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Advancing Otolaryngology Education in the New Millennium	1191
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Just as the practice of otolaryngology has changed over the years, so too the educational enterprise that supports the growth and development of the field continues to evolve. Changes in otolaryngology education have been driven by multiple internal and external factors. These changes need to be understood, and a proactive, cooperative approach by the members of this specialty is required to help shape the future in a way that will ultimately benefit both patients and the specialty itself. Rapid growth in the clinical sciences, accelerating technologic developments, and expanding quality improvement initiatives mandate that modern otolaryngologist-head and neck surgeons actively engage in continuing education. As described in many of the articles in this issue of the *Otolaryngologic Clinics of North America*, the resident in otolaryngology is graduating into a career of lifelong learning.

Otolaryngology Residency Training: Resurgence of the Specialty	1195
Karen H. Calhoun, William E. Davis, and Jerry W. Templer	

Five decades ago, otolaryngology dealt primarily with infectious diseases of the head and neck. The quality of otolaryngology residency training programs was inconsistent and mostly determined by the institution and local faculty. The specialty flourished by developing new expertise in all facets of head and neck medicine and surgery through the leadership of outstanding clinicians and scientists in private practice and universities. Otolaryngology programs subsequently grew from weak divisions within a department of surgery with few faculty members to departments of otolaryngology with full-time, mostly fellowship-trained faculty. Teaching shifted from resident-to-resident to

faculty teaching. Organized medicine encouraged systematic quality improvement and periodic review of programs for accreditation. Residencies were also bolstered through Medicare, Medicaid, and Veterans Administration hospitals, which provided funds for growth but limited flexibility of the faculty schedules. The American Academy of Otolaryngology/Head and Neck Surgery shouldered an enormous load of teaching and maintaining unity of the specialty from its birth to the present.

Interactive Instruction in Otolaryngology Resident Education 1203

John M. Schweinfurth

Today's academic faculty was typically trained under an education system based entirely on didactic lectures. However, if the aim is to teach thinking or change attitudes beyond the simple transmission of factual knowledge, then lectures alone, without active involvement of the students, are not the most effective method of teaching. If the goals of teaching are to arouse and keep students' interest, give facts and details, to make students think critically about the subject, and to prepare for independent studies by demonstration of problem solving and professional reasoning, then only two of these purposes are suited to didactic lectures. The problem then is how to organize lecture material so that individual student's learning needs are better addressed. The education literature suggests that instruction include a variety of activities designed to stimulate individual thought. These activities include small group discussion, working problems during lecture time, questions included in the lecture, and quizzes at the end of lecture, among others. The current study was undertaken to examine the feasibility of using these types of interactive learning techniques in an otolaryngology residency program. Possibilities considered in the current study include standard interactive lecturing, facilitated discussion, brainstorming, small group activities, problem solving, competitive large group exercises, and the use of illustrative cliff hanger and incident cases. The feasibility of these methodologies being effectively incorporated into a residency curriculum is discussed.

Competency-Based Resident Education 1215

Bradley F. Marple

Over the course of the last decade fundamental changes have occurred in residency training. The basis of these changes has been rooted in the desire to simultaneously improve the quality of the learning experience while decreasing the demands of training on resident lifestyle. The ACGME Outcomes Project was initiated in 1999 with the intent of facilitating such change in medical education. Before its introduction, assessment of residency training sites focused on the processes, resources, and reputation of an individual program, but failed to assess how effectively a program used those assets. The stated goal of the ACGME Outcomes Project has been to drive an evolution of this process-oriented form of

education to one that is based on outcomes that measure the effect of the educational experience. This article is a brief overview of current efforts to achieve this goal.

The Evolution of Surgical Training: Perspectives on Educational Models from the Past to the Future

1227

Christine B. Franzese and Scott P. Stringer

Surgical education and training have progressed through the centuries, with the most commonly used model being the apprentice model. With advances in medical knowledge and practice, the apprentice model has evolved and competing models have arisen. However, the apprentice model remains the gold standard today, but for future use, further evolutionary changes will need to be made to the apprentice model if it is to continue to remain an effective education paradigm.

Assessment of Surgical Competency

1237

Terance T. Tsue, James W. Dugan, and Brian Burkey

Technical skill is only one component of overall surgical competency, but it has been one of the most difficult to measure. Assessment methods are currently subjective and unreliable, and include techniques such as operative logs, end-of-rotation global assessments, and direct observation without criteria. Newer objective methods of technical skill assessment are being developed and undergoing rigorous validation, including methods such as direct observation with criteria, final product analysis, and hand-motion analysis. Following the example set in other fields in which high-stakes assessment is paramount, such as in aviation, virtual reality simulators have been introduced to surgical competency assessment and training. Significant work remains to integrate these assessments into both training programs and practice and to demonstrate a resultant improvement in surgical outcome.

