A Survey of US Medical Education in Otolaryngology

Joseph Haddad, Jr, MD; Jay Shah, MD; Thomas G. Takoudes, MD

Background: With the increasing amount and complexity of medical information, medical schools are challenged with incorporating surgical subspecialty education, such as otolaryngology (OTO), into a time-limited curriculum.

Objectives: To understand the state of OTO education in US medical schools and to generate a discussion of the role of surgical subspecialty education in the medical school curriculum.


Participants: Academic faculty at each of the 125 US medical schools.

Results: Responses were obtained from all 122 OTO programs associated with the 125 US medical schools with Liaison Committee on Medical Education–accredited programs. One third (33.6%) of the schools have a required rotation in OTO in the clinical years, with others offering elective rotations; only 5.2% offered no exposure in the third year of medical school. Most schools offer some OTO in the first 2 years; 71.1% and 87.2% taught OTO in the first and second years, respectively, mostly in anatomy and physical diagnosis. In the fourth year, almost 68.9% of schools reported student participation in an OTO elective.

Conclusion: Most medical schools in the United States offer some teaching and clinical exposure to OTO, with considerable variability in the type of experience.

Arch Otolaryngol Head Neck Surg. 2003;129:1166-1169

SURGICAL SPECIALTY care in the United States is not presented in the same fashion in different medical schools. In some schools, third-year students rotate through most or all of the specialties; in others, students choose from a menu of specialties and spend time in only those chosen. Exposure to otolaryngology (OTO) also varies in the other 3 years of medical school.

The education of medical students in a specialty has several ramifications for medical care. First, knowledge base in the specialty may vary from school to school and from region to region. This may affect decisions on when to refer to a specialist for a particular problem. It may also influence decision making in working up a specialty problem, as in deciding what blood tests or imaging studies should be done. In addition, decisions on choice of specialty for residency training may be affected. With fierce competition for a limited number of subspecialty surgery positions, the teaching presentation can have a significant effect on the number of residency applicants.

In an effort to understand better how OTO is taught as a surgical specialty in US medical schools, a survey was sent to OTO departments or divisions in every medical school in the country.

METHODS

A 1-page survey (Figure) was devised to determine how medical students are exposed to OTO teaching in each of the 4 years. The survey was sent to all US medical schools with Liaison Committee on Medical Education–accredited programs, as listed in The Journal of the American Medical Association “Medical Education” issue.1

One hundred twenty-five schools were listed, but prescreening by telephone revealed that some schools shared clinical rotations, for a total of 122 separate programs identified. Surveys were sent to all programs; those for which surveys were not received had a telephone follow-up, with responses obtained through a second mailing or through survey completion by telephone. Survey responses were entered into a database (Excel) that tabulated the responses.

RESULTS

Written or telephone responses were obtained from all 122 programs in the United States. In response to a general question about an OTO rotation in the medical school curriculum, 93.2% responded yes;
an average class size of 132 was estimated by the OTO program directors.

The percentage of students receiving OTO exposure by year of medical school is as follows. Teaching of OTO was performed in the first year in 71.1% of the medical schools. The primary exposure was in anatomy lectures (61.5%), with 53.0% of OTO anatomy teaching to the entire class and 15.4% done in small groups, with some schools using both formats. Physical diagnosis included OTO teaching in 35.9% of the medical schools (27.4% to the entire class and 16.2% in small groups [some schools used both formats]).

In the second year, 87.2% of the schools gave OTO instruction; most did this work in physical diagnosis (80.3%), with primary teaching method by clinic or office examination (68.4%) and formal lecture (51.3%).

The third year OTO rotation was mandatory in 33.6% of all medical schools, with 50.9% offering OTO as a subspecialty elective. Another 10.3% were in a third category, in which OTO was presented in a lecture or other format, often as part of a general surgery or family practice rotation. Only 5.2% of medical schools had no mandatory or elective rotation.

In the third year, program directors estimated that students spent on average 37.8% of their time in the operating room, 39.3% in a clinic with residents, and 35.3% in a private physician's office. Lecture time was estimated at 16.2% on average.

