

**AMERICAN BOARD OF OTOLARYNGOLOGY
SCOPE OF KNOWLEDGE STUDY SUMMARY REPORT**

SPECIALIST

Revised 10/1/2003

INTRODUCTION

In 1996, the American Board of Otolaryngology (ABOto) commissioned a national practice analysis study to identify the responsibilities associated with basic (minimal) competence in the specialty of otolaryngology-head and neck surgery and the knowledge required to fulfill these responsibilities. The procedures used in conducting the practice analysis involved an interactive process that combined:

- the practice analysis expertise of Knapp & Associates International (K&AI) staff;
- the professional knowledge of an expert Scope of Knowledge Task Force made up of prominent members of the profession; and
- the judgements of a nationwide sample of otolaryngologists.

METHOD

The design and implementation of the practice analysis study (hereafter referred to as the Scope of Knowledge Study) consisted of a number of steps carried out between September 1996 and April 1997. These steps are described below.

1. Establishment of Specialty Scope of Knowledge Task Force

Members of the Specialty Scope of Knowledge Task Force were appointed jointly by the ABOto and the American Academy of Otolaryngology-Head and Neck Surgery (AAO-HNS). These professionals were highly respected experts in the field of otolaryngology and were selected to be representative with respect to geographic region and practice setting. Appendix A contains a list of the physicians participating in the Task Force.

The role of the Task Force was to participate in the development of the Specialty Scope of Knowledge survey instrument to ensure that the full range of professional tasks and knowledge areas pertinent to the practice of otolaryngology was comprehensively and accurately represented. In addition, the Task Force reviewed draft and final versions of the instrument, assisted in the interpretation of the survey data, and developed examination specifications based on the results of the survey.

2. Review of the Otolaryngology Literature

ABOto supplied K&AI with a list of documents providing an overview of the specialty of otolaryngology. These materials included journal articles and seminal textbooks.

3. Interviews of Practitioners

A series of 20 telephone interviews was conducted with specialists and subspecialists to determine the core responsibilities and knowledge areas associated with professional practice. In an attempt to differentiate specialty practice from that of the four subspecialties (facial plastic and reconstructive surgery, head and neck surgery, neurotology, and pediatric otolaryngology), practitioners also were asked to identify the types of patients or problems that they would refer to subspecialists.

4. Development of Draft Specialty Inventory

A draft survey instrument for the specialty was developed based on information obtained from the literature review and telephone interviews. The instrument listed the important professional tasks that otolaryngologists carry out on a day-to-day basis and the knowledge areas they must assimilate in order to carry out these professional responsibilities

5. Revision of the Draft Specialty Inventory

On November 1-3, 1996, the Specialty Scope of Knowledge Task Force convened to review the draft inventory. The subspecialty Task Force chairs also were present to ensure that subspecialty perspectives were considered in the development of the specialty inventory.

In addition to revising the draft inventory of tasks and knowledge areas, the Task Force developed a number of demographic questions that would help describe the sample and identify categories for use in data analysis. They also selected rating scales (importance and frequency) to be used on the survey.

On the final day of the meeting, the Specialty Task Force and the four subspecialty Task Forces met together to discuss the proceedings of the previous days and present the most salient and distinguishing features of their newly developed inventories.

The draft inventory was converted to a survey format and reviewed by mail by the Task Force chair. After the revisions suggested by the chair were made, the survey was mailed to the Task Force members for their review. Recommendations made by the Task Force were discussed with the chairs, as needed, and were subsequently incorporated in the survey documents.

6. Preparation of Final Version of the Specialty Scope of Knowledge Survey Instrument

After the final revisions were made, a camera-ready copy of the Specialty Scope of Knowledge Survey was prepared by K&AI, and the documents were printed and mailed by ABOto.

7. Selection of the Survey Sample

During the development of the survey document, a mailing was sent to all ABOto-certified otolaryngologists requesting that they return a form indicating the area of otolaryngology (i.e., specialty or subspecialty) in which they spend 60% or more of their professional time. For the purposes of the Scope of Knowledge study, individuals who devoted 60% or more of their practice to the specialty were classified as "specialists" in otolaryngology-head and neck surgery. The mailing yielded a 65% return rate and identified a total of 4,848 specialists and subspecialists.

