



## The business of educating the next generation of surgeons

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### ABSTRACT

Surgical education community needs to be informed about how education is funded and how it is threatened. In order to explore these issues the Association of Surgical Education convened a panel with significant experience in managing surgery departments to discuss the business of surgical education. They specifically addressed methods to recognize and reward faculty, educate residents on safety, quality and cost, and increase departmental revenue. This information is important in the current educational environment where there is an increased need for institutions to find alternate revenue streams to sustain graduate medical education. It is also important to find additional revenue streams to fund new residency slots to accommodate the greater number medical students who have been admitted to medical schools in response to meet the projected shortage of physicians.

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### Introduction

Medical education stands at an important crossroads as new policies are being implemented by both governmental agencies and the Accreditation Council for Graduate Medical Education (ACGME) in the face of funding uncertainty. The threat of eroding clinical dollars heightened by the Affordable Care Act has put pressure on institutional leadership and department chairs to grow the clinical enterprise while being fiscally conservative. Currently, the Centers for Medicare and Medicaid reimbursements remain the primary source of GME funding in the US, and gaps in funding for education have traditionally been supported by taxation of clinical revenue. However, a report from the Simpson Bowles Commission recommended reduction in total GME funding of up to 50% over a 10 year period.<sup>1</sup> In 2011, Nasca and colleagues determined that funding cuts of this magnitude could reduce the number of ACGME accredited programs by nearly 30%. These changes are also occurring in the context of a need to grow training opportunities as new medical schools open to cope with the impending shortage of physicians. As a result, academic medical centers have increasingly resorted to

innovative methods of funding their missions by profiting from core educational, research, and service endeavors, a growing trend known as “academic capitalism.”<sup>2</sup> Previous studies have shown that both residents and faculty are relatively naïve to many of these economic and policy considerations. Despite this existing need for education, few medical training programs have addressed financial or cost considerations in their curricula.<sup>3,4</sup> In order to educate surgeons and surgical residents regarding these issues, an expert panel was convened at the annual meeting of the Association for Surgical Education (ASE) in Orlando, Florida. The expert panelists included department chairs and a dean with significant experience in managing departments of surgery. They discussed the emphasis that the ACGME is placing on improving the learning environment for medical trainees at all levels and engaging residents in important safety and quality initiatives. In addition, the panelists discussed the growing problem of adequately financing health care education. Overall, the discussion highlighted important strategies in supporting financially sustainable health education for both the current and future education of medical trainees. The points raised by the panel reflect critical questions in the future of medical education that deserve continued discussion and input from medical educators; namely, the pressures faced by academic institutions to meet the complex demands of national funding and accreditation bodies in addition to maintaining institutional standards for

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excellence in preparing learners for medical practice. Herein lies a further discussion of the concerns raised by this ASE panel as well as a presentation of the existing literature addressing these issues.

### Financial barriers to educating the next generation of surgeons

Innovation in surgical education cannot begin without first addressing the complex issue of financing novel educational endeavors and motivating individuals to engage in education reform. As previously described, funding for graduate medical education at the national level is certainly at risk in the current era. Therefore, the funding sources for an undergraduate surgical education program rely primarily on tuition dollars returned from the Dean's office to the Department of Surgery. However, it will always be necessary to utilize clinical revenue for a strong education program; this frequently occurs in the form of department or division tax. Additional funding may be obtained from the sponsoring hospital, education grants, as well as philanthropy for major projects, such as a surgical skills laboratory.

From the perspective of the panelists, it is critical that departmental educational leadership in surgery recognize the value of an outstanding surgical clerkship as a priority from the school of medicine and the Dean. This understanding of “what Deans want” is vital in preserving funding flow from the medical school. Generally, Deans want a clerkship that is highly rated, particularly on the Association of American Medical Colleges (AAMC) graduation questionnaire (GQ), which is perhaps the most reliable data from the medical student perspective. Deans want a high level of faculty professionalism with no outliers, departmental faculty that win major teaching awards, and faculty involvement in key committees, such as admissions, curriculum and student progress. In addition, the panelists supported that deans and program leadership want strong engagement and mentoring of students in research and faculty engagement in cross-disciplinary teaching, which is becoming more important in recently revised medical student curricula. While there are many dedicated faculty willing to engage in such endeavors, the panelists discussed that providing incentives for faculty participation in the education mission can be one of the most challenging aspects of financing surgical education.

