

Selection bias: Examining the feasibility, utility, and participant receptivity to incorporating simulation into the general surgery residency selection process



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Abstract

BACKGROUND: Opportunities exist to revise the current residency selection process to capture desirable candidate competencies. We examined the extent to which components of the American College of Surgeons/Association for Surgical Education simulation-based medical student curriculum combined with a teamwork activity could be used as potential screening method.

METHODS: Students participated in a workshop consisting of training/evaluation of knot tying, suturing, airway management, gowning/gloving, and teamwork. Surveys were given to medical students (MS) and faculty/resident/staff (FRS) to examine their opinions about the residency screening process, the most critical competencies to assess, and the effectiveness of each station for candidate evaluation.

RESULTS: Communication (FRS, 4.86 ± .35; MS, 4.93 ± .26), leadership (FRS, 4.41 ± .80; MS, 4.5 ± .76), judgment (FRS, 4.62 ± .74; MS, 4.67 ± .62), professionalism (FRS, 4.64 ± .73; MS, 5.00 ± .00), integrity (FRS, 4.71 ± .78; MS, 4.87 ± .35), and grit/resilience (FRS, 4.71 ± .78; MS, 4.53 ± .74) were considered most valuable for candidate screening. The simulation-based curriculum for evaluation of residency candidates was rated lowest by both groups. Open response comments indicated positive perceptions of this process.

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CONCLUSIONS: Employing simulation to assess candidates may be most beneficial for examining nontechnical attributes. Future work should continue to explore this area.
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Residency program directors strive to identify candidates who will succeed in their program. Current strategies to screen candidates include reviewing candidates' United States Medical Licensing Examination (USMLE) scores, medical school grades, Dean's letters, solicited letters of recommendation, candidates' personal statement and inviting those who meet that programs' criteria to come for a face-to-face interview.¹⁻⁴ The ability of these screening methods to predict who will be successful in general surgery residency programs is undergoing increased scrutiny, however, 20% to 30% of candidates who match into general surgery residency either voluntarily or involuntarily leave.⁵⁻⁸ In addition, surgical educators are noting that many of the qualities that they find most desirable in potential candidates for residency—such as communication, teamwork, and professionalism—are nontechnical competencies that are difficult to formally assess in the current screening process. Furthermore, those issues that most often require remediation in residents—such as professionalism and decision-making—are also nontechnical competencies.⁹⁻¹³ These issues are supported in a literature review by Sanfey et al⁹ which demonstrated that many of the most frequent issues exhibited by struggling trainees involve interpersonal skills and professionalism.

These data present opportunities to revise the current residency selection process to better identify desirable nontechnical competencies in candidates. At a time when program directors manage an increasingly heavy volume of applications,¹⁴ a unique opportunity exists to test the feasibility and validity of new processes. Simulation may be able to play a pivotal role in this process.¹⁵ By placing candidates in simulated situations in which they will have to demonstrate their ability to learn a new task, problem solve, and work together as a team, programs may be able to assess competencies that heretofore were both unevaluated and unamenable to later remediation attempts.

The goal of this pilot study was to examine the extent to which components of the American College of Surgeons/Association for Surgical Education (ACS/ASE) simulation-based medical student curriculum¹⁶⁻¹⁸ combined with a teamwork activity¹⁹ could be used as potential screening methods for surgical residency candidates during the interview process. We evaluated the stakeholder buy-in and reactions to this process at a recent workshop at a national surgical education meeting by surveying the volunteer medical students who participated in the session as well as the surgical educators who attended the workshop.

Methods

A workshop entitled “Sim Games” was offered at the 2016 Association for Surgical Education (ASE) meeting (as part of Surgical Education Week, 2016, Boston, MA, USA). Student teams from 4 area medical schools were invited to participate. Nonmedical student workshop attendees were offered the opportunity to observe the skills sessions being proctored by ASE Simulation Committee members and provide feedback.

Part 1 of the workshop consisted of technical skills training and assessment. Technical skills exercises from ACS/ASE simulation-based medical student curriculum (Table 1) were selected based on expert consensus from the members of the ASE Simulation Committee. Members were queried regarding which 4 modules from this national curriculum would be most useful in helping to select candidates during the resident selection process. Selected modules included basic knot tying (year 2, module 2), basic suturing (year 3, module 3), airway management (year 2, module 1), and sterile techniques—gowning and gloving (year 2, module 6). Students were provided approximately 20 minutes to complete training and evaluation at each of these stations.

Part 2 of the workshop consisted of a tabletop teamwork exercise provided by the Department of Family Medicine & University of Vermont Clinical Simulation Laboratory (CSL) and adapted from the work of Murphy et al (Fig. 1).⁹ This simulation is used to evaluate participants' verbal communication, social and teamwork skills. The entire group of medical students was briefed on the goals, objectives, and the details of the simulation, and the best practices in simulation-based educational methods were reviewed (confidentially, reflection, and creation of safe learning environment).²⁰ The medical students were then randomly divided into 2 teams of 6. Each team was provided with the scenario in which a family of 16 potato heads who were on a bus traveling to an International Potato Head (Hasbro, Pawtucket, RI) conference crashed. Their team arrives at the crash site to find only heads and scattered body parts. Their goal is to correctly assemble as many potato head family members as possible within 7 minutes using verbal communication, social, and teamwork skills. Afterward, the number of correctly assembled potato heads was recorded and teams then engaged in a group debrief following a plus/delta framework regarding what went well, what did not go well, and what they would change for next time. Teams then repeated the simulation with a different set of potato heads using what was learned from the first simulation to improve outcomes on the second. A second debrief focused on what aspects of verbal communication, social and teamwork skills were helpful in completing the task.

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