The sampling plan for the specialist survey included both specialists and subspecialists, as it is planned that the specialist certification will be used as a prerequisite for subsequent subspecialty certifications. Inclusion of subspecialists in the sample allowed for direct group comparisons on tasks and knowledge areas. The survey sample also was stratified with respect to years of practice post-residency and geographic region. The survey was mailed to a total of 1,000 recipients (600 specialists, 100 facial plastic and reconstructive surgery subspecialists, 100 head and neck surgery subspecialists, 100 neurotologists, and 100 pediatric otolaryngologists).

8. Administration of the Scope of Knowledge Survey

The surveys were mailed in January 1997, along with a postage-paid envelope and a cover letter from ABOto President Eugene N. Myers, MD and AAO-HNS President Charles J. Krause, MD, explaining the purpose of the survey. In an effort to enhance the total return rate, a reminder postcard was sent to each survey recipient approximately two weeks after the initial mailing.

RESULTS

A. Response Rate

Four hundred and fifty five (455) surveys were received, resulting in a total return rate of 46%. Data analysis was conducted on 430 surveys -- the number received prior to the cut-off date for beginning the analyses. Based on experience with similar surveys, the number of surveys returned was considered to be adequate for the purpose of analysis.

B. Demographic Characteristics of Respondents

It was the consensus of the Task Force that the demographic characteristics of the respondents were consistent with those of otolaryngologists practicing the specialty nationwide and that data obtained from the sample provided a solid foundation from which to make decisions regarding the scope of practice and examination specifications. Additionally, the Task Force concurred that the representativeness of the sample was such that the subsample analyses could be interpreted with confidence.

C. Analysis of Task Importance Ratings

Task importance ratings were analyzed by total sample, focus of practice, years of practice post-residency (1-5, 6-20, 21+), and type of practice (academic vs. clinical). All but 4 of the 109 tasks were judged to be of at least moderate importance by the total sample.

D. Analysis of Task Frequency Ratings

Task frequency ratings also were analyzed by total sample, focus of practice, years of practice, and type of practice. All but 17 of the 109 tasks were judged to be performed at least occasionally (defined as 26-50% of the time in a series of 100 consecutive patients) by the total sample.

E. Analysis of Knowledge Importance Ratings

Knowledge importance ratings were analyzed by total sample, focus of practice, years of practice post-residency (1-5, 6-20, 21+), and type of practice (academic vs. clinical). All but 8 of the 226 subknowledge areas were judged to be of at least moderate importance by the total sample.

F. Analysis of Knowledge Frequency Ratings

Knowledge frequency ratings also were analyzed by total sample, focus of practice, years of practice, and type of practice. Eighty-three (83) of the 226 subknowledge areas were judged to be used at least occasionally (defined as 26-50% of the time in a series of 100 consecutive patients) by the total sample.

G. Development of Examination Specifications

After a preliminary review of the survey results, the Task Force developed decision rules for the inclusion of responsibility dimensions (and the tasks subsumed under each dimension) in the examination specifications. The relevance of taking into account both the importance and frequency ratings was discussed with the group; however, the Task Force ultimately decided to focus only on importance ratings. Unless otherwise decided by the Task Force, tasks were included if the mean importance rating for the total sample was above 2.0.

When reviewing the subknowledge areas, the Task Force once again chose to focus on importance ratings. Initially, the Task Force elected to include subknowledge areas with mean ratings greater than 2.0; however, this decision-rule was later changed to include mean ratings greater than 2.5 due to the group's concern that the number of subknowledge areas retained was too large and the content areas too specific to be adequately addressed on a 240-item examination. In addition, a number of related subknowledge areas were clustered together, thus reducing the total number of subknowledge areas. The subknowledge areas identified as being the most important to the practice of the specialty of otolaryngology are listed in Appendix B.