An exploration of the literature reveals several successful programs in motivating faculty engagement in medical education reform. The academic incentive program described by colleagues at Southern Illinois University provides department-wide incentive credits for educational activities, as well as research and service activities.<sup>5</sup> The program funding came from a collection of 5% of professional receipts with quarterly incentive bonuses awarded to faculty with an annual program revision. More recent literature questions whether this strong system of “carrots” really works for motivating faculty. In his book *Drive*, Daniel Pink notes the seven deadly flaws of carrots and sticks, including the risk of extinguishing intrinsic motivation, diminishing performance, crushing creativity and crowding out good behavior. He asserts, “We need to upgrade to autonomy, mastery, and purpose. Teaching is an autotelic experience. The goal is self-fulfilling. The activity is its own reward.”<sup>6</sup> Following this philosophy, Indiana University Department of Surgery has structured a set of teaching expectations for all fulltime faculty, as well as an educational value unit system (EVUs) that quantitates teaching contribution for recognition and assurance of distribution of teaching effort, but offers no specific financial incentive for this activity. Finally, a recent systematic review by faculty at McGill University investigated various methods for faculty development initiatives to improve efficacy in medical education.<sup>7</sup> Interestingly, the majority of these activities appeared highly valued by the faculty learners who participated in them, and

learners expressed positive changes in attitudes toward teaching medical trainees. The authors encourage future development of medical educators to build upon successful existing models and continue to support methods of evidence based medical education. Indeed, there are now multiple institutions offering fellowships in surgical education at centers in both the United States and Canada. Such fellowships incentivize further innovation in evidence based teaching and seek to train the next generation of leaders in surgical education.

### Engaging learners in health policy and economics

While both the issues of financing healthcare as well as innovation in medical education stand at the forefront for many faculty and medical educators, the panelists remarked that fewer than half of graduating medical students in the United States themselves receive adequate training in the economics of practicing medicine. Without an in-depth exposure to health policy and the healthcare system, the panelists agreed that physicians in training are missing critical tools in their professional toolbox. Such deficiencies in training as early as medical school have consequences for physicians as they later navigate the complex world of medical costs, comparative effectiveness, and medical decision making.

Furthermore, the panelists expressed the complexities of the pressure felt by medical educators to address these issues. Aside from the motivation to produce the next generation of financially and medically savvy learners, educators are faced with the reality that these changes must be made in order to continue receiving financial support at a national level. Indeed, teaching hospitals previously received approximately \$3.5 billion for graduate medical education without restrictions. However, in June 2010, the Medicare Payment Advisory Commission voted unanimously to re-allocate these dollars as performance-based payments for graduate medical programs that educate physicians on the integration of community-based care with inpatient care, practice-based learning and improvement, and systems-based practice. This change requires that physicians understand their role within the larger network and apply the system to improve the quality of care.

Within this framework, the panelists support the proposal from Patel and colleagues at the University of Pennsylvania that training must begin during medical school, though ideally, even as early as premedical education through courses in public health and public policy. This should be followed by further instruction and application during residency training. Such an approach would provide training early in a physician's career that will be continually reinforced as they transition to independent clinical practice. Since medical students disperse after graduation from medical schools to residency programs at various institutions, the panelists endorsed the suggestion that a standardized core health policy curriculum should be adopted collectively by medical schools and residency programs throughout the country. In the model proposed by Patel et al., the focus of the curriculum is on four domains: healthcare systems and principles; healthcare quality and safety; value and equity; and health politics and law.<sup>3</sup>

The panelists identified three potential barriers of such a curriculum that must be addressed in order to allow for successful implementation at the national level. The first is time-constraints. Some argue that adding curricula in health policy and economics in an already busy curriculum for medical students will be difficult. However, there appears to be sufficient time, particularly in the fourth year of medical school that could and should be dedicated to the preparation of students for their residency training in the area of health policy and the business of medicine.<sup>3</sup>