Teaching Evidence-Based Medicine in Otolaryngology

1261

Jeffrey C. Liu and Michael G. Stewart

Learning to apply the ever-expanding volume of clinical literature to patient care is critical for the next generation of physicians. This evidence-based medicine (EBM) offers much to improve patient care and outcomes, but should enhance rather than restrict the practice of medicine. Although the barriers to the adoption and teaching of EBM lie on many fronts, including institutional and staff limitations, many examples of structured didactics—from journal club to professor rounds—have been reported with good success. Published reviews and online evidence-based guidelines offer excellent synthesis of complex topics as a catalyst for understanding the clinical literature. Beyond academics, this

article, in its discussion of what EBM is and how to practice it, presents information of value to practicing clinicians.

Internet Platforms for Lifelong Learning: A Continuum of Opportunity

1275

Susan E. Sedory Holzer and Phillip Kokemueller

Access to knowledge through the Internet has spawned a world of online learning, stimulating a new passion for lifelong learning in academia, professional environments, the workplace, and at home. This article takes a fresh look at the wide spectrum of opportunities for online medical education for physicians. We first explore a continuum of “e-learning” models and then look at the range of platforms used to support these systems. We will also look forward to the options likely to change e-learning in the near future and improve physician performance and patient outcomes.

Developing the Next Generation of Otolaryngologist-Researchers

1295

Shawn D. Newlands and Daniel A. Sklare

The lifeblood of any specialty is innovation and discovery. It is important for the field of otolaryngology and its patients that we identify, recruit, train, and develop the next generation of researchers in otolaryngology. This article describes programs and resources currently available to otolaryngologists in training and early in their career for their development as clinician-scientists. We describe the background of the current generation of National Institutes of Health–funded otolaryngologists and discern where the next generation might come from. Special attention is given to the National Institute on Deafness and Other Communication Disorders, which focuses on supporting research and research training in hearing, balance, smell, taste, voice, speech, and language, and to programs aimed at the development of clinician-scientists.

Fellowship Training in Otolaryngology—Head and Neck Surgery

1311

Matthew W. Ryan and Felicia Johnson

Fellowship training in otolaryngology–head and neck surgery is a relatively new phenomenon that reflects the increasing complexity of clinical medicine. Despite an expansion of fellowship opportunities over the last three decades, there is still incomplete regulation and standardization of fellowship training. Approximately one third of residency graduates obtain some form of fellowship training. This article describes the fellowship opportunities that are currently available within the field of otolaryngology.

Fellowship training serves as an avenue to gain further credentials and certification, although only the fields of neurotology, pediatric otolaryngology, and sleep medicine are accredited by the ACGME.

Lifelong Learning in Otolaryngology: Self-Directed Learning 1323

John M. Schweinfurth

Although nothing in didactic form approaches the learning experience of the real world, the educational process up to graduation is based on a teacher-directed model of learning. Active engagement in self-planned learning activities tends to be more effective than passive learning. Lifelong learning involves finding and implementing solutions to everyday problems encountered in the clinic, emergency room, and operating room and on the wards. The process by which much of this education occurs is via self-directed learning, in which learners challenge themselves to pursue activities that arise from their own experiences using their own emerging styles. The acquisition of self-directed learning is a complex process that involves numerous skills and competencies relied upon to complete challenges.

Trends and Developments in Continuing Medical Education 1331

Phillip Kokemueller and J. David Osguthorpe

Continuing education is vital for otolaryngologists to maintain and build on their knowledge base and skill sets. This article discusses the history of continuing medical education (CME) and describes the significant changes in CME that are currently underway. The development of CME has generally lagged behind other improvements in medical education. After a gradual evolution, however, CME is now incorporating many of the principles that are driving undergraduate and graduate medical education—namely, adult learning theory and technology-intensive applications. As attention is focused on maintaining physician competency and eliminating medical errors, CME is becoming more highly regulated, and CME providers are being held to higher standards. The future will see an increased emphasis on the effect of CME activities on altering physician behavior and improving patient outcomes.

Certification and Maintenance of Certification in Otolaryngology–Head and Neck Surgery 1347

Robert H. Miller

The American Board of Otolaryngology is the organization responsible for certifying physicians who have met the Board's professional standards of training and knowledge in otolaryngology–head and neck surgery. The American Board of Otolaryngology monitors the progress of residents through training and

conducts examinations for board certification. Quality of care initiatives throughout medicine have stimulated the Board to develop a maintenance of certification process with a 10-year, time-limited certification. Maintaining certification requires participation in the Board's process, which includes evaluation of professional standing, continuing education and self-assessment, cognitive expertise, and performance in practice. The ultimate goal of the American Board of Otolaryngology's activities is improved patient care.

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