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Lifelong Learning for the Hand Surgeon

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“If the license to practice meant the completion of his education how sad it would be for the practitioner, how distressing to his patients”. Sir William Osler, July 4, 1900 (1).

Sir William Osler is widely known as the Father of Modern Medicine. His efforts transformed medical education in the United States from a passive, didactic experience, to one in which students and physicians were encouraged to become motivated, self-directed learners. Not only was he the first Chief of Medicine at Johns Hopkins University School of Medicine, but he organized the first medical journal club (2), became the first President of the Postgraduate Medical Association (3), and was the first to prioritize lifelong learning for the physician (4).

Since Osler's time, advances in science, medicine, and technology have increased exponentially; even a visionary could not have foreseen these remarkable developments. Surgical care is changing at such a rapid pace that contemporary surgeons are faced with the impossible task of mastering an ever-expanding pool of knowledge and surgical procedures. As such, it is imperative that the medical community focuses on education and training throughout one's career to foster the acquisition of knowledge, skills, and facility with state-of-the-art techniques (4). The purpose of this article is to outline the history, current status, and emerging trends in continuing medical education (CME) for the hand surgeon.

History of CME in the United States

In the early 20th century, medical education was a for-profit venture, churning out a surplus of inadequately trained physicians (5). Abraham Flexner, in a 1910 report entitled “*Medical Education in the United States and Canada*” (6), criticized the poor quality of curricula and facilities used to train future physicians; this report led directly to the closure or merging of

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nearly half of all 155 North American medical schools. Although the “Flexner Report” was directed at medical student training, achieving these new benchmarks also demanded professionalism in post-training medical practice. In other words, physicians were now, more than ever, expected to have cognitive expertise, technical skills, and an unwavering commitment to altruism and public service (7). Any attempt to meet these standards required dedication to lifelong learning.

Recognizing changes on the horizon, the Association of American Medical Colleges stated, in 1932, that “the time may come when every physician may be required in the public interest to take continuation courses to ensure that his [her] practice will be kept abreast of current methods of diagnosis, treatment, and prevention” (7). The very next year, the American Board of Medical Specialties (ABMS) was formed to bolster post-training education and, to this end, later recommended recertification at regular intervals. In 1969, the American Board of Family Practice was the first specialty board to institute time-limited board certification with recertification requirements at 6-year intervals (now a 10-year interval). The American Board of Surgery (ABS) followed in 1976, the American Board of Orthopaedic Surgery (ABOS) in 1986, and the American Board of Plastic Surgery (ABPS) in 1995, all with 10-year recertification cycles. Today, all 24 members of the ABMS require compulsory recertification to maintain board certification.

In 1999, a joint effort between the ABMS and the Accreditation Council for Graduate Medical Education (ACGME) led to the development of the six core competencies and the four-part maintenance of certification (MOC) process (Table 1) (8). The six competencies are: patient care, medical knowledge, practice-based learning, systems-based practice, professionalism, and interpersonal and communicative skills. The four-part MOC process evaluates: professional standing, cognitive expertise, lifelong learning and self-assessment, and practice performance. Professional standing is demonstrated through current medical licensure, credentialing, and peer letters of support, whereas cognitive expertise is shown using a secure examination. Lifelong learning/self-assessment is demonstrated through CME hours and self-assessment modules. Practice performance assessment varies by specialty, but can include peer or self-evaluation of cases, participation in a surgical outcomes database, review of a benchmarking report for comparison to peers, and completion of an action plan for improvement.

Hand Surgery: A New Subspecialty is Born

Over the course of the 20th century, the knowledge and skill set required to be a hand surgeon expanded and evolved sufficiently to command recognition independent of one’s original specialty training (e.g. general surgery, orthopaedic surgery, plastic surgery). In 1982, the American Society for Surgery of the Hand (ASSH) and the American Association of Hand Surgery (AAHS) requested that the ABS, ABOS, and ABPS recognize board-certified surgeons with special qualifications in hand surgery (9). In 1989, the first Subspecialty Certificate in Surgery of the Hand (formerly CAQ Hand) examination was offered to candidates completing a 1 year ACGME fellowship in hand surgery. As with board certification, this Subspecialty Certificate is valid for 10 years.

Current status of CME in Hand Surgery

Annual meetings of the ASSH, AAHS, American Academy of Orthopaedic Surgeons, and American Society of Plastic Surgery (ASPS) provide exceptional tailored educational opportunities for hand surgeons. These organizations also provide topic-specific online CME activities for credit. For example, the ASSH creates rotating CME Webinars on special topics. Furthermore, the ASSH-developed Self-Assessment Examination is available each year for CME credit and offers a unique comprehensive tool to gauge clinical knowledge. Regional journal clubs are a traditional method of reviewing current literature with colleagues and trainees in an effort to develop critical thinking skills and an understanding of new advances in the field.

