CORR Curriculum – Orthopaedic Education

ACGME and ABOS Changes for the Orthopaedic Surgery PGY-1 (Intern) Year

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Introduction

The Accreditation Council for Graduate Medical Education (ACGME) and American Board of Orthopaedic

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. In his second column, Dr. Paul J. Dougherty, residency director at the Detroit Medical Center and Dr. Randall E. Marcus, chairman of the department of orthopaedic surgery at Case Western Reserve University, detail the significant changes to the PGY-1 year curricular requirements for orthopaedic surgery. We welcome reader feedback on all of our columns and articles; please send your comments to eic@clinOrthop.org.

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Surgery (ABOS) recently mandated major changes to curricular requirements for the PGY-1 (intern) year for categorical orthopaedic surgery residents. Since July 1, 2013, PGY-1 residents are required to have 6 months of orthopaedic surgery rotations, 6 months of nonorthopaedic surgery rotations, and complete a mandatory surgical skills curriculum [1, 2]. The ACGME and ABOS executed these changes in an effort to improve the quality and breadth of education for interns, preparing them for more advanced orthopaedic education. These changes were prompted by shifts in general surgery procedures (from open to laparoscopic), which have reduced the operating room experience of suturing and knot tying for interns, as well as by duty hour requirements that further reduce the

operating room experience for interns. Together, these shifts in first-year resident experience have resulted in less surgical training for the orthopaedic surgery intern. The new ABOS requirements, which commence on July 1, 2014, seek to offset those losses [1, 2].

This column describes the changes mandated by the ABOS and ACGME for the orthopaedic intern year, discusses some limitations associated with these changes, and offers program strategies for effective implementation.

Changes to the PGY-1 Rotation Schedule

The PGY-1 curriculum consists of a 12 month-long experience designed to provide a broad educational background, and prepare recent medical school graduates for more advanced training in orthopaedic surgery [1, 2]. Instead of a maximum of 3 months of orthopaedic surgery rotation blocks, the ACGME and ABOS now require 6 months of orthopaedic surgery for the PGY-1 year. The goals for the 6 months of orthopaedic surgery rotations are to “foster proficiency in basic

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Table 1 Comparison of rotation changes [1, 2]

	Before July 1, 2013	After July 1, 2013
Orthopaedic rotations	3 months maximum	6 months
Surgery	6 months of surgery or surgical subspecialties including: trauma, plastic surgery/burn care, surgical intensive care, and vascular surgery	At least 3 months surgical rotations chosen from: general surgery, general surgery trauma, plastic/burn surgery, surgical, or medical intensive care, and vascular surgery
Other rotations	At least 3 months of structured education, with at least one month in three or more of the following: anesthesiology, emergency medicine, internal medicine, medical/cardiac intensive care, musculoskeletal imaging, neurological surgery, neurology, pediatrics, rehabilitation, rheumatology, and pediatric surgery if not already included in general surgery	Additional 3 months of structured training chosen from the following: anesthesia, basic surgical skills, emergency medicine, general surgery, general surgery trauma, internal medicine, medical or surgical intensive care, musculoskeletal radiology, neurological surgery, pediatric surgery, physical medicine and rehabilitation, plastic/burn surgery, rheumatology, and vascular surgery.
Other		No more than two of any nonorthopaedic rotation. Surgical skills may be given during 1 month as a rotation or distributed as modules throughout the year.

surgical skills, the general care of orthopaedic patients both as inpatients and in the outpatient clinics, the management of orthopaedic patients in the emergency department, and the cultivation of an orthopaedic knowledge base.”[1] The 3 additional months will be taken from what had previously been general surgery or other surgical subspecialties (Table 1).

