

Egyptian curriculum and assessment protocol for postgraduate study in otorhinolaryngology, head and neck surgery advanced training

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The primary aim of our work is to develop an Egyptian program to produce competent postgraduate ENT doctors.

Postgraduate medical education worldwide is now governed by academic standards that describe the qualities and abilities of graduates. We first defined these standards for the general and professional competencies expected from our graduates in otolaryngology upon successful completion of training. These expectations are clearly reflected in the otolaryngology curriculum. The curriculum describes what trainees will know and be able to do upon completion of training.

All topics covered during practical and theoretical studies are outlined in a simplified manner that will aid candidates of postgraduate otorhinolaryngological practice. This will help guide trainees in their readings and their choice of learning activities. In addition, all required clinical cases and procedures are listed, together with expected performance at various stages of training.

This curriculum will be constantly revised and updated. The examination will not normally test areas that are not clearly or implicitly included in the curriculum, but it should be noted that research and changes in the medical environment might sometimes lead to changes in scientific theory and clinical practice before the curriculum is updated to reflect them.

We divided the curriculum into seven main themes: Applied basic science, Pediatric otolaryngology, Head and neck surgery, Otology, Rhinology, Skull base and neuro-otology, and miscellaneous topics in otorhinolaryngology.

Each theme has three pillars of competence: Knowledge (information stored in a learner's mind; they either have it or not); Clinical skills (these are actions that a person performs in a competent way to achieve a goal; skills range from none to mastery); and Attitude (a feeling about a situation based on knowledge and experience that results in an action toward that situation). All of them together define the main objective for each Intended Learning Outcome (ILO).

Then we assigned a weight for every ILO using an action verb, as action verbs define the depth of knowledge required for each ILO – for example, for an imperative subject about which the trainee must know all details we use the action verb 'discuss', and for others about which the candidate needs to know only a little we use 'enumerate' or 'outline'. We used other suitable action verbs for clinical skills and attitude.

Karen Lawson. *The Trainer's Handbook*, 2nd ed. Pfeiffer, 2006.

Our work has been assessed and used by the Egyptian Board (fellowship) of ENT and has been used for the accreditation of the Egyptian Board (fellowship) of ENT program by the Royal College of Surgeons in Ireland (RCSI) since 11 July 2011 to date.

References

- (1) The Otolaryngology curriculum approved by the Joint Committee on Surgery training and the PMETB in 2007.

- (2) *Scott–Brown's Otorhinolaryngology, Head and Neck Surgery*, 7th ed.
- (3) Postgraduate Medical Education and Training Board UK (guidelines for curriculum development 2006).
- (4) Guidelines for curriculum development issued by the Egyptian Fellowship Board April 2007.

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Otolaryngology, head and neck surgery curriculum

The Egyptian Fellowship Board and the Otolaryngology Scientific Council worked collaboratively and closely to make this curriculum available for trainees' guidance and support.

Postgraduate medical education worldwide is now governed by academic standards that describe the qualities and abilities of graduates. In addition, there are standards for the training processes, trainers' selection, and methods of assessment to ensure transparency and clarify expectations.

The Egyptian Fellowship Board has already defined and published its standards for the general and professional competencies expected from our graduates in different specialties upon successful completion of training. These expectations are clearly reflected in the otolaryngology curriculum.

The curriculum describes what trainees will know and be able to do upon completion of training. In addition, methods of teaching and learning needed to deliver the curriculum are outlined. The curriculum also describes in detail, in 'The training rules and regulations section', expectations from trainees during their rotations. Methods of assessment and examination regulations are also available in the last section of the curriculum.

All topics covered during practical and theoretical studies are outlined. This will help guide trainees in their readings and their choice of learning activities. In addition, all required clinical cases and procedures are listed, together with expected performance at various stages of training.

To help our trainers and supervisors and maximize benefits, we provided a guide for required lectures at various training stages. Mandatory courses are also mentioned, and the Egyptian Fellowship Board will work closely with otolaryngology scientific council to ensure proper organization of courses at appropriate training stages.

We hope that all our trainees, trainers, and educational supervisors will follow the guides provided in the curriculum and cooperate with The Egyptian Fellowship Board and Otolaryngology Scientific Council to implement the curriculum in the best way.

Secretary General

Higher Committee of Medical Specialties

References

The committees consulted international and regional curricula in otolaryngology. The external references for the development of this curriculum are as follows:

- (1) The otolaryngology curriculum approved by the Joint Committee on Surgery training and the PMETB in 2007.
- (2) *Scott–Brown's Otorhinolaryngology, Head and Neck Surgery*, 7th ed.
- (3) Postgraduate Medical Education and Training Board UK (guidelines for curriculum development 2006).
- (4) Guidelines for curriculum development issued by the Egyptian Fellowship Board April 2007.

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Prof Dr. Eman AbdulRaouf, Professor of Pediatric Hematology, Cairo University, Medical education expert and member of the Egyptian Fellowship Curriculum Committee.

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1. Applied basic science curriculum

1.1. Anatomy

Objective

To understand the basic anatomy that surgeons will encounter during the management of both adult and pediatric patients with diseases of the ears, nose, and throat, and the embryological development of anatomical systems.

Knowledge (K1.1)

- K1.1.1 Otological anatomy.
 - K1.1.1.1 Outline the otological anatomy of the outer, middle, and inner ear, brain stem, central auditory pathways, and the vestibular system, and their embryogenesis.
 - K1.1.1.2 Describe congenital anomalies of the outer, middle, and inner ear.
- K1.1.2 Respiratory tract and rhinological anatomy.
 - K1.1.2.1 Rhinological anatomy and embryology.
 - K1.1.2.1.1 Outline the anatomy and embryology of the upper and lower respiratory tract, including the nose and paranasal sinuses and nasopharynx, trachea, and bronchial tree.
 - K1.1.2.1.2 Outline the anatomy of the olfactory system and its central connections.
 - K1.1.2.2 List common anatomical variations of the upper and lower respiratory tract and lungs.
- K1.1.3 Head and neck.
 - K1.1.3.1 Discuss the embryogenesis and anatomy of the head and neck, including the oral cavity, pharynx (including pharyngeal lymphoid tissue), larynx, esophagus, and thyroid gland.
 - K1.1.3.2 List common anatomical variations of the head and neck, including the oropharynx, pharynx, larynx, and esophagus.
 - K1.1.3.3 Describe the surgical anatomy of the head and neck, including the oropharynx, pharynx, larynx, and esophagus, and their important relations.

