

Will Virtual Reality Simulators End the Credentialing Arms Race in Gastrointestinal Endoscopy or the Need for Family Physician Faculty With Endoscopic Skills?

All important ideas pass through three stages. First, they are ridiculed. Second, they are violently opposed. Third, they are accepted as being self-evident.

- Schopenhauer

Twenty years ago I stumbled upon an idea that changed my life. In a study of preventive medicine behaviors by family physicians, the introduction of a new procedural technology (flexible gastrointestinal endoscopy) markedly improved the long-standing noncompliance of physicians and patients in the prevention of colorectal cancer.^{1,2}

The fiberoptic bundles of short colonoscopy and flexible sigmoidoscopy translated into a reproducibly constant group of diagnostic advantages.³ Improved patient tolerance led to greater insertion depth and better diagnostic yield. Few, however, have commented on the process that led to displacement of old technology (rigid sigmoidoscopy) by a continuum of newer technologies (flexible sigmoidoscopy, endoscopic biopsy, and colonoscopy; and esophagogastroduodenoscopy [EGD]).^{4,5} Even fewer have described the lengthy technology transfer curve (30 years) and the embarrassing resistance of established physicians who were trying to protect the status quo.⁶⁻⁸

Using fiberoptic endoscopy, teacher and learner could observe the visual findings simultaneously,⁹ which had not been possible with rigid sigmoidoscopy. For the first time teaching could be structured and effective. Although medical schools and residencies had claimed that training occurred, clearly for many minor in-office surgical procedures, it had not.¹⁰ With this new and more teachable procedure, surely, I thought, things would improve rapidly.¹¹ They did not. Down-

stream from education, clinical practice changes slowly unless scientific, economic, and political incentives are aligned. They are not.

The study by Tuggy¹² in this issue of *The Journal* arrives on the heels of yet more data describing widespread and repeated neglect of cancer prevention behaviors by physicians.¹³⁻¹⁵ Why do we keep churning the same tired data? Will family physicians collectively awaken to the leadership opportunities staring them in the face?^{16,17} Or, will they quietly retreat into the politically correct comfort of generic primary care?¹⁸

The Credentialing Arms Race in Gastrointestinal Endoscopy

As the architect of many programs that teach procedural skills for primary care physicians, I have taught at nationally accredited courses for a variety of specialties, including, but not limited to, internists, family physicians, obstetrician-gynecologists, and general surgeons. Credentialing criteria should be specialty neutral and should acknowledge within this group of procedural skills that there are three levels of complexity:

1. Unsedated flexible sigmoidoscopy and colonoscopy (including biopsy)
2. Colonoscopy or EGD using intravenous sedation or analgesia
3. Endoscopic electrosurgery, with the most frequent example being colonoscopic polypectomy

By current self-report, flexible sigmoidoscopy and nonsedated general colonoscopy skills (remember that the 65-cm flexible sigmoidoscope was originally called the short colonoscope) are taught in more than 95 percent of all internal medicine, family medicine, and general surgery programs. To the best of my knowledge, obstetrics-gynecology has not chosen to emphasize these procedures as a fundamental skill, though there are exceptions.

For credentialing purposes, a letter from the

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residency director stating that the physician has had appropriate training, education, or experience could be sufficient documentation to grant provisional skills. In the American Academy of Family Physicians (AAFP) collaborative study, most experienced family physicians with previous rigid sigmoidoscopy experience acquired flexible sigmoidoscopy skills in slightly fewer than 15 supervised procedures.¹⁹ The American Society for Gastrointestinal Endoscopy has unilaterally escalated this number to 25 supervised procedures. The average family physician can use the flexible sigmoidoscopy within 10 to 15 supervised procedures.²⁰

Physicians who can document 50 to 100 successful short colonoscopy or flexible sigmoidoscopy experiences in a private practice have shown sufficient experience to be considered for advancement to colonoscopy or EGD privileges. First, however, they must have training, experience, or education in intravenous sedation analgesia. To me, this means, at a minimum, having taken and passed an advanced cardiac life support (ACLS) course at least once every 5 to 10 years.

