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Invited Commentary

Re-envisioning undergraduate surgical education during and after the COVID-19 pandemic



Like faculty at all of our institutions, Pettitt-Schieber and colleagues at Emory were challenged by the need to pull medical students off the wards because of safety concerns and potential shortages of personal protective equipment at the spring peak of the COVID-19 pandemic. As they describe in this report,¹ they responded by creating a series of eight one to two week online electives that could be offered to students instead. They report here student satisfaction with those offerings, based upon an 81% response rate to their survey across a wide range of disparate offerings. These results are encouraging, although course evaluation surveys are often mandatory, and so the results must be viewed in the context what the other 19% of students might have thought of these courses, as well as the diversity of course offerings considered in this report.

Perhaps more importantly, surgical education is undergoing a paradigm shift from the accidental learning that occurs while shadowing a surgeon or surgical team to more intentional objective-based teaching and learning.^{2–4} Therefore, it is critical to ask not only whether students were satisfied but whether learning objectives were met. To what extent was curriculum actually delivered? Some of these electives incorporated brief pre-tests and post-tests, and mean scores seem to have increased, but we have little information about what sort of questions were on these quizzes and how they corresponded to learning objectives that either were established for these particular courses or that would have been used in a parallel in-person course in the specialty. It would also be interesting to measure how effectively these courses were able to teach various procedural skills on-line. Evaluation of such course work should ideally not simply include student satisfaction and some demonstration that some learning has occurred but benchmarking against equivalent in-person experiences with rotations in the same specialties.

Here at the University of North Dakota, we faced similar challenges and shifted students into virtual learning experiences four weeks into an eight-week surgical clerkship. Like most institutions, we improvised on the fly, building upon curricular material already in our program as well as material borrowed from national societies and newly developed asynchronous and synchronous activities. The demands of clinical care on our faculty posed additional challenges, but we mandated at least four virtual contact hours per week between students and faculty. We were also able to adapt and shift our case-based Professor Rounds series⁵ on-line, via our teleconferencing software. The process may have been easier at UND than at some other schools because our decentralized multi-

campus system already requires us and our students to be facile in distance education. Like the authors of the current paper, we found student satisfaction rate to be high (although their disappointment with not being able to stay on the wards was both palpable and continually expressed). We also compared USMLE surgery shelf exam scores, and found that they actually went up compared to average scores from the same time period in previous years. Kronefeld and colleagues recently reported similarly from the University of Miami.⁶ Such comparisons validated our course offering and may have reflected additional study time. Indeed, McGann and colleagues have recently described an asynchronous on-line skills elective that even teaches teach knot tying and suturing in a virtual fashion.⁷ However, we cannot help but speculate that what students may have gained in additional knowledge, they may have lost in in-person exposure to surgical anatomy, specific and memorable patient cases, non-technical skills, and the modeling of surgical professionalism. These, too, are important aspects of surgical education.^{8–11}

Although as I write this, students are back on the wards, it is important that we attempt to learn from our experience with this challenge, whether with online experiences like those described by Pettitt-Schieber and colleagues,¹ or social media use,^{12,13} or other techniques. First, it remains possible that students may have to leave the wards again in the future, either because of this or some other public health emergency or other local disaster such as a crippling hurricane or flood. Thus, the curricula that we have developed should be rigorously evaluated and adapted for such eventualities. Second, as demonstrated by our own experience with increasing the USMLE shelf exam score, it is possible that students may actually learn some things better on their own time in their own homes than during on the fly surgical teaching or in synchronous in person lectures. Certainly, that has been an increasing trend in preclinical education. Furthermore, in an era of increasing clinical demands on our faculty, particularly for community-based schools in which preceptors' teaching efforts may be limited by their RVU targets, the possibility to replace in person teaching with asynchronous curriculum that need not be repeated individually each rotation seems potentially more efficient if it can be demonstrated to be at least equally effective. Indeed, a multiinstitutional collaboration has recently been described to efficiently meet similar challenges in educating surgical residents.^{14,15} Retrospective thoughtful and thorough evaluation of our efforts during this pandemic is therefore required. The paper by Pettitt-Schieber and colleagues represents an important part of this process.

Declaration of competing interest

No Conflict of Interest.

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