Six months of nonorthopaedic surgery rotations are also required; designed to provide structured education to “foster proficiency in basic surgical skills, the perioperative care of surgical patients, musculoskeletal image interpretation, medical management of patients, and airway management skills” [1, 2]. No

more than 2 months of any single rotation may occur for nonorthopaedic rotations [1, 2]. For 3 of the nonorthopaedic surgery rotation months, the following general surgery rotations may be used: general surgery, general surgery trauma, plastic/burn surgery, surgical, or medical intensive care, and vascular surgery. To provide further education on care of the patient, the last 3 months can be fulfilled by choosing one of the following: anesthesiology, basic surgical skills, emergency medicine, general surgery, general surgery trauma, internal medicine, medical or surgical intensive care, musculoskeletal radiology, neurological surgery, pediatric surgery, physical medicine and rehabilitation,

plastic/burn surgery, rheumatology, or vascular surgery [1, 2].

Limitations of the Revised PGY-1 Rotation Schedule

Although it is thought that increasing the required orthopaedic surgery rotations from 3 to 6 months will better prepare an intern for the subsequent orthopaedic residency years, the plan still has limitations.

This approach may limit an intern’s opportunities to learn about the complex physiology of the severely injured or ill patient, which is a topic many consider to be well taught in the setting

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of general or trauma surgery. Exposure to patients experiencing large postoperative fluid shifts, nonorthopaedic medical problems, and immunosuppression following transplants will necessarily be lower under the new system. This may impair the ability of a resident to recognize major changes in clinical status in more complicated patients. While many orthopaedic inpatients are managed or comanaged by other services, being knowledgeable about preventing complications in the perioperative period is important. Therefore, orthopaedic surgery rotations should include care of inpatients such as those on adult reconstruction, spine, or trauma services so the educational component of managing nonorthopaedic medical problems can occur.

Residents occasionally elect to leave the orthopaedic surgery residency during the intern year to pursue another specialty necessitating the need for another person to fill that “open” slot. The new PGY-1 curriculum presents challenges that previously did not exist when filling that slot with a PGY-1 General Surgery transfer. Replacing an orthopaedic intern who withdraws from the program will likely necessitate filling that slot with a resident who must repeat part of or all of their intern year, placing that individual off-cycle for rotations, and incurring additional costs to the program and institution. A program may add a person who has

successfully completed a part of another orthopaedic surgery program. Candidates who leave a program, either by resignation or dismissal, are generally not ideal resident candidates. A second solution is to change the rotation length to offset this loss of a resident. For example, extend the length of rotations from 3 to 4 months in a four resident per year program that has lost a resident. With this example, care would need to be taken to ensure that adequate rotations in all areas of orthopaedic surgery are provided by the program.

Surgical Skills Curriculum

Since July 1, 2013, the ACGME has mandated that orthopaedic surgery PGY-1 residents receive a surgical skills curriculum. The basic surgical skills training must be designed to “to integrate with skills training in subsequent postgraduate years and should prepare the PGY-1 resident to participate in orthopaedic surgery cases” [1]. Surgical simulation has become popular in surgical specialties as a means of providing skills training in an environment that does not harm a patient, and allows for practice of surgical skills without time constraints. The 18 modules for the surgical skills curriculum (Table 2), chosen by an expert panel, include basic suturing, knot tying, and bone handling skills. The

intent is to provide basic education on important topics such as consenting a patient, as well as providing education for surgical skills [2].

The surgical skills curriculum may be taught during a dedicated surgical skills rotation during the orthopaedic or nonorthopaedic surgical rotations, or interspersed throughout the intern year.