The cognitive level (recall, interpretation, problem-solving) at which each subknowledge area was to be assessed was also determined. It was the consensus of the Task Force that the specifications should be flexible with respect to cognitive level, as it was their opinion that each subknowledge area could be assessed at each cognitive level. However, the group did agree that 25% of the examination questions should assess knowledge at the recall level, 25% of the questions should be at the interpretation level, and 50% of the questions should assess problem-solving. In addition, the Task Force indicated that the oral examination should emphasize problem-solving, with few, if any, questions designed to assess knowledge at the recall or interpretation levels.

Recommendations from survey respondents regarding the proportion of the examination to be devoted to the various knowledge areas served as an initial guide to the Task Force in determining this aspect of the examination specifications. The following knowledge areas and associated percentages were ultimately agreed upon by the Task Force:

Knowledge Area	Percent of Exam	Number of Items
Diagnostic and Assessment Procedures	17	41
Diseases, Disorders and Conditions	18	43
Habilitation/Rehabilitation Approaches	4	10
Basic Concepts Associated with Surgery	11	27
Specific Surgical Procedures	23	55
Basic Science	8	20
Science of Head and Neck Structures	10	24
Pharmacology	8	20
<i>Total Number of Items</i>		240

The Task Force noted that at some point in the future, new content areas (i.e., ethical considerations and business practices) should be added to the examination specifications to reflect recent changes in residency training.

The Task Force determined that an examination of 240 questions would be of sufficient length to assess the knowledge areas represented on the examination matrix. They then selected the number of exam questions to be dedicated to each subknowledge area, using the knowledge importance ratings from the survey as a guide.

Other examination characteristics discussed by the Task Force included the use of visuals and case material. It was agreed that the goal should be for 20-25% of the examination to be based on visuals; however, it was observed that progress toward this goal would likely be gradual as it is dependent on the number of visuals currently in the pool and the number obtained in future item-writing drives. The Task Force concurred that case material should be emphasized on the examination, but did not decide on a specific percentage of examination questions that should be case based. Although the value of multi-item case sets composed of independent items was discussed, the Task Force decided that cases should continue to consist of only one item, as they felt that having more than one item per case might place the candidate in a "double jeopardy" situation.

SUMMARY

The primary purpose of the practice analysis was to delineate a body of professional knowledge judged by practitioners to be an important prerequisite to practicing at a level of basic (minimal) competence in the specialty of otolaryngology-head and neck surgery. A select Scope of Knowledge Task Force consisting of prominent physicians representing the specialty developed an inventory of critical tasks and knowledge areas which was subsequently converted to a survey format and mailed to a representative national sample. The survey results confirmed and supported the work of the Task Force and identified the most crucial knowledge areas. Thus, the survey results provided a sound basis for identifying the content appropriate for inclusion in a certification examination. The development of the examination specifications was guided by the results of the survey and the expert opinion of the Task Force.

A professional certification examination based upon examination specifications derived from the information collected in the practice analysis study will provide a practice-related and content-valid standard. The practice analysis provided a core body of important professional knowledge areas on which there is substantial agreement. The establishment of an examination developed from data-based specifications will serve to advance the specialty of otolaryngology-head and neck surgery and contribute to maintaining high standards of patient care.

APPENDIX A

SCOPE OF KNOWLEDGE TASK FORCE

Specialist

Harold C. Pillsbury, III, MD, Chair

Neil O. Ward, MD

Michael E. Johns, MD

Herbert C. Jones, MD

Jerome C. Goldstein, MD

Jonas T. Johnson, MD

John G. Campbell, MD

Lee D. Eisenberg, MD

James A. Hadley, MD

Ira D. Papel, MD

Gary T. Turner, MD

APPENDIX B

SCOPE OF KNOWLEDGE: SPECIALTY

I. SCIENCE OF HEAD AND NECK STRUCTURES (10% of Exam/Curriculum)

A. Embryology, anatomy, physiology, histology and pathology of:

1. Ear
2. Nose and paranasal sinuses
3. Oral cavity
4. Salivary glands
5. Pharynx/esophagus
6. Larynx/trachea
7. Thyroid and parathyroid glands
8. Face and neck/skin, integument, muscles
9. Facial skeleton and skull base
10. Nervous system structures related to the head and neck
11. Other sites important for the evaluation and treatment of the head and neck conditions