In assessing time spent on an OTO rotation, 25.0% spent 1 week, 41.2% spent 2 weeks, and 29.1% spent some other period, which ranged from 2 hours to 4 weeks. A text or syllabus was used in 51.7% of the programs; the texts most frequently cited are listed in the Table.

Students were tested by department examination in 34.5% of the programs, and in a third-year written examination in 13.8%; both tests were given in 6.1% of programs. Oral examinations were administered in 21.5% of programs; 10.3% gave oral and written examinations.

Third-year students were given a grade evaluation in 40.5% of programs; 23.3% were evaluated by pass or fail. Most programs (66.4%) had a performance evaluation; 51.7% were also graded and/or given a pass or fail designation.

In the fourth year, 68.9% of programs reported that students participated in an OTO elective, with an average of 11.3 students per program (range, 1-60). Students performed a subinternship in 37.9% of programs, with 7.3 students on average (range, 1-25). Preceptorships were reported in 12.1% of programs, with an average of 3.9 students per program (range, 1-6).

Overall, 81.1% of medical schools solicit feedback from medical students on their ears, nose, and throat experience.

**COMMENT**

Consideration of the way subspecialty surgery such as OTO is taught is important for several reasons. Graduating medical students need knowledge of basic OTO and other specialty fields as part of their education. Exposure to the variety of medical specialties influences their choice of field of residency training. In general, it is help-

<table>
<thead>
<tr>
<th>Medical School:</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many medical students are there in an average class?</td>
</tr>
<tr>
<td>Do medical students do an otolaryngology rotation as part of the medical school curriculum?</td>
</tr>
<tr>
<td>If yes, please check all that apply to otolaryngology medical education at your school:</td>
</tr>
</tbody>
</table>

- **First Year**
  - Anatomy Lecture: Entire Class, Small Groups
  - Physical Diagnosis: Entire Class, Small Groups
  - Other: Entire Class, Small Groups

- **Second Year**
  - Physical Diagnosis: Entire Class, Small Groups
  - Clinical Medicine: Entire Class, Small Groups
  - Other: Entire Class, Small Groups

  Physical diagnosis includes (check all that apply):
  - Clinical/Office Exam
  - Teaching Tape
  - Handout
  - Formal Lecture
  - Other

- **Third Year**
  - Clinical otolaryngology: Mandatory, Elective, Other
  - Time spent on the service: 1 Week, 2 Weeks, Other
  - If elective, how many students rotate per year?
  - Approximate percentage of time in each area:
    - Operating Room
    - Resident Clinic
    - Doctor's Private Office
    - Lectures/Conferences
    - Other
  - Students are evaluated by:
    - Part of Written Exam/Entire Class
    - Departmental Written Exam
    - Oral Exam/Presentation
    - Performance Evaluation
    - Grades
    - Pass/Fail
  - What tests, if any, are used during rotation?
  - Author
  - Author
  - Title
  - Title

- **Fourth Year**
  - Approximately how many students do each of the following?
    - Clinical Elective
    - Subinternship
    - Preceptorship
    - Other
  - Do students evaluate their experience? Yes, No
  - If yes, which years? 1st, 2nd, 3rd, 4th

**Table**

<table>
<thead>
<tr>
<th>First Year</th>
<th>Second Year</th>
<th>Third Year</th>
<th>Fourth Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anatomy</td>
<td>Physical</td>
<td>Clinical</td>
<td>Clinical</td>
</tr>
<tr>
<td>Lecture</td>
<td>Diagnosis</td>
<td>Medicine</td>
<td>Otology</td>
</tr>
<tr>
<td>Entire Class</td>
<td>Entire Class</td>
<td>Entire Class</td>
<td>Entire Class</td>
</tr>
<tr>
<td>Small Groups</td>
<td>Small Groups</td>
<td>Small Groups</td>
<td>Small Groups</td>
</tr>
</tbody>
</table>

**Questionnaire sent to US medical schools to survey medical education in otolaryngology.**

ful to know how OTO and other specialties are taught, because evaluation leads to a better understanding among medical schools of national trends for OTO education. While the subject of OTO in British medical schools has been described in the literature,2,3 to our knowledge, no articles describe the role of OTO education in US medical schools.