The ASPS has created the Tracking Operations and Outcomes for Plastic Surgeons (TOPS) database for outcomes data collection. Plastic surgery-trained hand surgeons may claim Patient Safety CME credit for entering information into this database; these data may then be used to compare results of clinical practice against national norms. Industry-sponsored events are a controversial, yet potentially useful, modality for learning. Possible biases must be balanced against any potential educational benefit. Regardless of the type of educational method, the key is a post-activity assessment to ensure that the learner has the ability to reflect on the experience and knowledge gained.

Emerging trends in CME for Hand Surgeons

According to Schrock et al. (10), the number of physicians participating in Internet-based CME activities increased 600% between 1998 and 2003. During the same time period, CME activities on the internet increased 800%. One can anticipate that these numbers will continue to increase owing to the portability and ease of learning with this format. Future developments in CME will likely involve more user-specific online formats with customized curricula.

Perhaps the most effective learning modality for surgeons, outside of the operating room, may be surgical simulation. This is based on the premise that adult learning is experiential and related to problem-solving (11). Simulators allow trainees and practicing surgeons to practice techniques in a risk-free environment. These technologies have been applied in multiple surgical specialties and for specific techniques, such as microsurgery and arthroscopy. Whether these benefits are realized in hand surgery is yet to be determined.

The Importance of CME and MOC

With widespread use of the internet, patients now have access to an unprecedented amount of information regarding diagnoses, treatment options, and physician credentials (e.g. board certification, educational background). For better or worse, physician quality measures are also readily available online. Resulting, in part, from widely advertised cases of professional negligence and medical errors, patients are increasingly concerned regarding their physician's medical expertise and clinical decision-making. In a 2010 study commissioned by the ABMS (12), 95% of 3,621 adult respondents felt that it was "important" or "very important" that doctors be assessed on the quality of care provided and 88% believed that

physicians should pass a written test of medical knowledge at regular intervals. In another study, 45% of patients stated that they would look for another physician if they discovered theirs does not participate in MOC (13). Further, more than a million searches of physicians' certification status were conducted on the ABMS public website in 2013 (14). Evidently, patients prefer physicians with board certification and those that participate in MOC.

There are other less obvious reasons to engage in board-directed CME activities. The evidence is clear that physicians have a limited ability to accurately self-assess; the accuracy of which is the worst in providers who were the least skilled and the most confident (15). Further, because demands on time are substantial (e.g. clinic, operating room, administrative meetings, family obligations), many physicians may also have difficulty allotting appropriate time for self-reflection and a critical review of performance. The ability to recognize and communicate knowledge gaps or technical deficiencies is an extremely important part of lifelong learning as a physician. These goals are more easily attainable using the impartial feedback provided as part of many CME activities.

Although some physicians state that board-sponsored programs are “extremely complex and problematic...esoteric, not relevant to practice, and full of minutiae” (16), physician participation is unequivocally linked to improved clinical performance and patient care (17, 18). Physicians participating in CME activities note measurable improvements in interpersonal skills, communication skills, and medical knowledge (10, 18). Additionally, physicians generally report satisfaction with the feeling of “being caught up” (14), while also leveraging the opportunity to address any evolving deficits.

Substantial barriers exist in post-graduate training that prevents trainees from achieving full competence in all aspects of hand and upper extremity surgery. As noted by Cooke et al. (19), “increasing attention to the quality of care, patient safety, and documentation of care enhances medical practice, but threatens to relegate trainees to the role of passive observer.” As such, the modern day practice of hand surgery forces one to learn independently. Achieving board certification, participating in CME and MOC activities, and attending national meetings are essential mechanisms by which a hand surgeon may augment knowledge and clinical skills; the benefits are clear. Although medicine has changed dramatically since the time of Sir William Osler, lifelong learning remains at the core of providing the best possible patient care.

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Table 1**Maintenance of Certification (MOC)**

Six Core Competencies for Quality Patient Care
<ul style="list-style-type: none">• Patient Care• Medical Knowledge• Practice-Based Learning• Systems-Based Practice• Professionalism• Interpersonal and Communication Skills
Four Essential Components
<ul style="list-style-type: none">• Professional Standing• Cognitive Expertise• Commitment to Lifelong Learning and Self-Assessment• Evaluation of Performance in Practice