1.2. Physiology

Objective

To understand the normal physiological processes at different ages and the effects of disease and trauma on these processes.

Knowledge (K1.2)

- K1.2.1 Upper aerodigestive tract.
 - K1.2.1.1 Describe palatal function.
 - K1.2.1.2 Describe the motility of the pharynx and esophagus.
 - K1.2.1.3 Describe the function of the lymphoid tissue in the head and neck.
 - K1.2.1.4 Outline salivary gland function.
 - K1.2.1.5 Discuss laryngeal function and phonation.
 - K1.2.1.6 Discuss the electrophysiology of taste, sensation, and smell.
- K1.2.2 The outer, middle, and inner ear
 - K1.2.2.1 Describe sound conduction and transduction.
 - K1.2.2.2 Outline the function of the cochlear nerve and its central connections and the electrophysiology of hearing.
 - K1.2.2.3 Outline the function of the peripheral and central vestibular system.
- K1.2.3 The nose and olfactory system
 - K1.2.3.1 Describe the nasal airflow, mucociliary function, and olfaction, including their measurement.
 - K1.2.3.2 List the functions and role of the paranasal sinuses.

Clinical skills (CS1.2)

- CS1.2.1 List the methods of testing the vestibular system.

1.3. Audiology

Objective

To understand the principles of sound and its measurement and the principles of audiology.

Knowledge (K1.3)

- K1.3.1 Physics of sound.
 - K1.3.1.1 Outline the physics of sound, including its measurement.
 - K1.3.1.2 Outline the basics of electrophysiological tests of hearing.

Clinical skills (CS1.3)

- CS1.3.1 Perform routine audiometric testing in adults and children.

1.4. Oncology

Objective

To understand pathological processes as they present in common oncological pathologies.

Knowledge (K1.4)

- K1.4.1 Demonstrate an understanding of cancer staging in relation to otorhinolaryngology.
- K1.4.2 List the principles of chemotherapy and radiotherapy in relation to otorhinolaryngology.

2. Pediatric otolaryngology

Objective

To understand the etiology, presenting signs, symptoms, and management of common pediatric ORL conditions. This module gives some indication of the breadth and depth of required knowledge and surgical skills. The list should not be considered fully inclusive or exhaustive.

2.1. Congenital deformities of the ear and temporal bone

Knowledge (K2.1)

- K1.1.1.1 Outline the otological anatomy of the outer, middle, and inner ear and brain stem and central auditory pathways and their embryogenesis.
- K2.1.1 Discuss the etiology and presentation of congenital deformities of the ear and temporal bone.
- K2.1.2 Interpret radiological investigations of congenital deformities.
- K2.1.3 Interpret audiological investigations of congenital deformities.
- K2.1.4 Discuss methods of rehabilitation, including bone conductor and bone anchored hearing aids and bone anchored prostheses.
- K2.1.5 Understand methods for surgical correction of congenital abnormalities of the external and middle ear.

Clinical skills (CS2.1)

- CS2.1.1 Taking clinical history from patient's caregivers.
- CS2.1.2 Interpret radiological and audiological investigations.
- CS2.1.3 Properly manage patients and refer appropriately to other agencies or for other expert opinions – for example, audiologists, genetics, and general pediatrics.

Attitude (A2.1)

- A2.1.1 Demonstrate communication skills and empathy, including teamwork and issues relating to pediatric practice.

- A2.1.2 Advise the patient/parents or caregivers of the treatment options.
- A2.1.3 Discuss risks, potential benefits, and potential complications and obtain informed consent.

2.2. Disorders of the external ear

Knowledge (K2.2)

- K2.2.1 Discuss the types and microbiology of otitis externa.
- K2.2.2 Describe the pathogenesis of disorders of the external ear.
- K2.2.3 Discuss the management of otitis externa in children.

Clinical skills (CS2.2)

- CS2.2.1 Elicit history taking and clinical examination.
- CS2.2.2 Understand the principles of patient management.
- CS2.2.3 Aural microsuction and insertion of dressing.

Attitude (A2.2)

- A2.2.1 Demonstrate communication skills and empathy.
- A2.2.2 Advise the patient/parents or caregivers of the treatment options, discuss risks, potential benefits, and potential complications, and obtain informed consent.

2.3. Acute otitis media in children

Knowledge (K2.3)

- K2.3.1 Outline the microbiology of middle ear infections, clinical picture, and the complications of acute otitis media.
- K2.3.2 Plan for the management of a child with acute otitis media and its complications.
- K2.3.3 Discuss the pathology, clinical picture, complications, and management of otitis media with effusion (glue ear).

Clinical skills (CS2.3)

- CS2.3.1 Take clinical history and elicit clinical signs.
- CS2.3.2 Understand the principles of patient management.

Attitude (A3)

- A2.3.1 Demonstrate communication skills and empathy.
- A2.3.2 Advise the patient of the treatment options.

- A2.3.3 Discuss risks, potential benefits, and potential complications and obtain informed consent.

2.4. Chronic otitis media

Knowledge (K2.4)

- K2.4.1 Describe the etiology and pathogenesis of chronic otitis media.
- K2.4.2 Discuss the management of chronic otitis media in children.
- K2.4.3 List the complications of chronic otitis media and outline the importance of teamwork in managing critically ill patients.
- K2.4.4 Outline the microbiology of ear infections, clinical picture, and the complications of chronic otitis media.
- K2.4.5 Mention the principles of auditory rehabilitation.

Clinical skills (CS2.4)

- CS2.4.1 Assess patients, interpret relevant audiological, neuroradiological, and microscopic assessment tests, and manage appropriately.

Attitude (A2.4)

- A2.4.1 Demonstrate communication skills and empathy.
- A2.4.2 Be able to break bad news.
- A2.4.3 Discuss risks, potential benefits, complications, and treatment and obtain informed consent.