With the vast increase in medical information, medical schools are given the task of choosing how best to include work in several different specialties in a time-limited curriculum. Initial skills in head and neck examination and diagnosis are given in medical school, so the information presented serves as a building block for further development of these skills during residency training. Inadequate exposure to OTO or some other specialty in medical school may leave graduating medical students with poor physical examination skills and improper management philosophies for evaluating sophisticated surgical specialty problems.

Primary care physicians often initially manage common community diseases, such as sinusitis, tonsillitis, and otitis media. Patient care becomes more challenging when the disease course is complicated. Further management and referral for medical and/or surgical intervention may be inappropriate if the physician does not have a clear...
understanding of the indications for common OTO surgery, such as myringotomy with tubes, tonsillectomy, and endoscopic sinus surgery.

Exposure to OTO in medical school may also affect medical student choice of specialty for residency training. Without exposure to the medical and surgical issues that are at the core of OTO, it would be difficult for a medical student to commit to the rigorous and competitive match. Surgical subspecialties such as OTO remain a popular choice for graduating medical students. In 2002, 318 applications were received for 250 positions in the OTO match; as an indicator of the competitive nature of the match, the average applicant score on the US Medical Licensing Examination, part 1, was 236 (anonymous, oral communication, January 2002).

To better evaluate the importance of OTO exposure to medical student applications for OTO training programs, information was obtained from the OTO match service on applicants to the OTO match during the past 5 years. The information given showed that 20 medical schools led the nation in applicants, with 19 or more applicants from each school in the past 5 years (range, 19–27 students per school). Of these medical schools, 10 had a mandatory third-year rotation and 10 offered OTO as an elective. In comparison, of the 20 schools with the least number of applicants (≤4), 10 had no mandatory or elective OTO rotation in the third year, 5 had a mandatory rotation, and 5 offered OTO as an elective. While several factors enter into the decision making for choice of residency fields, most students make the decision in the third year of medical school. Therefore, the previous information given may indicate an association between third-year exposure and residency choice.

We believe that it is important for individual programs to have national data on medical student exposure for comparison with their own educational methods. If national trends in OTO education are identified, all schools would benefit from an understanding of basic OTO educational goals and how these goals are achieved in different medical schools. With such information, medical schools might choose to improve their clinical OTO experience to a level more consistent with national trends.

The information outlined in this study may be useful as a springboard for a discussion on the role a subspecialty academy should play in medical education. For instance, an academy might choose to identify a core body of knowledge important for exposure during the medical school years. This might lead to a consensus statement of basic information useful in the diagnosis and management of diseases common to OTO. A 1978 consensus statement by the Society of University Otolaryngologists described “essential competencies in otolaryngology” that graduating medical students should possess.5 These include knowledge of anatomy of the head and neck and skills in the evaluation and management of common OTO diseases. This article is thorough but outdated, because management principles have changed in the past 25 years.

While it seems that a rotation in OTO is the ideal forum for educating medical students in basic OTO knowledge and skills, many medical schools do not require this rotation. In this case, a lecture series and dedicated clinic and operating room time with otolaryngologists during other rotations, such as family practice and general surgery, might satisfy the educational goals. One survey study at Indiana University, Indianapolis, documented that 22.9% of patient encounters in a family practice rotation involved an ear, nose, or throat diagnosis. The researchers’ concluded that medical students had sufficient exposure to OTO problems to justify dropping a 1-week required OTO rotation.

Areas of interest for studying OTO include anatomy, physical diagnosis, and clinical medicine. At the Columbia University College of Physicians and Surgeons, New York, medical students have significant clinical exposure to OTO in each of the first 3 years. While not necessarily meant to be a paradigm, the Columbia curriculum will be described as an example to suggest ways to enhance OTO education in medical school.

The first exposure to OTO is often in gross anatomy in the first year of medical school, where the head and neck dissection occurs. At Columbia, medical student understanding of the anatomical issues is enhanced and clinical correlation is improved in 2 ways. First, OTO attending physicians instruct medical students during other rotations, such as family practice and general surgery, might satisfy the educational goals. One survey study at Indiana University, Indianapolis, documented that 22.9% of patient encounters in a family practice rotation involved an ear, nose, or throat diagnosis. The researchers’ concluded that medical students had sufficient exposure to OTO problems to justify dropping a 1-week required OTO rotation.

