CORR Curriculum — Orthopaedic Education

CORR® Curriculum — Orthopaedic Education: Faculty Development Begins at Home

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Introduction

Through the years, I have taken an interest in asking orthopaedic surgeons who teach residents just what formal education or training they have experienced in both teaching and assessing residents. With few exceptions, these orthopaedic surgeons have replied “none” — only relying on what they had learned during residency or fellowship. But all of those who answered my unscientific survey agreed that their skills and knowledge could be improved.

Residency programs generally succeed in developing safe, practicing orthopaedic surgeons, and they usually

do a good job of keeping residents current both with clerical and clinical changes. While some faculty truly are outstanding educators and have made specific efforts to learn and improve on their pedagogic talents, many more do not fit this model.

Previously published studies across several medical specialties [5, 6, 13, 17, 23] have described mentoring programs as a means to help new faculty members develop professionally. Despite some evidence that these programs help [13, 18, 19], a review of mentoring across all medical specialties [20] found that fewer than 20% of junior faculty could identify a mentor. The incentive to make significant

progress in faculty development is limited because these programs rarely produce revenue. As a consequence, faculty members are not reaching their potential.

A large chasm forms between the potential and actual performance of an orthopaedic department when “education to the educators” is not provided. I believe it is possible for most departments to do more in this area, despite the challenges that exist, and that the benefits will justify the investments made.

Teaching Residents

Faculty members generally teach residents in three settings: (1) Didactic lectures or seminars, (2) the operating room, and (3) patient encounters in the hospital or clinic. Not all faculty members in all departments provide all three aspects of education, but a residency program needs enough faculty in all three areas to remain viable.

Lectures and Seminars

Faculty members who teach residents often cite time constraints as the most

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common barrier to better resident and faculty participation [11]. The orthopaedic surgery residency review committee stipulates that orthopaedic residency programs are required to have 4 hours of didactic sessions per week [2]. These may take place as part of a journal club, seminars, grand rounds, or other lectures. Because of the fewer hours available for residents to participate in didactics, the ability to utilize available time becomes more constrained.

For academic surgeons, there is even less time for learning how to teach. Many learn simply from the development of their presentations skills as residents. These skills are rarely developed beyond their initial acquisition as residents. Learning new presentation techniques or how to engage the listener into active learning, is generally not taught in any formal way in most orthopaedic surgery departments [22].

There are formal courses on education, such as the American Academy of Orthopaedic Surgeons Course for Orthopaedic Educators, which provides background on educational theory, resident education, and assessment. But what is the incentive to take a formal course on education? Those who take this course generally receive Continuing Medical Education (CME) credits. However, those involved with residency programs seldom need CME

credits. Formal courses like The Academy's Course for Orthopaedic Educators involve extensive time, travel, and expenses, making it difficult for departments to fund all who teach in a program. Additionally, there are limited slots per year for this course; as I write this, about 2 months in advance of the next such session, the course already is full. To alleviate this expense, the Council of Residency Directors has developed online educational "webinars" on these important topics [25], which take place during the evening to avoid scheduling difficulties. The courses cost USD 25 for members and USD 40 for nonmembers. It is too early to determine the popularity or efficacy of these webinars. For the webinar I helped run, approximately a little more than half of the 45 or so who signed up actually logged on.

Teaching in the Operating Room

Previously published studies [3, 4, 7, 12, 14–16, 21, 24, 26, 27] have provided great insight into just how faculty members could and should guide a resident through a procedure in the operating room. No one approach truly wins out. Although allowing a resident to struggle on his or her own might provide good experiential learning — and in the past perhaps this was more widely accepted as an

approach — hospitals and patients today are much less receptive to this practice. Yes, patient safety is paramount — but operating room time is limited. To ease this dilemma, residency programs have explored alternative surgical simulations [4, 12, 24, 26] like cadaver skills labs, or more sophisticated simulators such as the arthroscopy knee simulator, which uses computer generated arthroscopy fields and tactile feedback (haptic feedback) to mimic real arthroscopic procedures.

Cadaver or animal model skills labs can help the resident replicate certain operative approaches. More sophisticated models have also been used for skills assessment. Cadaver models are expensive, do not necessarily allow for multiple simulations, and the soft tissue is of differing consistency (stiff) with bone being softer than found with actual patients.

Surgical simulators often consist of simple or "low fidelity" exercises such as suturing and knot tying, but they do have the capability of performing more complex procedures. Sophisticated arthroscopic knee simulators have been found to be useful in both the development and assessment of surgical skills [7, 12, 14]. The simulators can perform repeated simulations, requiring less space than cadaveric models, and do not require biological handling or storage.

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While surgical simulation provides a safe environment for a resident, it requires both time and financial support (particularly for more complex exercises). Recent efforts have emphasized the review of resident simulator performance on videos, allowing feedback from a faculty member at a remote location.

Teaching at the Bedside and in the Clinic

Demonstrating clinical signs or radiographic features are important when evaluating a patient on the floor or in an outpatient setting. Additionally, linking patient history to the physical findings can emphasize mechanism of injury and basic science, such as when a patient says he or she “twisted their knee, heard a pop, and limped off the playing field.”