2.5. Ear trauma

Knowledge (K2.5)

- K2.5.1 Describe the effects of trauma on the pinna, ear canal, tympanic membrane, middle ear, and temporal bone.
- K2.5.2 Describe the effects of barotrauma on the middle and inner ear.
- K2.5.3 Outline the surgical and nonsurgical management of trauma of the external, middle, and inner ear.

Clinical skills (CS2.5)

- CS2.5.1 Take clinical history and clinical signs.
- CS2.5.2 Perform proper otoscopic examination.
- CS2.5.3 Interpret audiovestibular tests.
- CS2.5.4 Interpret relevant neuroradiological investigations.
- CS2.5.5 Outline the principles of patient management.

Attitude (A2.5)

- A2.5.1 Demonstrate communication skills and empathy.
- A2.5.2 Advise the patient/parents or caregivers of the treatment options.
- A2.5.3 Discuss risks, potential benefits, and potential complications and obtain informed consent.

2.6. Facial paralysis

Knowledge (K2.6)

- K2.6.1 Outline the anatomy and functions of the facial nerve.
- K2.6.2 List the causes of facial paralysis in children.
- K2.6.3 Outline the psychological effects of facial disfigurement.
- K2.6.4 Describe the relevant clinical, neurological, vascular, radiological, biochemical, serological, and electrophysiological investigations.
- K2.6.5 Outline the principles of management and rehabilitation for facial paralysis.

Clinical skills (CS2.6)

- CS2.6.1 Assess patients with facial paralysis.
- CS2.6.2 Interpret neurophysiological tests and radiological findings.
- CS2.6.3 Plan for patient management.

Attitude (A2.6)

- A2.6.1 Demonstrate communication skills and empathy.
- A2.6.2 Advise the patient/parents or caregivers of the treatment options.
- A2.6.3 Discuss risks, potential benefits, and potential complications and obtain informed consent.

2.7. Deafness in childhood

Knowledge (K2.7)

- K2.7.1 Describe the principles and practice of audiology, including play audiometry, pure-tone audiometry, speech audiometry, and electrophysiological tests and other objective tests of hearing.
- K2.7.2 Discuss the causes of sensorineural deafness in children.
- K2.7.3 Outline hereditary hearing impairment, autoimmune inner ear disease, and ototoxicity.
- K2.7.4 Discuss the causes of conductive hearing loss.
- K2.7.5 Outline nonorganic hearing loss.

- K2.7.6 Outline the principles of auditory rehabilitation, including the use of hearing aids.
- K2.7.7 Outline surgical options of auditory rehabilitation, including bone anchored hearing aids and cochlear implant.

Clinical skills (CS2.7)

- CS2.7.1 Perform comprehensive and focused history taking and examination.
- CS2.7.2 Plan patient management.

Attitude (A2.7)

- A2.7.1 Demonstrate communication skills and empathy.
- A2.7.2 Discuss potential complications and obtain informed consent.
- A2.7.3 Advise the patient of the treatment options and discuss risks and potential benefits.

2.8. Implantable hearing devices in children

Knowledge (K2.8)

- K1.1.1.2 Describe congenital anomalies of the outer, middle, and inner ear.
- K2.8.1 List the types of implants.
- K2.8.2 Discuss indications and contraindications, including risks and complications.
- K2.8.3 Describe surgical approaches to the inner ear.
- K2.8.4 Describe the principles of osseointegration.

Clinical skills (CS2.8)

- CS2.8.1 Take proper history and perform clinical examination.
- CS2.8.2 Interpret radiological findings.
- CS2.8.3 Plan for patient management.

Attitude (A2.8)

- A2.8.1 Demonstrate communication skills and empathy.
- A2.8.2 Advise the patient/parents or caregivers of the treatment options.
- A2.8.3 Discuss risks, potential benefits, and potential complications.
- A2.8.4 Obtain informed consent.
- A2.8.5 Define the role of extended teamwork.

2.9. Vertigo in children

Knowledge (K2.9)

- K1.1.1.1 Outline the otological anatomy of the outer, middle, and inner ear and brain

- stem and central auditory pathways and their embryogenesis.
- K2.9.1 Describe maturation of the vestibular system.
- K2.9.2 Discuss assessment of a dizzy child.
- K2.9.3 Outline the causes of childhood vestibular symptoms.
- K2.9.4 Enumerate different types of ataxia.
- K2.9.5 Discuss the management of vertigo in children.

Clinical skills (CS2.9)

- CS2.9.1 Diagnose and properly manage a dizzy child.

Attitude (A2.9)

- A2.9.1 Deal appropriately with a dizzy child.
- A2.9.2 Discuss risks and potential benefits.

2.10. Congenital nasal abnormalities

Knowledge (K2.10)

- K1.1.2.1.1 Outline the anatomy and embryology of the upper and lower respiratory tract, including the nose and paranasal sinuses and nasopharynx, trachea, and bronchial tree.
- K2.10.1 Describe the pathology and clinical picture of congenital deformities of the nose, paranasal sinuses, and nasopharynx and its associations with other syndromes.
- K2.10.2 Plan for the management of congenital deformities of the nose, paranasal sinuses, and nasopharynx.

Clinical skills (CS2.10)

- CS2.10.1 Assess competently the nose and paranasal sinuses and plan for the management.

Attitude (A2.10)

- A2.10.1 Communication skills, empathy, and an understanding of teamwork and issues relating to pediatric practice.
- A2.10.2 Deal according to specific issues relating to patients with multiple handicaps.

2.11. Nose and sinus infection

Knowledge (K2.11)

- K2.11.1 Discuss the etiology and pathogenesis of sinus diseases in children.
- K2.11.2 Describe microbiology.
- K2.11.3 Discuss the complications of acute and chronic rhinosinusitis.

- K2.11.4 Discuss the management of acute and chronic rhinosinusitis and its complications.

Clinical skills (CS2.11)

- CS2.11.1 Assess a child with sinusitis.
 CS2.11.2 Interpret radiological studies.
 CS2.11.3 Plan for the management of acute and chronic rhinosinusitis.

Attitude (A2.11)

- A2.11.1 Demonstrate communication skills, empathy, and an understanding of teamwork and issues relating to practice.