Areas of interest for studying OTO include anatomy, physical diagnosis, and clinical medicine. At the Columbia University College of Physicians and Surgeons, New York, medical students have significant clinical exposure to OTO in each of the first 3 years. While not necessarily meant to be a paradigm, the Columbia curriculum will be described as an example to suggest ways to enhance OTO education in medical school.

The first exposure to OTO is often in gross anatomy in the first year of medical school, where the head and neck dissection occurs. At Columbia, medical student understanding of the anatomical issues is enhanced and clinical correlation is improved in 2 ways. First, OTO residents assist the anatomy faculty in proctoring the head and neck dissection. Second, OTO attending physicians lecture to first-year students in a clinical correlation series that provides clinical relevance to the anatomical dissections.

Physical diagnosis is generally offered in the second year of medical school, and includes examination of the head and neck. At Columbia, otolaryngologists meet with medical students in small groups to offer expertise in the head and neck physical examination and to edu-

### References Most Commonly Incorporated Into Third-Year Medical Student Otolaryngology Rotations

<table>
<thead>
<tr>
<th>Editor</th>
<th>Title</th>
<th>No. of Medical Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable</td>
<td>Syllabus</td>
<td>11</td>
</tr>
<tr>
<td>Frank Lucente, Steven Sobol</td>
<td>Essentials of Otolaryngology</td>
<td>8</td>
</tr>
<tr>
<td>David Schuller, Alexander J. Schleuning</td>
<td>DeWeese and Saunders Otolaryngology–Head and Neck Surgery</td>
<td>6</td>
</tr>
<tr>
<td>Karen Calhoun, Mark Wax, David Eibling</td>
<td>Expert Guide to Otolaryngology</td>
<td>7</td>
</tr>
<tr>
<td>Charles Cummings, John Frederickson, Lee Harker, et al</td>
<td>Otolaryngology–Head and Neck Surgery</td>
<td>5</td>
</tr>
<tr>
<td>Richard Babin, Christopher Harrison, Thomas Upchurch, Thomas D. Upchurch</td>
<td>Otolaryngology: Problems in Primary Care</td>
<td>5</td>
</tr>
<tr>
<td>Bryon Bailey, Karen Calhoun, Gerald Healy, et al</td>
<td>Head and Neck Surgery–Otolaryngology</td>
<td>4</td>
</tr>
</tbody>
</table>
cate them in the use of specialty equipment, such as the otoscope, the head mirror, and the flexible laryngoscope.

Clinical medicine is taught at most medical schools in the third and fourth years. At Columbia, a 1-week mandatory rotation in OTO is provided to ensure that graduates have clinical exposure to common OTO issues. While some medical schools (33.6%) have a mandatory OTO course, most do not. Schools not offering a mandatory OTO elective might have medical students spend time in the office of otolaryngologists to observe the management of common diseases, such as otitis media and chronic sinusitis; this could take place in outpatient clinic rotations, such as pediatrics and family practice. In addition, students rotating through general surgery could benefit from observing OTO surgery, such as neck dissection, mastoidectomy, and endoscopic sinus surgery, that they would otherwise not be offered in general surgery.

In conclusion, US medical schools have a varied approach to OTO education. Because OTO is a unique specialty that offers expert care to patients with some of the most common diseases in this country, medical students would benefit from a curriculum that addresses the clinical care of these common diseases and their complications. Some schools attempt to address these goals with a mandatory clinical OTO rotation. Others have their students learn OTO as part of other clinical electives. The effect of this process on the choice of OTO as a field they choose to enter is unclear, although OTO remains a popular residency choice for medical students and analysis of information from the match service seems to indicate that those schools with many applicants have a greater exposure to OTO in mandatory and elective third-year rotations.

Submitted for publication June 18, 2002; final revision received January 27, 2003; accepted February 28, 2003.

Corresponding author and reprints: Joseph Haddad, Jr, MD, Department of Pediatric Otolaryngology–Head and Neck Surgery, Children’s Hospital, New York Presbyterian–Columbia Campus, 3959 Broadway, Suite CHONYN-5-501, New York, NY 10032 (e-mail: jh56@columbia.edu).

REFERENCES