The second barrier to the adoption of health policy curricula is the need for an interdisciplinary faculty team, including health

economists, medical sociologists, and health policy analysts, among others. Most traditional departments do not employ scholars in these fields for the purpose of medical education; however, the panelists recognized that there are talented individuals serving in administrative positions in their own institutions that have the necessary background and knowledge to participate in development of an innovative, centralized curriculum. The panelists discussed the Duke GME concentrations established by collaboration between the institutional GME, the school of law, and the business school as an example of this. The concentration areas include coursework in 'law and ethics and health policy' and 'patient safety and quality improvement' (<https://www.sites.duke.edu/dukegmeconcentrations/>).

In reviewing the literature for other successfully implemented programs of this kind, there are several successful prototypes of such programs integrated at both the level of residency and undergraduate medical education. For example, the Michael G. DeGroote School of Medicine at McMaster University has incorporated a Professional Competencies curriculum integrated across all three years of their MD program (<http://mdprogram.mcmaster.ca/>). The Population Health component of this curriculum encompasses three main elements: determinants of health; organization, financing, and regulation of healthcare; and public and community health. Similar to the Duke programs, the McMaster curriculum is facilitated by both MD and non-MD educators.

Outside of select institutional endeavors, very little research has been conducted to evaluate methods of teaching and implementing health policy curricula. Rather than being a barrier, this can be an opportunity for investigating how to design curricula that build foundations in health policy during medical school and allow for further education during residency training.<sup>3</sup> Greysen et al. at George Washington University described such an effort. They developed a program and then surveyed 130 residents from 14 specialties after they completed the course. The majority of participants felt the course was either very or extremely helpful.<sup>8</sup>

Clearly, such programs have been implemented at the level of both medical student and resident education with positive reception and can serve as models for development of universal undergraduate medical education in health business and policy. If national and regional curricula were developed, the panelists expressed the hope that content could be tailored to local needs and circumstances, which should encourage more widespread adoption.

### **Safety and quality improvement: a novel solution to financing innovation**

In addition to the pressures from national level funding bodies, medical educators also must comply with ACGME accreditation standards. As a component of its next accreditation system (NAS), the ACGME has established the Clinical Learning Environment Review (CLER) program to assess the GME learning environment of each institution. CLER emphasizes the responsibility of the sponsoring institution for the quality and safety of the environment in which learning and patient care is delivered. The ultimate goal of both CLER and NAS is to both improve the learning environment and the quality of patient care.<sup>9</sup> CLER assesses sponsoring institutions in six focus areas, including patient safety and healthcare quality improvement. Institutions are evaluated in these areas based on opportunities for residents to report errors, unsafe conditions, near misses, and to participate in inter-professional teams to promote and enhance safe care, as well as how sponsoring institutions engage residents in the use of data to improve systems of care, reduce health care disparities and improve patient outcomes.<sup>9</sup>

Traditional methods for involving residents and students in

quality improvement efforts such as mortality and morbidity (M&M) conferences are important, but insufficient to meet current health education environment goals. The panelists suggest the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) and the Surgical Care Improvement Project (SCIP) can be utilized to develop quality initiatives to improve surgical care. Furthermore, these can be complementary to the traditional morbidity and mortality conference (M&M). The cases identified by both M&M and NSQIP at the University of Florida College of Medicine-Jacksonville serve as an example of the power of utilizing both programs; in this case, only a fraction of the adverse events were common to both processes. While there were no significant differences in types of adverse events, M&M focused more on care processes and operative issues, while NSQIP was attuned to specific diagnoses and blood use. These findings demonstrate that while both programs identify common issues related to quality of care and define strategies for improvement, NSQIP should serve as a valuable supplement rather than a surrogate for traditional M&M. The panelists agreed that this will allow for identification of particular areas of interest/concern for additional in-depth analysis.