2.12. Noninfectious conditions of the nose

Knowledge (K2.12)

- K2.12.1 Mention the mechanisms of allergic and nonallergic rhinitis.
 K2.12.2 Plan the medical and surgical management of noninfectious inflammatory nasal disease and its complications.
 K2.12.3 Outline the role of cystic fibrosis in nasal polyp formation and complications of nasal polyps.

Clinical skills (CS2.12)

- CS2.12.1 Assess the patient accurately.
 CS2.12.2 Diagnosis and management of different inflammatory conditions and sinonasal polyposis.
 CS2.12.3 Interpret different imaging studies.

Attitude (A2.12)

- A2.12.1 Advise the patient of the treatment options and risks.

2.13. Nasal trauma and deformity

Knowledge (K2.13)

- K2.13.1 Outline different modes of nasal and facial trauma in children with the resultant deformities.

Clinical skills (CS2.13)

- CS2.13.1 Assess the patient accurately.
 CS2.13.2 Interpret imaging studies.
 CS2.13.3 Diagnose and properly manage nasal trauma and deformity.

Attitude (A2.13)

- A2.13.1 Advise the patient of the treatment options and risks.

2.14. Epistaxis

Knowledge (K2.14)

- K2.14.1 Describe the blood supply to the nose.
 K5.14.2 List causes of epistaxis.
 K2.14.3 Outline the etiology and pathogenesis of epistaxis.
 K2.14.4 Describe the medical and surgical management of epistaxis.

Clinical skills (CS2.14)

- CS2.14.1 Assess the patient accurately.
 CS2.14.2 Interpret imaging studies.
 CS2.14.3 Diagnose and properly manage epistaxis.

Attitude (A2.14)

- A2.14.1 Advise the patient of the treatment options and risks.

2.15. Airway disorders in childhood

Knowledge (K2.15)

- K1.1.2.1.1 Outline the anatomy and embryology of the upper and lower respiratory tract, including the nose and paranasal sinuses and nasopharynx, trachea, and bronchial tree.
 K2.15.1 Discuss the differential diagnosis of stridor in children and their management.
 K2.15.2 Describe the nature and presenting features of obstructive sleep apnea in children.
 K2.15.3 Describe the embryology, anatomy, associated syndromes, pathology, and management of the cleft palate.
 K2.15.4 Plan for the management and complications of different airway disorders in children.

Clinical skills (CS2.15)

- CS2.15.1 Elicit history taking and examination with proper assessment of the patient.
 CS2.15.2 Perform competently endoscopic assessment of the airway (rigid and flexible endoscopy).
 CS2.15.3 Investigate and formulate a differential diagnosis and a management plan.

Attitude (A2.15)

- A2.15.1 Advise the patient and parents of the treatment options, discuss risks, potential benefits, and potential complications, and obtain informed consent.
 A2.15.2 Work as a team with professional colleagues, in particular anesthetists, in a shared airway.

A2.15.3 Deal according to the specific issues related to the management of children in hospital.

2.16. Neck masses in infants and children

Knowledge (K2.16)

- K1.1.3.1 Discuss the embryogenesis and anatomy of the head and neck, including oropharynx, pharynx (including pharyngeal lymphoid tissue), larynx, esophagus, and thyroid gland.
- K1.1.3.2 List common anatomical variations of the head and neck, including oropharynx, pharynx, larynx, and esophagus.
- K1.1.3.3 Describe the surgical anatomy of the head and neck, including oropharynx, pharynx, larynx, and esophagus and their important relations.
- K2.16.1 Outline the pathogenesis and classification of neck masses.
- K2.16.2 Discuss principles of medical and surgical management of neck masses.

Clinical skills (CS2.16)

- CS2.16.1 Assess the patient's oral cavity, oropharynx, and neck accurately, including paranasal sinus and lower airway.
- CS2.16.2 Deduce a differential diagnosis and formulate a management plan.

Attitude (A2.16)

- A2.16.1 Advise the patient and parents of the treatment options.
- A2.16.2 Discuss risks, potential benefits, and potential complications and obtain informed consent.
- A2.16.3 Deal according to the specific issues related to the management of children in hospital.

2.17. Tumors of the head and neck in children

Knowledge (K2.17)

- K2.17.1 Outline the pathology of benign and malignant tumors and their behaviors.
- K2.17.2 Plan for the management of a child with an enlarged cervical lymph node.

Clinical skills (CS2.17)

- CS2.17.1 Assess the patient accurately.
- CS2.17.2 Interpret imaging studies.
- CS2.17.3 Diagnose and properly manage.

Attitude (A2.17)

- A2.17.1 Advise the patient of the treatment options and risks.

2.18. Cervicofacial infections in children

Knowledge (K2.18)

- K1.1.3.1 Discuss the embryogenesis and anatomy of the head and neck, including oropharynx, pharynx (including pharyngeal lymphoid tissue), larynx, esophagus, and thyroid gland.
- K2.18.1 Plan the medical and surgical management of infections of the pharyngeal lymphoid tissue.
- K2.18.2 Discuss secondary effects of pharyngeal lymphoid hyperplasia.
- K2.18.3 Mention the complication of adenotonsillectomy.

Clinical skills (CS2.18)

- CS2.18.1 Assess the patient accurately.
- CS2.18.2 Diagnose and properly manage cervicofacial infections in children.

Attitude (A2.18)

- A2.18.1 Advise the patient of the treatment options.
- A2.18.2 Discuss risks and potential benefits.
- A2.18.3 Discuss potential complications and obtain informed consent.

2.19. Foreign bodies in the ear, nose, and aerodigestive tract

Knowledge (K2.19)

- K2.19.1 Describe the types, clinical picture, management, and complications of foreign bodies in the ear, nose, and aerodigestive tract.

Clinical skills (CS2.19)

- CS2.19.1 Assess and manage patients with foreign bodies in the ear, nose, and aerodigestive tract.
- CS2.19.2 Perform nasal endoscopy, hypopharyngoscopy, laryngoscopy, bronchoscopy, and esophagoscopy.

Attitude (A2.19)

- A2.19.1 Demonstrate communication skills and empathy.
- A2.19.2 Advise the patient/parents or caregivers of the treatment options, discuss risks, potential

benefits, and potential complications, and obtain informed consent.

