ORIGINAL REPORT

Finding Value in Surgical Didactics: Longitudinal Resident Feedback From Case-Based and Traditional Lectures in an Orthopaedic Residency

Jonathan C. Barnwell, MD,[1] *Jason J. Halvorson, MD, Robert D. Teasdall, MD and Eben A. Carroll, MD*

Department of Orthopaedic Surgery, Wake Forest Baptist Medical Center, Winston-Salem, North Carolina

OBJECTIVE: To evaluate orthopedic resident perceptions of a didactic curriculum presented in traditional and case-based formats.

DESIGN: Prospective cohort study using anonymous web-based survey after each conference evaluating resident perceptions of faculty participation, didactic delivery, content, and overall conference value. Conferences were structured as primarily case-based or traditional lecture. Logistic analysis was performed to determine factors predictive of rating a conference as valuable time spent.

SETTING: Orthopedic residency training program at single institution over an academic year.

PARTICIPANTS: Orthopedic residents in postgraduate training year 1 to 5 attending mandatory didactic conference.

RESULTS: Cased-based conferences received higher Likert ratings on residents' perception of faculty participation, instructor delivery, and improvement in topic understanding when compared to traditional lecture-based conferences ($p < 0.0001$ for each factor). Residents also were more likely to rate case-based conferences as valuable time spent ($p < 0.0001$). In our logistic model, factors associated with a negative likelihood of rating a conference as valuable were lecture format (odds ratio [OR] = 0.155, 95% CI: 0.115-0.208), PGY-2 level presenter (OR = 0.288, 95% CI: 0.169-0.490), and PGY-3 level presenter (OR = 0.433, 95% CI: 0.269-0.696). Timing in the year, surgical subspeciality, and conference identity were not significant predictors of conference value rating.

CONCLUSIONS: Longitudinal resident feedback demonstrates highly favorable resident perceptions toward case-based formats in didactic sessions. Junior levels residents are not perceived as effective as senior residents and faculty in presenting material in either format. These methods allow for a dynamic approach to identifying strengths and weaknesses in a resident curriculum as a well as a means for more focused and real-time improvements. (J Surg Ed ▮:▮▮▮-▮▮▮. © 2016 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: graduate medical education, teacher evaluation, case-based learning, student feedback

COMPETENCIES: Practice-Based Learning and Improvement, Medical Knowledge

INTRODUCTION

Increasingly, graduate medical education programs face pressure to promote efficiency in resident training while achieving standardized metrics of competency. This has led to greater scrutiny on how residents spend their time. In a work-shift analysis of orthopedic residents, Hamid et al.[1] observed that almost 25% of a resident's time is now spent performing documentation and administrative duties. Duty hour regulations pose additional constraints to time available for formalized education. Although the result of duty hour limits on resident performance and clinical outcomes are mixed, there is a growing body of evidence to suggest duty hour limits have adversely affected resident perceptions of their education.[2-4] An annual survey of orthopedic residents showed decreasing satisfaction with education between 2003 and 2009 after implementation of 2003 duty hour limit.[5] Similar concerns are echoed by faculty. A survey of 482 general medicine attendings raised

Correspondence: Inquiries to Jonathan C. Barnwell, MD, Department of Orthopaedic Surgery, Wake Forest Baptist Medical Center, Winston-Salem, NC 27103; e-mail: Jonathanbarnwell@gmail.com

[1] Present address: Department of Orthopaedic Surgery, UT Southwestern Medical Center, 5323 Harry Hines Blvd, Dallas, TX 75390.

  1931-7204/$30.00 http://dx.doi.org/10.1016/j.jsurg.2016.07.009

concerns for significantly less time available for teaching after the 2003 Accreditation Council for Graduate Medical Education (ACGME) duty hour regulations.[6] Harris et al.,[7] in a systematic review, found such negative perceptions to be prevalent in the graduate medical education literature. Although outcomes in resident education are influenced by a multitude of factors, perceptions of one's education and outcomes are likely linked. In a multiregression analysis, d'Apollonia calculated that 45% of the variation in student learning can be explained by student perception of teacher effectiveness.[8]

A more granular analysis of instructional activities may provide insights for optimization of teacher effectiveness and improved learning efficiency. In the operating room, time-action analysis has identified pitfalls and areas where the learner can direct attention to improve performance.[9] However, there is little evidence to support how the surgical resident should best spend their time in the classroom. To identify attributes of classroom didactics favorably perceived by residents, we longitudinally surveyed residents following each educational conference over a single academic year. These conferences varied in structure, surgical subspecialty or discipline, and presenter training level. We hypothesized that residents would value case-based approaches over traditional lectures. In addition, we believed obtaining resident feedback dynamically throughout the year, as opposed to a few static time points, would allow for more accurate insights into the most valued areas of instruction and provide opportunity for real-time improvements.

MATERIAL AND METHODS

Conference Structures

For the 2014 to 2015 academic year, the orthopedic didactic curriculum at a single residency program was structured so that the resident body would attend 3 subspecialties conferences and a core knowledge conference on a weekly basis. Grand rounds, morbidity and mortality conference, non-mandatory conferences or conferences not attended by the resident body were excluded from this study. The core knowledge conference (Core) was based on topics from all subspecialties with relevance to in-training and board examination preparation. It was structured to include a 10 to 15 minute focused didactic, a 30-minute faculty-led case discussion, and finally, a series of in-training style questions using a web-based anonymous audience-response system, www.pollev.com (Poll Everywhere, San Francisco, CA). Other mandatory subspecialty conferences were 1 hour in duration, directed mostly by faculty. However, formats varied by subspecialty. Subspecialty conference A (SSC A) Socratic in nature, and without predesignated topics. Both Core and SSC A were primarily case-based. Subspecialty conferences B and C (SSC B and C, respectively) were given in traditional lecture formats primarily by faculty, generally more comprehensive in scope, used slides to emphasize learning points, and were based on topics predetermined by faculty at the onset of the academic year.

Conference Surveys

Immediately following each conference, residents were emailed a web-based anonymous survey (SurveyMonkey, Palo Alto, CA). This was a multidimensional instrument designed to assess residents' perceptions of instructor effectiveness. The final survey given for the remainder of the academic year included 4 questions incorporating the principles from the elements above. A pilot phase was conducted during the first 5 weeks of the academic year to assess instrument reliability. The first 3 questions asked residents to rate their agreement with the following statements on a Likert scale of 1 (strongly disagree) to 10 (strongly disagree):

(1) Faculty participation in today's conference was professional and enhanced my knowledge of the given topic.
(2) Content was delivered in a concise and clear fashion.
(3) Overall, today's conference improved my clinical understanding of the given topic.

The fourth and final question asked residents to indicate their agreement with the following statement dichotomously (yes or no):

(4) Today's conference was valuable time spent.

An additional survey was e-mailed at 6 months and at the end of the academic year to assess overall attitudes toward conference composition. Factor analysis was performed to determine whether the individual conference (SSC A, SSC B, SSC C, and Core), conference structure (case-based or traditional), topic discipline (basic science, oncology, trauma, foot & ankle, hand, sports, reconstruction or pediatrics) or instructor training level (PGY1-5 or faculty) best predicted resident value ratings.

Instructor Feedback

Faculty and resident teachers were e-mailed survey results upon request or when achieving highly favorably marks. In addition, the resident body and program director received quarterly reports of survey data.

Data Analysis

Mean values of response rates and survey ratings along with associated standard deviations and 95% CIs were calculated. Given the interrelatedness of the statements on our