If the physician has a letter from his or her residency director certifying 20 supervised EGD experiences, I believe that physician has sufficient experience for provisional privileges. The surgical societies want a minimum of 25 for EGD and 50 for colonoscopy. The gastroenterologists have escalated the training requirements to a minimum of 100 for EGD and 100 for colonoscopy. Published studies suggest that endoscopy-naïve physicians should probably have an ACLS certificate, intravenous sedation and analgesia skills, and a minimum of 20 supervised experiences each for EGD and colonoscopy.^{4,5,21-23} The exact number might vary slightly, but evaluation of proficiency should come from nonbiased colleagues who teach and serve. Once provisional privileges are granted, a period of surveillance and reassessment will follow. Currently our university hospital credentials within the Department of Family Medicine on this basis. In 10 years there has been one perforation (mine), no lawsuits, and no mortality.

Therapeutic endoscopy is a separate and more complex issue. Clearly physicians should have satisfied the criteria for level 2 skills. At this point, they should also have a working knowledge and some training in electrosurgery for colonoscopic polypectomy. In lieu of documented training, experience, or proven ability, I recommend at least

one continuing medical education (CME) course on electrosurgery skills. The AAFP scientific assembly gives an excellent course each year.

The AAFP scientific assembly also offers a 4-hour examination for physicians who wish to show competence in the techniques of flexible sigmoidoscopy and colonoscopy. This examination includes a graded test of cognitive issues, recognition of lesions and disease, equipment manipulation, and case management. To the best of my knowledge, it is the only independent and objective assessment of actual skill.

Once provisional privileges are attained, the physician may be advanced to full and independent procedures after a period of proctorship. Proctorship can be defined as hand-on-hand supervision, at-the-elbow supervision, or immediately available supervision, or it can be retrospective (chart review) supervision. For example, some hospitals allow physicians with well-documented qualifications to start cases with a second physician somewhere in the hospital or on call with a minimum response time of 15 minutes. These are all acceptable definitions of proctorship.

Each physician should maintain a database such that indications, findings, complications, medications, and procedure times are available for review. Once 5 to 10 cases or 1 year's activity has passed, a decision may be made regarding advancement to full and unrestricted privileges. As with all surgical procedures, the physician should be required to maintain a procedural log that is available for review.

No Accountable Infrastructure for Teaching Advanced Skills

There is no uniform and accountable educational infrastructure for teaching procedural skills. While I believe that virtual reality is an important advance, this study¹² points out that the "control group had no training or preparation before performing their first live patient examination...." A better comparison or control group would be residents who had worked for 30 minutes with an experienced examiner in a colon model that has a flexible sigmoid loop before their first live patient examination, which is more or less the purpose of the structured CME course given annually at the AAFP. In fact, the procedural teaching courses at the annual scientific assembly were developed in response to the lack of this training in residencies.

As a member of that original scientific program committee, I am amazed that 15 years later a substantial number of residencies do not provide adequate training in such simple skills as flexible sigmoidoscopy.

In a study of obstetric sonography teaching, 19 percent of residencies responded that sonography was irrelevant because they did not teach obstetrics in their residency program.²⁴ These same residencies claimed the contrary while undergoing accreditation by the Residency Review Committee. It appears we have a great many residencies claiming to provide structured experiences while, in reality, not providing them.²⁵

A weakness of Tuggy's study, therefore, is the comparison of one valid method of structured curriculum with the current nonsystem of random chance. The AAFP coursed on flexible sigmoidoscopy-colonoscopy was among the first to provide performance-based learning and competency-based testing. Tuggy should be complimented for putting another brick into that structure.

At the frontiers of family medicine some educators, such as Dr. Tuggy, are developing training standards for a system that might be best labeled performance-based learning (ie, specific goals, objectives, and hands-on structure) and competency-based testing (ie, minimize red-out times, minimize directional errors, increase the percentage of colonic mucosa visualized, and minimize the time necessary to do an adequate examination). Additionally, there is a dimension of this procedure known as disease recognition. Since 1995 the disease-recognition skills (ie, the cognitive dimension) be tested alongside the psychomotor dimension of the procedure.

Finally, I want to mention improvement in quantity and quality among training opportunities in family practice.^{26,27} While skeptics continue to suggest dismantling teaching programs for office surgeries, such as gastrointestinal endoscopy, many believe the need will persist.²⁸ After all, less than 20 percent of Americans receive indicated screening for colorectal cancer.