2.20. Gastroesophageal reflux and aspiration

Knowledge (K2.20)

- K2.20.1 Describe the pathophysiology of gastroesophageal reflux.
- K2.20.2 Discuss the clinical picture and otolaryngological manifestations of gastroesophageal reflux disease (GERD).
- K2.20.3 Outline diagnostic testing of GERD.
- K2.20.4 Discuss the management of GERD in children.
- K2.20.5 Discuss the causes and management of aspiration.

Clinical skills (CS2.20)

- CS2.20.1 Diagnose and properly manage aspiration in children.

Attitude (A2.20)

- A2.20.1 Advise the patient/parents or caregivers of the treatment options; discuss risks and potential benefits.

Surgical skills in pediatric ORL (SS)

- SS2.1 Perform independently microscopic or endoscopic assessment of the ear.
- SS2.2 Perform independently drainage of the auricular hematoma.
- SS2.3 Perform independently adenoidectomy and adenotonsillectomy.
- SS2.4 Perform independently surgical ventilation of the ear.
- SS2.5 Perform independently endoscopic assessment of the airway, intubation, and FB removal.
- SS2.6 Perform independently removal of foreign body (FB) from the pharynx and esophagus.
- SS2.7 Perform independently pediatric tracheostomy.
- SS2.8 Perform independently aural polypectomy.
- SS2.8 Perform independently cortical mastoidectomy.
- SS2.10 Perform under supervision open cavity surgery.
- SS2.11 Perform under supervision surgery for choanal atresia.
- SS2.12 Perform independently, but may need help with, excision of thyroglossal.
- SS2.13 Perform independently, but may need help with, the excision of branchial cyst.
- SS2.14 Perform independently, but may need help with, endoscopic laser surgery for airway diseases.

3. Head and neck

Objective

To understand the etiology, presenting signs, symptoms, and management of common head and neck conditions. This module gives some indication of the breadth and depth of required knowledge and surgical skills. The list should not be considered fully inclusive or exhaustive.

3.1. Salivary gland disease

Knowledge (K3.1)

- K1.2.1.4 Outline salivary gland function.
- K3.1.1 Describe the anatomy, physiology, and pathology of salivary gland disorders (parotid, submandibular, and minor salivary glands).
- K3.1.2 Outline the epidemiology, classification, pathology, and clinical picture of salivary gland disease, including neoplasms.
- K3.1.3 Plan the medical and surgical management of salivary gland disease, and the complications of surgery, including neoplasms.

Clinical skills (CS3.1)

- CS3.1.1 Take clinical history and elicit clinical signs.
- CS3.1.2 Examine the neck and mouth.

Attitude (A3.1)

- A3.1.1 Advise the patient of the treatment options.
- A3.1.2 Discuss risks, potential benefits, and potential complications and obtain informed consent.

3.2. Thyroid disease

Knowledge (K3.2)

- K3.2.1 Describe the physiology, biochemistry, and anatomy of the thyroid gland and parathyroid.
- K3.2.2 Outline the epidemiology, classification, pathology, and clinical picture of thyroid disease, including neoplasms.
- K3.2.3 Discuss the management of thyroid gland diseases, including neoplasms and complications of thyroid surgery.

Clinical skills (CS3.2)

- CS3.2.1 Assess the patient's condition (including metabolic state), investigate appropriately, and plan for management.

Attitude (A3.2)

- A3.2.1 Advise the patient of the treatment options.
- A3.2.2 Discuss risks, potential benefits, and potential complications and obtain informed consent.

3.3. Head and neck cancer

Knowledge (K3.3)

- K1.1.3.3 Describe the surgical anatomy of the head and neck, including oropharynx, pharynx, larynx, and esophagus and their important relations.
- K3.3.1 Outline the epidemiology and classification of head and neck tumors.
- K3.3.2 Discuss the various hypotheses and prognostic factors relating to the etiology of head and neck cancer.
- K3.3.3 Determine the presenting signs and symptoms of head and neck cancer.
- K3.3.4 Describe the methods of disease spread.
- K3.3.5 Plan the medical and surgical management of head and neck cancer.
- K3.3.6 Outline the functional consequences of head and neck disease and its treatment.
- K3.3.7 Mention complications of head and neck surgeries and their management.

Clinical skills (CS3.3)

- CS3.3.1 Assess competently the patient's condition and plan for management.
- CS3.3.2 Perform endoscopy of the upper aerodigestive tract in the outpatient department.
- CS3.3.3 Interpret imaging of head and neck cancer.

Attitude (A3.3)

- A3.3.1 Advise the patient of the treatment options.
- A3.3.2 Discuss risks, potential benefits, and potential complications and obtain informed consent.
- A3.3 Break bad news and work as a member of a team.

3.4. The pharynx and esophagus

Knowledge (K3.4)

- K1.1.3.1 Discuss the embryogenesis and anatomy of the head and neck, including oral cavity, pharynx (including pharyngeal lymphoid tissue), larynx, esophagus, and thyroid gland.
- K1.1.3.2 List common anatomical variations of the head and neck, including oropharynx, pharynx, larynx, and esophagus.

- K1.1.3.3 Describe the surgical anatomy of the head and neck, including oropharynx, pharynx, larynx, and esophagus and their important relations.

- K1.2.1.2 Describe the motility of the pharynx and esophagus.

- K3.4.1 Discuss diseases of the pharynx, including neoplasms.

- K3.4.2 Outline the inflammatory conditions of the pharynx, with highlight on the granulomas of the pharynx (see also K2.18).

- K3.4.3 Classify the different etiologies of stomatitis and oropharyngeal ulcerations.

- K3.4.4 Discuss the causes of dysphagia, its management and intervention.

- K3.4.5 Describe Plummer–Vinson syndrome.

- K3.4.6 Describe pharyngeal pouch and its management.

- K3.4.7 Discuss tumors of the oral cavity and pharynx (nasopharynx, oropharynx, and hypopharynx), both benign and malignant, and plan for their management.

Clinical skills (CS3.4)

- CS3.4.1 Take clinical history and perform clinical examination.

- CS3.4.2 Examine the mouth, nose, nasopharynx, pharynx, and larynx with endoscopes as required in outpatients and under general anesthesia.