A review of the literature supports that novel efforts to educate residents in a systems-based approach to health and patient care innovation is challenging and requires multi-level contributions and resources. Even at the international level, developing strategies for a new era of health education has spurred collaborative studies such as the American Medical Association funded project "Accelerating Change in Medical Education" and the Association of Faculties of Medicine in Canada sponsored endeavor "Future of Medical Education in Canada (FMED)." Both investigations support that curriculum changes alone are not enough to address the gaps in physician training that leave medical trainees with insufficient understanding of the healthcare finance system or how to work effectively in interprofessional teams.<sup>10,11</sup> Instead, they support engagement in quality and performance improvement and patient safety enhancement projects that expand upon existing educational platforms. Indeed, hospital quality improvement initiatives are becoming increasingly common, and efforts are being made to support both medical student and resident participation in these endeavors.

Despite this progress, little is known about the influence of these initiatives on resident learning and attitudes, a concern expressed by the ASE panelists. To date, several studies have actually been carried out to assess whether training in an environment committed to involving residents in hospital-initiated quality improvement (QI) projects also influence residents' attitudes toward QI and engagement in the hospital community. In a study from the Indiana University Department of Surgery, Canal et al. demonstrated that a structured QI curriculum can be integrated successfully into a general surgery residency program. Residents involved in such programs were also eager to make improvements in their local system of residency, leading to enhanced patient care.<sup>12</sup> A similar program instituting a longitudinal QI curriculum throughout the first year of residency in the Department of Family Medicine at Queen's University in Ontario was reported by Barber et al.<sup>13</sup> This curriculum was carried out in three stages and made an effort to simulate real-world challenges in initiating QI projects, such as securing project buy-in from stakeholders and negotiating with peers. The program resulted in successful QI programs and resident interest and competency in carrying out future QI projects. A survey of Seattle Children's Hospital pediatric residents demonstrated that training in a hospital committed to involving residents in quality improvement was associated with a high rate of QI activities in their practice after residency.<sup>14</sup> The Department of Surgery at Danbury Hospital took

this a step further by initiating a dedicated research year in performance improvement. This program has benefited their residents by providing them with a working knowledge of quality measures and also their institution with multiple projects that have yielded significant improvements in the quality of patient care.<sup>15</sup> Other QI projects that have already yielded positive results at the University of Florida College of Medicine-Jacksonville Department of Surgery include: Handoffs; Time outs; Hemorrhage/Hematoma (blood utilization); resident contribution to faculty RVU's; Bronchoalveolar Lavage (BAL)/Ventilator Associated Pneumonia (VAP); and Breast Care Performance Improvement. A *Patient Safety and Quality Fellowship* has also been instituted in 2012 and provides a distinct benefit to the institution by initiating and overseeing multiple projects that result in improved patient safety and care. This experience has been similar to the program described by Morales et al.<sup>15</sup>

The University of Toronto, Department of Medicine, also took novel approach to incorporating quality improvement into residency training by implementing a co-learning curriculum in QI designed to train both residents and faculty in basic principles of QI, as well as develop teaching and project facilitation skills in QI for the faculty.<sup>16</sup> The curriculum was highly rated by all learners and successfully expanded both the number of residents and faculty engaging in quality improvement projects. This project can serve as a valuable model for scalable quality improvement curriculum in other departments and addresses the need of building faculty capacity while expanding resources for resident education.

Aside from the model of these successfully implemented programs, the panelists discussed additional resources available for all surgical training programs. These include the Surgical Council on Resident Education (SCORE) *Systems Based Practice* modules which cover: Economics and Cost Accounting; Operations Management; Legal and Institutional Safeguards; Financial Stewardship; and Physician Organization and Leadership. The Institute for Healthcare Improvement (IHI) *Open School* modules are also available through their website ([www.ihl.org](http://www.ihl.org)) and provide in-depth instruction on: Quality Improvement; Patient Safety; Patient and Family Centered Care; Leadership; Managing; Health Care Operations; and Population Health.

Overall, implementing programs and policies such as those described here are important responses to stated CLER goals. Furthermore, efforts focusing on building quality and safety initiatives serve as unique solutions to the complex issue of engaging both faculty and learners in the changing healthcare environment while also meeting financial and accreditation incentives. Furthermore, these efforts serve as more creative solutions to preparing students and residents to engage in healthcare business and policy changes that also improve patient care.