Teaching a clinical approach in the midst of time and resource constraints has been studied in other specialties [1, 10]. When teaching at the bedside, one may emphasize such commonly used techniques like the “One Minute Preceptor” model [3, 9], which is useful in time-limited settings. The One Minute Preceptor is a learner-focused, structured discussion of a patient seen in clinic or on the hospital floor comprised of four discussion areas: (1) Commitment, (2) probing, (3) teaching

points, and (4) constructive feedback (Appendix 1).

Resident Assessment and Feedback

Written assessment and providing feedback to residents in a constructive manner is another area of concern in many residency programs, not just orthopaedic surgery. The most common concerns among faculty I have spoken with through the years are inflated evaluations for residents and incomplete resident evaluations.

The orthopaedic surgery residency review committee requires all programs to provide resident assessment and feedback in a timely manner [2]. For each rotation, there is a formal cycle of assessment and feedback. Rotation-specific objectives (RSOs), used in a broad range of medical specialties, provide the resident educational goals and objectives for that rotation. Assessment of resident performance should be based on the RSOs, with mid- and end-of-rotation evaluations provided to the residents. On at least an annual basis, the RSOs should be reviewed and adjusted to reflect a rotation’s actual content. Often, the RSOs are not followed, formal feedback is not provided, and evaluations are inflated, or not completed at all.

It can only be concluded that this global rotation cycle is broken [8]. Faculty generally fall into one of three categories: (1) Those who actively participate and try to provide assessments in a timely manner, (2) those who provide some cursory feedback, and (3) those who do not complete evaluations or have incomplete evaluations. Reasons for this vary, but there is a prevailing perception that faculty are reluctant to criticize residents out of fear of being considered “too harsh.” In academic institutions, both promotion and resident participation in a rotation are dependent on resident evaluation of the faculty. Because of this, faculty may be reluctant to complete or give negative feedback.

Operative assessment is evolving, and faculty should be made aware of their obligation to provide quality surgical assessment as well. One common problem with the development of motor skills is that surgical programs do not give autonomy until later in a resident’s career, and deficiencies are not noted until later in the program. This, in turn, creates a situation whereby remediation is undertaken later in a program and high stakes decisions are made in the PGY4 or 5 years. Residency programs can avoid late decisions on residents by having their faculty members begin their assessments of motor skills

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earlier. A surgical skills curriculum, now mandated for the PGY1 year by the Accreditation Council on Graduate Medical Education and the American Board of Orthopaedic Surgery, could help with the earlier assessment of residents.

Making it Real: Incentives and Funding

The reality is that significant progress in faculty development can only be made and maintained if the solution holds incentives for the faculty. Promoting a culture whereby faculty can pursue their interests and provide education for residents is one of the more difficult objectives facing academic departments. Successful

departments prioritize their educational mission, and work to support a culture (through mentoring and financial incentives) favoring the attributes of scholarship (discovery, synthesis, and dissemination). One common source of incentive includes academic promotion, with associated recognition of efforts by peers of educational and scholarly excellence. Revenue to support faculty development may be increased by creating department “education relative value units,” which add financial support for those who undertake the educational mission with residents. The education relative value units could be awarded for working with residents on research, providing didactic lectures or seminars, or other specific teaching. Additionally, some departments also

successfully promote scholarship through intramural grants and philanthropy, particularly for those who are beginning their academic careers.

The current environment, which emphasizes revenue while also maintaining a balanced department budget, makes it difficult to introduce new faculty development concepts. Because of this, leaders in departments should work towards producing local solutions, bringing experts from outside the department to conduct workshops, or provide support for improving the areas outlined in this column. Additionally, supporting faculty members who wish to participate in courses, such as the Academy’s Course for Orthopaedic Educators, should also be encouraged.

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Appendix 1

1. Get a commitment from the resident by asking him or her about a diagnosis or plan.

Faculty

What seems to be happening here?

PGY-2 Resident

Mr. Smith has a patella tendon rupture.

2. Probe for supporting evidence by evaluating the resident's knowledge/reasoning.

Faculty

Why do you think that?

PGY-2 Resident

His “knee gave out” after a jump during a basketball game yesterday. He cannot do a straight leg raise and he has a palpable defect below the patella.

Faculty

What would you like to do?

Resident

I think he needs a confirmatory study, such as an MRI or ultrasound, and be scheduled for surgical repair.

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3. Teach a general principal by providing a succinct teaching point.

Faculty

A patella tendon rupture is more common in the weekend warrior. Mr. Smith is 38 and an accountant, slightly overweight, and was playing basketball, which is consistent with that picture. Additionally, use of certain medications may increase his risk for patella tendon rupture. His lateral knee x-ray shows patella alta as shown from the pole of the patella being proximal to Blumenstat's line.

4. Provide constructive feedback by reinforcing what was done well and what could be improved.

Faculty

I agree the exam is consistent with a patella ligament rupture, with a swollen knee and a palpable defect below the patella. You should review the other risk factors that might contribute to patellar tendon rupture, and incorporate those into your preoperative evaluation. Review the choice of diagnostic studies as to whether MRI or ultrasound is recommended.

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