- CS3.4.3 Assess accurately the patient's condition and manage appropriately under supervision.

Attitude (A3.4)

- A3.4.1 Advise the patient of the treatment options.

- A3.4.2 Discuss risks, potential benefits, and potential complications and obtain informed consent.

3.5. Adenoidal and tonsillar pathology

Knowledge (K3.5)

- K1.1.3.1 Discuss the embryogenesis and anatomy of the head and neck, including the oropharynx, pharynx (including pharyngeal lymphoid tissue), larynx, esophagus, and thyroid gland.

- K1.2.1.3 Describe the function of the lymphoid tissue in the head and neck.

- K3.5.1 Mention the secondary effects of pharyngeal lymphoid hyperplasia.

- K3.5.2 Discuss the medical and surgical management of infections of the pharyngeal lymphoid tissue.
- K3.5.3 Describe differential diagnosis and management of unilateral tonsillar swelling.

Clinical skills (CS3.5)

- CS3.5.1 Assess accurately the patient's condition.
- CS3.5.2 Diagnose and manage the patient's condition.

Attitude (A3.5)

- A3.5.1 Advise the patient of the treatment options.
- A3.5.2 Discuss risks, potential benefits, and potential complications and obtain informed consent.

3.6. Pharyngeal suppurations

Knowledge (K3.6)

- K3.6.1 Describe the anatomy of parapharyngeal spaces and fascias.
- K3.6.2 Outline the clinical picture, investigations, and differential diagnosis of pharyngeal suppurations, including Ludwig's angina.
- K3.6.3 Plan for the medical and surgical management of pharyngeal suppurations.

Clinical skills (CS3.6)

- CS3.6.1 Assess accurately the patient's condition and manage appropriately under supervision.
- CS3.6.2 Know when to involve other specialties such as surgery, microbiology, pathology, and infectious diseases.

Attitude (A3.6)

- A3.6.1 Advise the patient of the treatment options.
- A3.6.2 Discuss risks, potential benefits, and potential complications and obtain informed consent.

3.7. The larynx

Knowledge (K3.7)

- K1.1.2.1.1 Outline the anatomy and embryology of the upper and lower respiratory tract, including the nose and paranasal sinuses and nasopharynx, trachea, and bronchial tree.
- K1.1.3.1 Discuss the embryogenesis and anatomy of the head and neck, including the

oropharynx, pharynx (including pharyngeal lymphoid tissue), larynx, esophagus, and thyroid gland.

- K1.1.3.2 List the common anatomical variations of the head and neck, including the oropharynx, pharynx, larynx, and esophagus.
- K1.1.3.3 Describe the surgical anatomy of the head and neck, including the oropharynx, pharynx, larynx, and esophagus and their important relations.
- K3.7.1 Discuss acute infections, chronic laryngitis, and other benign laryngeal lesions.
- K3.7.2 Discuss laryngeal trauma, stenosis, paralysis, and their management.
- K3.7.3 Describe the epidemiology, pathology, clinical picture, and management of tumors of the larynx (benign and malignant) (see also K3.3).
- K3.7.4 Discuss complications of management of laryngeal tumors and mention the different modalities of voice rehabilitation after total laryngectomy.

Clinical skills (CS3.7)

- CS3.7.1 Take clinical history and elicit clinical signs in potential laryngeal symptoms.
- CS3.7.2 Assess the patients with laryngeal carcinoma and select proper line for management.
- CS3.7.3 Competently perform endoscopic assessment and staging of laryngeal carcinoma.

Attitude (A3.7)

- A3.7.1 Advise the patient of the treatment options.
- A3.7.2 Work with anesthetists in the 'shared airway'.
- A3.7.3 Discuss risks, potential benefits, and potential complications and obtain informed consent.

3.8. Airway disorders

Knowledge (K3.8)

- K3.8.1 Classify airway disorders.
- K3.8.2 Outline the principles of medical and surgical management, including tracheostomy and their complications.
- K3.8.3 Plan for the management of a patient with neck trauma.
- K3.8.4 Describe causes and plan the management of aspiration.

Clinical skills (CS3.8)

- CS3.8.1 Take clinical history and elicit clinical signs in potential laryngeal symptoms.
- CS3.8.2 Assess the patients with critical airways.
- CS3.8.3 Competently perform endoscopic assessment of the airway and intubation.

Attitude (A3.8)

- A3.8.1 Advise the patient of the treatment options.
- A3.8.2 Work with anesthetists in the 'shared airway'.
- A3.8.3 Discuss risks, potential benefits, and potential complications and obtain informed consent.

3.9. Voice disorders

Knowledge (K3.9)

- K3.9.1 Outline the classification of dysphonias.
- K3.9.2 Discuss the various hypotheses relating to the etiology of dysphonias.
- K3.9.3 Plan the medical and surgical management of dysphonias.

Clinical skills (CS3.9)

- CS3.9.1 Take clinical history and elicit clinical signs in patients with voice disorders.
- CS3.9.2 Perform endoscopic assessment.
- CS3.9.3 Enhance communication skills with other professionals.

Attitude (A3.9)

- A3.9.1 Advise the patient of the treatment options.
- A3.9.2 Discuss risks, potential benefits, and potential complications and obtain informed consent.

3.10. Cervical lymphadenopathy

Knowledge (K3.10)

- K1.1.3.1 Discuss the embryogenesis and anatomy of the head and neck, including oropharynx, pharynx (including pharyngeal lymphoid tissue), larynx, esophagus, and thyroid gland.
- K1.2.1.3 Describe the function of the lymphoid tissue in the head and neck.
- K3.10.1 Discuss the etiology, pathology, presenting signs, and symptoms of cervical lymphadenopathy.
- K3.10.2 Discuss occult primary and management.
- K3.10.3 Discuss differential diagnosis and management of a patient with a neck mass.

- K3.10.4 Interpret imaging of the neck.

Clinical skills (CS3.10)

- CS3.10.1 Take clinical history and elicit clinical signs.
- CS3.10.2 Examine the mouth, nose, nasopharynx, pharynx, larynx, and esophagus with endoscopes as required in outpatients, under general anesthesia (see also CS3.4.2, CS3.8.3).