Limitations of the Surgical Skills Curriculum

Though designed by an expert panel, there is no evidence as yet that the surgical simulation skills curriculum will provide PGY-1 residents with what they will need to succeed in that year of training or beyond. While some topics, such as suturing and knot tying, are commonly performed by interns, other topics may be more important for subsequent years of training. For example, use of a saw guide and making bone cuts during a total knee replacement are tasks in the PGY-1 simulation curriculum that are not commonly done by surgical interns during their rotations that year. This raises the question of whether any skill acquired pertaining to these tasks (which are unlikely to be practiced that year) will be retained after the completion of this module. Skills acquired in simulation laboratories need to be

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Table 2 Modules for the surgical skills curriculum [1, 2]

Modules (18)
Sterile technique and orthopaedic room set up
Knot tying
Suturing
Soft tissue handling techniques
Fluoroscopic knowledge and skills
Bone handling techniques 1 (instruments, osteotomy, osteotome)
Bone handling techniques 2 (basic arthroplasty skills—saw skills, jigs, and guides)
Casting and splinting (cast application and removal)
Traction (skeletal traction of femur and tibia and Gardner-Wells tongs)
Principles and techniques of fracture reduction
Basic arthroscopy skills (knee and shoulder anatomy, portals, triangulation, and dexterity)
Basic techniques for internal fixation of fractures (dynamic compression plate, buttress plate, neutralization plate, compression screw, and cannulated screw)
K-wire techniques (closed reduction and pinning of foot and hand fractures, and pediatric supracondylar humerus fracture)
External fixation (placement of pins, simple pipe reduction with monolateral frame)
Compartment syndrome (cognitive knowledge and compartment pressure measurement/fasciotomy techniques of leg, thigh, and forearm)
Use of local anesthetic/joint aspiration and injection
Patient safety, team training, and obtaining consent
Basic microsurgery techniques (cut, suture, and knot tying)

practiced to be retained, and without continued practice the skills may be completely lost in due time [5, 6]. Emphasis on techniques interns actually perform may, in time, be used to structure the surgical skills curriculum more effectively. Moreover, formulation of performance standards and assessment of residents during the modules is incomplete. While clear goals and objectives for the modules may be developed with relative ease, evidence that surgical simulation skills

readily transfer to the operating room is lacking. For example, we do not yet know whether the skills taught during the arthroscopy portion of this curriculum will correlate with performance during an actual procedure [5–7].

Importantly, simulation training is costly, and mandatory implementation of the surgical skills curriculum will require both faculty time and program dollars, resources that are becoming more limited in the current economic climate [4–6, 9]. The AGCME and ABOS recommend

vendor support, especially for equipment and techniques commonly used in a particular residency program. The use of vendor support can result in positive educational outcomes via the provision of standardized technical training for equipment used in program participating sites. Reliance on vendor support, however, may foster industry-related biases, preferences, and altered prescribing practice patterns that can last well beyond the residency, which can have lasting deleterious implications.

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Some skills, such as knee arthroscopy, may be learned on an arthroscopic knee simulator. While much work has been done developing an arthroscopic knee simulator, the cost for a high-quality simulator currently runs in excess of USD 50,000 [8]. Using a wet lab to develop basic skills is an alternative to the simulator, but cadaveric specimens, as well as lab space to handle biological material, may be difficult to obtain.

Formal assessment of specific cases or specific types of orthopaedic procedures is not often done in orthopaedic surgery, and the development of reliable and valid assessment tools will need to be developed for the simulation modules to ensure fair and standardized evaluation of resident performance. Additionally, a remediation program must be available for residents who perform below expectations.

new requirements, protected time for faculty assistance in conducting intern modules, and increased resident assessment with both the Next Accreditation System “Milestones” Reviews [3] and the intern surgical skills curriculum. These efforts will require more faculty teaching time and increased burden for documentation of resident evaluation.

The development of better assessment tools will provide better documentation of resident surgical skills. While feedback is often provided, most programs do not provide a formal structure of written (or electronic) surgical skills assessment. This step, which is decidedly “low tech” by contrast to the new, more-intensive simulation curriculum mandated by the ACGME, may be one of the most important interventions we, as educators, can provide.

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Next Steps

Orthopaedic surgery residency programs must prepare for a number of changes to the PGY-I curriculum, as they are coming soon. Significant faculty investment will be required to implement these changes. Programs will need to provide faculty development to ensure understanding of the