If a virtual reality simulator allows each residency director in this country to provide 5 hours of structured curriculum in flexible sigmoidoscopy to each resident, a major victory will be gained for the prevention of premature death from colorectal cancer. No such accountability currently exists, however. After 20 years, I have

been unable to convince my own faculty that they must take time to write a meaningful letter of completion for each resident who graduates from our programs. This does not dampen my enthusiasm for continuing to work toward this goal.

I want to commend those who did such a fine job of developing what I believe is a useful tool. It has an incredible amount of promise. If there is to be an important contribution from Tuggy's study, however, this teaching tool must be placed properly within the context of the problem it proposes to solve. High-tech education is most effective when blended with high-touch educators, and vice versa.

Procedurally Capable Family Practice Faculty—A Virtual Reality Future?

Historians will reflect on the 20th century as a curious time during which physicians developed the miracles of organ transplantation, intensive care units, and wonder drugs galore. Simultaneously, most medical students and young physicians are being infantilized by taught helplessness in a tax-subsidized and featherbedded medical education system that steadfastly refuses to reform.^{16,29,30}

Notorious examples of nonaccountability have resulted in such training programs as ACLS, advanced trauma life support (ATLS), and advanced life support in obstetrics (ALSO). Since medical schools and the American Board of Medical Specialties could not or would not enforce accountability for basic life-saving clinical skills, societies of nonacademic practicing physicians have filled the void. The American Heart Association developed ACLS training in the 1970s to discriminate between those physicians who could effectively respond to a cardiac arrest and those who could not. In the early 1980s, the American College of Surgeons developed ATLS training to certify those physicians who could stabilize critically injured patients in shock. The public assumed that, after a minimum of 7 years of medical school and residency, physicians would have been taught and tested for these skills. They are not. Licensing by means of multiple-choice questions, although convenient for the test givers, does not reliably assess competency at the bedside of patients with life-threatening illness.

Correspondence and data provided to the AAFP Task Force on Obstetrics and Procedures, 1989-1995, detailed case after case of well-inten-

tioned rhetoric but limited procedural teaching for residents.³¹⁻³⁴ Ineffective curricula, overworked educators, politically besieged directors, and a lack of consensus on procedural training led to limited opportunities for acquiring procedural skills.³⁵ In 1989 one of my senior faculty commented that the Memphis family practice residencies were basically producing "well-trained social workers." Downstream from these residencies, class after class of young family physicians departed with lowered expectations and limited skills. Tom Stern, MD, had predicted this outcome in 1980.³⁶

Because of documented educational needs unmet by medical schools and residencies, the AAFP established an annual maternity care course and an additional program in obstetrics—ALSO, despite the claims of skeptics that delivery of babies by family physicians was not worth resuscitating. These programs have survived, prospered, and multiplied.²⁶ "If you build it, they will come."

The 1997 Residency Review Committee-Family Practice special requirements mandate that each family practice program have some faculty who actually deliver babies. Children learn what they see their parents do. "The hand that rocks the cradle..."

The medical specialty of family practice, in particular, staked part of its claim for recognition upon a promise to provide effective preventive care. Based on my own studies describing the physician's role in noncompliance, I traced the source of this problem to inadequate training, lukewarm academic support, the reimbursement system, political suppression, and taught helplessness. and I have proposed and supported several educational interventions.³⁷⁻⁴¹

Residency directors, do each of your faculty teach at least one flexible sigmoidoscopy session per month? Have you budgeted time for this activity? Do you have a system describing accountability for the procedural and hospital skills of residents (and faculty)?^{34,35,41} Do you have documented progress reports of each resident's clinical skills at years 1, 2, and 3?

In my experience, many residency directors cannot produce these documents. Subsequently, many family practice residents have never started an intravenous line and do not feel comfortable managing simple fractures, delivering a baby, or performing flexible sigmoidoscopy. Perhaps resi-

dents will have a chance to start learning these skills by using the virtual reality trainer described by Tuggy¹² and others.⁴²

Perhaps, if computer-assisted virtual reality and simulated patient experiences can be produced in sufficient quantity, much of residency training can be provided by paraprofessionals. Think of the financial savings that would accrue if corporate executives could replace expensive physician educators with nurses and "smart" machines.⁴³

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