Attitude (A3.10)

- A3.10.1 Advise the patient of the treatment options.
- A3.10.2 Discuss risks, potential benefits, and potential complications and obtain informed consent.

3.11. Sleep apnea

Knowledge (K3.11)

- K3.11.1 Discuss etiology, presenting signs, and symptoms in adults.
- K3.11.2 Discuss the complications of sleep apnea disorder.
- K3.11.3 Discuss different lines for management of sleep apnea and mention their complications.

Clinical skills (CS3.11)

- CS3.11.1 Assess accurately the patient's condition and plan for management.
- CS3.11.2 Examine the upper aerodigestive tract with endoscopes in the outpatient department (see also CS3.4.2, CS3.8.3, CS3.10.2).

Attitude (A3.11)

- A3.11.1 Advise the patient of the treatment options.
- A3.11.2 Discuss risks, potential benefits, and potential complications and obtain informed consent.

Surgical skills in head and neck surgery (SS)

- SS3.1 Perform independently adenotonsillectomy.
- SS3.2 Perform independently drainage of peritonsillar abscess.
- SS3.3 Manage independently post-tonsillectomy bleeding.
- SS3.4 Perform independently endoscopic assessment of the airway, intubation, and FB removal.

- SS3.5 Perform independently tracheostomy.
- SS3.6 Perform independently endoscopic assessment of head and neck cancer under general anesthesia.
- SS3.7 Perform independently lymph node excision.
- SS3.8 Perform independently laryngeal endoscopic surgery.
- SS3.9 Perform independently endoscopic assessment of dysphonia.
- SS3.10 Perform independently removal of FB from the pharynx and esophagus.
- SS3.11 Perform independently endoscopic examination of the nose, nasopharynx, pharynx, and larynx under general anesthesia.
- SS3.12 Perform independently surgical excision of the ranula (if available).
- SS3.13 Perform independently, but may need help, with uvulopalatopharyngoplasty.
- SS3.14 Perform independently, but may need help with, laser-assisted uvuloplasty.
- SS3.15 Perform independently, but may need help with, excision of neck cyst, thyroglossal and branchial cysts, and fistulae.
- SS3.16 Perform independently, but may need help in, drainage of superficial and deep neck space infections.
- SS3.17 Perform independently, but may need help with, submandibular gland excision.
- SS3.18 Assist in medialization procedures in voice disorders.
- SS3.19 Assist in fine needle aspiration cytology.
- SS3.20 Assist in thyroid surgery.
- SS3.21 Assist in laryngectomy, neck dissection surgery, and voice prosthesis placement.
- SS3.22 Assist in intraoral parotid and submandibular duct stone excision.
- SS3.23 Assist in superficial parotidectomy.
- SS3.24 Assist in total conservative parotidectomy.
- SS3.25 Observe endoscopic laser surgery.
- SS3.26 Observe facial nerve grafting.
- SS3.27 Observe facial-hypoglossal anastomosis.
- SS3.28 Observe endoscopic and open pharyngeal pouch surgery.

4. Otology

Objective

To understand the etiology, presenting signs, symptoms, and management of common ORL conditions. This module gives some indication of the breadth and depth of required knowledge and clinical and surgical skills. The list should not be considered fully inclusive or exhaustive.

4.1. Congenital deformities of the ear and temporal bone

Knowledge (K4.1)

- K1.1.1.1 Outline the otological anatomy of the outer, middle, and inner ear, brain stem, and central auditory pathways, and their embryogenesis.
- K1.1.1.2 Describe congenital anomalies of the outer, middle, and inner ear.
- K4.1.1 Interpret radiological investigations of congenital deformities (see also K2.1.2).
- K4.1.2 Interpret audiological investigations of congenital deformities (see also K2.1.3).
- K4.1.3 Discuss methods of rehabilitation, including bone conductor and bone anchored hearing aids and bone anchored prostheses (see also K2.1.4).
- K4.1.4 Plan surgical correction of congenital abnormalities of the external and middle ear (see also K2.1.5).

Clinical skills (CS4.1)

- CS4.1.1 Take clinical history from patients with congenital deformities of the ear.
- CS4.1.2 Interpret radiological and audiological investigations.
- CS4.1.3 Plan for patient management and refer appropriately to other agencies or for other expert opinions.

Attitude (A4.1)

- A4.1.1 Demonstrate communication skills and empathy, including teamwork and issues relating to pediatric practice.
- A4.1.2 Advise the patient/parents or caregivers of the treatment options.
- A4.1.3 Discuss risks, potential benefits, and potential complications and obtain informed consent.
- A4.1.4 Deal with specific issues related to patients with multiple handicaps and refer to psychological assessment if needed.

4.2. Disorders of pinna and the external auditory canal

Knowledge (K4.2)

- K1.1.1.1 Outline the otological anatomy of the outer, middle, and inner ear, brain stem, and central auditory pathways, and their embryogenesis.
- K1.1.1.2 Describe congenital anomalies of the outer, middle, and inner ear.
- K1.2.2.1 Describe sound conduction and transduction.

- K4.2.1 Outline the pathogenesis and microbiology of disorders of the external ear, especially necrotizing otitis externa.
- K4.2.2 Discuss the management of different disorders affecting the external auditory canal.

Clinical skills (CS4.2)

- CS4.2.1 Take clinical history and elicit clinical signs.
- CS4.2.2 Interpret audiovestibular tests (see also K1.3.1.1, K1.3.1.2).
- CS4.2.3 Plan for patient management.

Attitude (A4.2)

- A4.2.1 Demonstrate communication skills and empathy.
- A4.2.2 Advise the patient of the treatment options.
- A4.2.3 Discuss potential complications, risks, and potential benefits and obtain informed consent.

4.3. Acute otitis media in adults

Knowledge (K4.3)

- K1.1.1.1 Outline the otological anatomy of the outer, middle, and inner ear, and brain stem and central auditory pathways and their embryogenesis.
- K4.3.1 Describe the pathology of acute otitis media in adults.
- K4.3.2 Outline the microbiology of ear infections (see also K2.3.1).
- K4.3.3 Describe clinical picture and the complications of acute otitis media in adults.