B. Basic physiology, pathophysiology and principles of:

1. Hearing/equilibrium
2. Speech/voice/language
3. Smell/taste

II. BASIC SCIENCE (8% of Exam/Curriculum)

A. Basic concepts and application to otolaryngology:

1. Immunology/allergy
2. Microbiology/virology
3. Endocrinology
4. Neurology
5. Molecular biology
6. Genetics
7. Epidemiology

III. DIAGNOSTIC & ASSESSMENT PROCEDURES (17% of Exam/Curriculum)

A. Proper technique, indications, limitations, and normal and pathological findings of:

1. Face
 - a. Aesthetic assessment
2. Ear
 - a. Otoscopy/microscopy/pneumatic otoscopy/tuning forks
 - b. Hearing testing
 - c. Vestibular function testing
3. Nose/paranasal sinuses
 - a. Rhinoscopy/endoscopy
4. Oral Cavity
 - a. Inspection and palpation
 - b. Dental occlusion
5. Nasopharynx
 - a. Mirror examination/endoscopy
6. Hypopharynx/larynx
 - a. Mirror examination/endoscopy
7. Neck
 - a. Videostroboscopy/voice analysis
 - b. Inspection/palpation/auscultation
 - c. Fine needle aspiration
 - d. Esophagus/trachea (including bronchoesophagology, endoscopy, manometry, pH probes, biopsy, pulmonary function tests)
8. Neurological
 - a. Cranial nerves

B. Indications, limitations, and normal and pathological findings of:

1. Imaging studies
 - a. Plain radiographs
 - b. Computed tomography
 - c. Magnetic resonance imaging
 - d. Ultrasound
 - e. Nuclear medicine

C. Proper technique, indications and normal and pathological findings of:

1. Laboratory studies
2. Histopathology
3. Assessment of psychological and social development and functioning
4. Assessment of occupational functioning

IV. DISEASES, DISORDERS, AND CONDITIONS (18% of Exam/Curriculum)

- A. Etiology, diagnostic criteria, differential diagnosis, prognosis, treatment options, common complications, and impact on all spheres of functioning:
 - 1. Congenital
 - 2. Degenerative
 - 3. Idiopathic
 - 4. Infectious
 - 5. Inflammatory - toxic
 - 6. Inflammatory - allergic
 - 7. Inflammatory - vascular
 - 8. Inflammatory - immune related
 - 9. Metabolic
 - 10. Neoplastic
 - 11. Psychogenic
 - 12. Iatrogenic
 - 13. Pain
 - 14. Foreign Body
 - 15. Trauma - soft tissue
 - 16. Trauma - skeletal
 - 17. Cosmetic and reconstructive

V. PHARMACOLOGY (8% of Exam/Curriculum)

- A. Treatment of anaphylaxis
- B. Principles of medication use, route of administration, mechanisms of action, indications/contraindications, proper usage, interaction effects, and limitations of:
 - 1. Antibiotics
 - 2. Nasal decongestants/antihistamines
 - 3. Antivertiginous medications/antiemetics
 - 4. Topical and systemic anti-inflammatory agents (steroids and nonsteroidals)
 - 5. Antireflux agents
 - 6. Pain medications (e.g., analgesics, sedatives, hypnotics, psychotropics)
 - 7. Antineoplastic agents
 - 8. Skin modifying agents

