The Orthopedic Surgeon: Can We Turn Out the Same Product in a Shorter Time Frame and With Less Cost?

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Editor’s Note—The medical community will see significant changes in health care in the next few years. These dramatic changes will be tied to quality and fiscal responsibility. The costs of medical training (ie, medical school, residency, and fellowship) raise a provocative question: Is it possible to turn out the same product by curtailing time and cost? In this Guest Editorial, Daniels and Walsh raise some provocative issues that the academic community needs to evaluate if we want to remain relevant.—Robert D. D’Ambrosia, MD

More than 90% of current orthopedic surgery trainees are pursuing subspecialty fellowship programs following completion of orthopedic residency training.1,2 The traditional 5-year orthopedic residency program alone may not be sufficient to train independent, competent orthopedic surgeons. Thus, subspecialty fellowship training is now perceived by many to be a necessary component of orthopedic surgery training in the United States.3

Although orthopedic surgery residency training was originally designed to expose residents to all aspects of orthopedic surgery and to prepare them for general orthopedic practice,4,5 this is becoming increasingly difficult due to rapid expansion of the field and ongoing duty hour and supervision regulations. These factors, in addition to increasing demand for subspecialization within the field, are driving an increase in trainee pursuit of subspecialty fellowship training. Although most trainees currently complete 1 year of additional training, a growing number of current orthopedic trainees are choosing to complete 2-year fellowships1,6 or 2 separate fellowships, often combining related specialties such as hand and shoulder/elbow, sports and shoulder/elbow, sports and foot/ankle, and musculoskeletal oncology and adult reconstruction or orthopedic trauma and another subspecialty fellowship.7

Cost of Orthopedic Surgery Education and Training

The cost and value of training are difficult to measure and define. Many believe that the fellowship training year is the most valuable training year in terms of refining surgical and decision-making skills,8 but this assertion is unproven. The cost of fellowship education depends on which program you examine and whether you are asking about the cost to society, the institution, or the trainee.

In the United States, orthopedic surgery fellowship training may be partially funded by fellow clinical productivity (eg, billing for consultations, surgical assistant fees). However, the Accreditation Council for Graduate Medical Education (ACGME) accreditation of fellowships limits billing opportunities, as Medicare and Medicaid do not allow ACGME-approved trainees to bill for clinical services. Clearly, many fellowship directors are hesitant to pursue ACGME accreditation because of its effect on fellow billing for services.
Institutions may apply for industry funding to support their fellowships, or may use research funds or extra clinical revenue to support fellow education. Orthopedic surgery fellows may also assist with work force issues due to limitations in duty hours for resident trainees and the high cost of physician assistants and nurse practitioners.

The cost to the trainee for pursuing fellowships is huge. In the United States, average medical school debt is rising rapidly.9 Generally, fellows continue to defer debt, and begin repaying their loans after training is completed. Some medical school graduates will have more than $500,000 of debt by the time they finish training.

The decision to pursue additional fellowship training is additionally costly for trainees, particularly when considering the associated time commitment, moving costs, and deferred surgeon reimbursement.10 The current average annual salary for orthopedic surgery fellowships ranges from $60,000 to $80,000, considerably less than the average salary of orthopedic surgeons. In 2009, Gaskill et al10 assessed the financial impacts of orthopedic subspecialty fellowship training, reporting that spine, hand, shoulder/elbow, sports, and adult reconstruction may yield positive financial returns, trauma yields a neutral financial return, and foot/ankle and pediatric orthopodics have negative net financial value.10 Despite the opportunity cost of pursuing extra subspecialty fellowship training, the sheer volume of residents seeking subspecialty fellowships tends to support the notion that these financial implications are outweighed by the fact that this additional training is perceived to be necessary for orthopedic surgeons.

**POSSIBLE SOLUTIONS**

Given the rapid expansion of techniques, knowledge, and skills required of orthopedic surgeons, and the increasing specialization within the field, it is no longer possible for orthopedic surgeons to master all of the subspecialties. It may be more efficient to offer more targeted training. For example, orthopedic trainees spend time learning orthopedic trauma, arthroplasty, sports/arthroscopy, hand, foot/ankle, shoulder/elbow, pediatrics, tumor, and spinal surgery during residency.

One way to improve the clinical experience of orthopedic trainees and to potentially reduce the necessity of subspecialty fellowships would be to create a pathway allowing orthopedic residents to subspecialize earlier in training, after their second year of residency. This would permit creation of focused, persistent training for subspecialty surgeons, while freeing up valuable training time for orthopedic trainees with no clinical interest in a single subspecialty, potentially shortening training for orthopedic surgeons. This proposal is undoubtedly controversial and will require intense discussion of the positive and the negative aspects of early and prolonged subspecialty fellowships. A true competency-based rather than a time-served model of orthopedic training might also enable efficiencies.

**CONCLUSION**

Given the rapidly changing health care environment, careful reassessment of our current orthopedic training system is in order. We must ask ourselves difficult questions. Is the cost of education worth it? This deceptively simple question has no simple answer. We need to develop expertise in cost and value analyses in orthopedic education.11 This will mean (1) determining the true costs of education from the perspectives of various stakeholders; (2) developing expertise in cost-effectiveness, cost-benefit, cost utility, and cost feasibility analyses; and (3) making difficult decisions about training as we seek to put new, cost-effective training strategies into practice.

**REFERENCES**