## Conclusions

This article presents the discussion of the ASE panel for all those involved in medical education to understand the complex pressures of securing funding for ongoing educational innovation, incentivizing faculty and others to engage in novel educational missions, and the responsibility for educating the next generation of surgical trainees about the business and practice of medicine in relevant and engaging ways. Despite the growing need for financial

innovation to fund both healthcare and medical education, neither residents nor physicians are well versed in the business of education. This recent meeting of the ASE panel recognizes the need to remedy this gap, but also acknowledges few curricula exist that teach finance or health policy during medical training. In light of the current economic environment and recent shifts in both government and ACGME policies, the panelists agree it is imperative that physicians become better versed in the business of education. The panelists offer involvement of both learners and faculty in quality and safety initiatives as a powerful opportunity for both innovative education and meaningful engagement with the changing healthcare environment.

## Summary

This article explored how to teach residents about the business of medicine and recent policy changes that impact medical education through both highlights from a recent ASE panel discussion and a review of relevant literature. The article offers insight into several factors that must be considered when adapting to the current environment of medical education as well as preparing the next generation of business-minded surgeons and medical educators.

## References

1. Nasca TJ, Miller RS, Holt KD. The potential impact of reduction in federal GME funding in the United States: a study of the estimates of designated institutional officials. *J Grad Med Educ.* 2011;3:585–590.
2. Rhoades G, Salughter S. *Academic Capitalism in the New Economy: Challenges and Choices.* 2004:37–59.
3. Patel MS, Davis MM, Lyson ML. Advancing medical education by teaching health policy. *N Engl J Med.* 2011;364:695–697.
4. Rock TA, Xiao R, Fieldston E. General pediatric attending physicians' and residents' knowledge of inpatient hospital finances. *Pediatrics.* 2013;131(6). peds. 2012-1753.
5. Williams RG, Dunnington GL, Folse JR. The impact of a program for systematically recognizing and rewarding academic performance. *Acad Med.* 2003;78:156–166.
6. Pink D. *Drive The Surprising Truth about what Motivates Us.* New York, NY: Riverhead Books, Penguin Group, Inc.; 2009.
7. Steinert Y, et al. A systematic review of faculty development initiatives designed to improve teaching effectiveness in medical education: BEME Guide No. 8. *Med Teach.* 2006;28:497–526.
8. Greysen SR, Wassermann T, Payne P, Mullan F. Teaching health policy to residents—three-year experience with a multi-specialty curriculum. *J Gen Intern Med.* 2009;24:1322–1326.
9. Weiss KB, et al. Advances in the ACGME clinical learning environment review (CLER) Program. *J Grad Med Educ.* 2013;5:718–721.
10. Skochelak S. Fueling change in medical education. Interview by Paul Barr. *Hosp Health Netw/AHA.* 2013;87:32.
11. Canada AoFoMo. *The Future of Medical Education in Canada (FMEC): A Collective Vision for MD Education.* Association of Faculties of Medicine of Canada (AFMC); 2010.
12. Canal DF, Torbeck L, Djuricich AM. Practice-based learning and improvement: a curriculum in continuous quality improvement for surgery residents. *Arch Surg.* 2007;142:479–483.
13. Barber KH, et al. Teaching quality improvement in graduate medical education: an experiential and team-based approach to the acquisition of quality improvement competencies. *Acad Med.* 2015;90:1363.
14. Lipstein EA, et al. Addressing core competencies through hospital quality improvement activities: attitudes and engagement. *J Grad Med Educ.* 2011;3:315–319.
15. Morales CS, Kontonickolas F, Volpe AA, Saldinger PF, Fukumoto R. Performance improvement: getting an early start. *J Surg Educ.* 2012;69:774–779.
16. Wong BM, Goguen J, Shojania KG. Building capacity for quality: a pilot co-learning curriculum in quality improvement for faculty and resident learners. *J Grad Med Educ.* 2013;5:689–693.