VI. BASIC CONCEPTS ASSOCIATED WITH SURGERY (11% of Exam/Curriculum)

- A. Types of surgical facilities and their suitability for various types of procedures
- B. Universal precautions
- C. Preoperative and postoperative care
- D. Basic techniques, indications and contraindications of anesthetic agents:
 - 1. Sedation
 - 2. Local anesthesia
 - 3. General anesthesia
- E. Intraoperative fluids and medications
- F. Airway management
- G. Wound management
- H. Grafts (autografts, homografts, and alloplasts)
- I. Flaps (cutaneous, myocutaneous, osteomyocutaneous, and free)
- J. Prosthetics
- K. Management of common complications occurring during and following surgery
- L. Basic techniques, indications and contraindications of surgical modalities:
 - 1. Endoscopic surgery
 - 2. Laser surgery

VII. SPECIFIC SURGICAL PROCEDURES (23% of Exam/Curriculum)

Proper technique, indications, contraindications, risks/benefits and complications of:

A. Facial Plastic and Reconstructive

1. Rhinoplasty/revision rhinoplasty/reduction of nasal fractures
2. Otoplasty
3. Rhytidectomy
4. Forehead and brow lift
5. Blepharoplasty and other periorbital procedures
6. Management of alopecia and reconstructive scalp surgery
7. Facial implants
8. Scar revision
9. Extratemporal facial reanimation
10. Soft tissue expansion
11. Mandibular reconstruction
12. Reconstruction of cleft lip and palate deformities
13. Reconstruction of other craniofacial deformities (e.g., microtia, facial dysostosis)
14. Treatment of facial fractures
15. Excision of skin lesions
16. Reconstruction of soft tissue defects
17. Skin resurfacing techniques

B. Otology

1. Canaloplasty
2. Middle ear exploration
3. Tympanoplasty/myringoplasty
4. Stapedectomy
5. Labyrinthectomy
6. Mastoidectomy
7. Tympanomastoidectomy
8. Meatoplasty
9. Myringotomy
10. Endolymphatic sac surgery
11. Repair of perilymphatic fistula
12. Transtympanic installation of ototoxic drugs
13. Cochlear implantation
14. Glomus tympanicum
15. Congenital middle ear reconstruction

C. Head and Neck

1. Tonsillectomy/adenoidectomy
2. Tracheostomy
3. Arterial ligation
4. Maxillectomy (with or without orbital exenteration)/partial maxillectomy/intraoral resection/oral cavity resection/composite resection/glossectomy
5. Pharyngotomy
6. Uvulopharyngopalatoplasty/office uvulopharyngopalatoplasty
7. Direct laryngoscopy/microlaryngoscopy
8. Phonatory surgery/framework surgery
9. Laryngotracheoplasty/epiglottoplasty
10. Management of laryngeal fractures
11. Repair of caustic injection injuries of pharynx and esophagus and thermal injury of upper airway
12. Partial laryngectomy/total laryngectomy/pharyngectomy
13. Arytenoidectomy/arytenoidopexy
14. Mandibulectomy/mandibular osteotomy
15. Parotidectomy
16. Neck dissection
17. Excision of mass of parapharyngeal space (including chemodectoma, neurilemmoma removal)
18. Cricopharyngeal myotomy
19. Excision of congenital cysts and sinus (branchial cleft, thyroglossal duct)
20. Reconstruction of vascular malformation (lymphatic, venous, hemangioma)
21. Pharyngoesophageal reconstruction
22. Neck abscess drainage
23. Repair of penetrating injuries of the head and neck
24. Zenker's diverticulectomy
25. Treatment of laryngeal clefts and tracheoesophageal fistulas
26. Surgical voice restoration (TEP)
27. Tracheal resection
28. Thyroidectomy
29. Parathyroidectomy
30. Skull base surgery

D. Sinus Surgery

1. Ethmoid/ethmoidectomy/frontoethmoidectomy
2. Maxillary/Caldwell-Luc
3. Frontal/trephination/obliteration/ablation
4. Sphenoid/hypophysectomy
5. Septoplasty/turbinate surgery
6. Dacryocystorhinostomy
7. Epistaxis management
8. Orbital decompression

VIII. HABILITATION/REHABILITATION APPROACHES (4% of Exam/Curriculum)

- A. Vocal/speech/language therapy
- B. Swallowing rehabilitation
- C. Aural habilitation

1. Hearing aids
2. Vestibular rehabilitation