Clinical skills (CS4.3)

- CS4.3.1 Take clinical history, elicit clinical signs, and provide appropriate medical treatment and perform microsuction when indicated.
- CS4.3.2 Interpret otoscopic appearance.
- CS4.3.3 Plan for patient management.

Attitude (A4.3)

- A4.3.1 Demonstrate communication skills and empathy.
- A4.3.2 Advise the patient of the treatment options.
- A4.3.3 Discuss risks, potential benefits, and potential complications and obtain informed consent.

4.4. Chronic otitis media in adults

Knowledge (K4.4)

- K4.4.1 Describe the etiology and pathogenesis and differential diagnosis of chronic otitis media in adults.
- K4.4.2 List the complications of chronic otitis media and outline the importance of teamwork in managing critically ill patients
- K4.4.3 Discuss the management of chronic otitis media and mention surgical complications.
- K4.4.4 Mention the principles of auditory rehabilitation.

Clinical skills (CS4.4)

- CS4.4.1 Assess patients, interpret relevant audiological, neuroradiological, and microscopic assessment tests, and manage appropriately.
- CS4.4.2 Plan for patient management and outline complications of chronic otitis media.

Attitude (A4.4)

- A4.4.1 Demonstrate communication skills and empathy.
- A4.4.2 Break bad news.
- A4.4.3 Advise the patient of the treatment options.
- A4.4.4 Discuss risks, potential benefits, and potential complications and obtain informed consent.

4.5. Otosclerosis

Knowledge (K4.5)

- K4.5.1. Describe the etiology, genetics, and pathophysiology of otosclerosis.
- K4.5.2 Discuss the management of otosclerosis and complications of different lines of management.
- K4.5.3 Outline differential diagnosis of conductive hearing loss behind an intact drum.

Clinical skills (CS4.5)

- CS4.5.1 Take clinical history and clinical signs.
- CS4.5.2 List appropriate investigations.
- CS4.5.3 Plan for patient management.

Attitude (A4.5)

- A4.5.1 Demonstrate communication skills and empathy.

- A4.5.2 Advise the patient of the treatment options.
 A4.5.3 Discuss risks, potential benefits, and potential complications and obtain informed consent.

4.6. Balance disorders

Knowledge (K4.6)

- K1.1.1.1 Outline the otological anatomy of the outer, middle, and inner ear, the brain stem, and central auditory pathways, and their embryogenesis.
 K1.2.2.3 Outline the function of the peripheral and central vestibular system.
 K4.6.1 Outline the pathology and various hypotheses relating to the etiology.
 K4.6.2 Discuss differential diagnosis of balance disorders.
 K4.6.3 Describe the neuroradiological imaging of the inner ear and central vestibular pathways, as well as the relevant clinical neurological, vascular, radiological, biochemical, immunological and serological investigations and their management.
 K4.6.4 Outline the relationship of balance disorders to legislation relating to employment and driving.
 K4.6.5 Describe the principles of vestibular rehabilitation.
 K4.6.6 Describe the handicaps related to sensory and proprioceptive degeneration associated with age.

Clinical skills (CS4.6)

- CS4.6.1 Assess accurately the patient's condition, including electrophysiological testing and clinical examination (see also CS1.2.1).
 CS4.6.2 Take clinical history and elicit clinical signs.
 CS4.6.3 Plan for patient management.

Attitude (A4.6)

- A4.6.1 Demonstrate communication skills and empathy.
 A4.6.2 Advise the patient of the treatment options.
 A4.6.3 Discuss risks, potential benefits, and potential complications and obtain informed consent.

4.7. Deafness in adults

Knowledge (K4.7)

- K4.7.1 Describe the principles and practice of audiology, including pure-tone

audiometry, speech audiometry, electrophysiological tests, and other objective tests of hearing (see also CS1.3.1, K1.3.1.2, K1.3.1.3).

- K4.7.2 Discuss the causes of sensorineural deafness (see also K2.7.2).
 K4.7.3 Outline hereditary hearing impairment, autoimmune inner ear disease, and ototoxicity (see also K2.7.3).
 K4.7.4 Discuss the causes of conductive hearing loss (see also K2.7.3).
 K4.7.5 Outline nonorganic hearing loss in adults.
 K4.7.6 Outline the principles of auditory rehabilitation, including the use of hearing aids and other assistive devices in adults.
 K4.7.7 Outline the surgical options of auditory rehabilitation in adults.

Clinical skills (CS4.7)

- CS4.7.1 Perform comprehensive and focused history taking and examination.
 CS4.7.2 Plan for patient management.

Attitude (A4.7)

- A4.7.1 Demonstrate communication skills and empathy.
 A4.7.2 Advise the patient of the treatment options and discuss risks and potential benefits.
 A4.7.3 Discuss potential complications and obtain informed consent.

4.8. Tinnitus

Knowledge (K4.8)

- K4.8.1 Describe the etiology, clinical presentation, and the psychological effects of tinnitus.
 K4.8.2 Outline the principles of tinnitus retraining, rehabilitation, support, and counseling.
 K4.8.3 Outline the principles and practice of audiology, including pure-tone audiometry, speech audiometry, and electrophysiological tests, and other objective tests of hearing, including otoacoustic emissions and psychoacoustical tests (see also K4.7.6).

Clinical skills (CS4.8)

- CS4.8.1 Assess patients with tinnitus and interpret audiological tests and radiological findings.
 CS4.8.2 Plan for patient management.

Attitude (A4.8)

- A4.8.1 Demonstrate communication skills and empathy.
- A4.8.2 Advise the patient of the treatment options.
- A4.8.3 Discuss risks and potential benefits.

4.9. Implantable hearing devices in adults*Knowledge (K4.9)*

- K1.1.1.1 Outline the otological anatomy of the outer, middle, and inner ear, brain stem, central auditory pathways, and the vestibular system, and their embryogenesis.
- K1.1.1.2 Describe the congenital anomalies of the outer, middle, and inner ear.
- K4.9.1 List the types of implants (see also K2.8.1).
- K4.9.2 Discuss indications and contraindications, including risks and complications (see also K2.8.2).
- K4.9.3 Describe surgical approaches to the inner ear (see also K2.8.1).
- K4.9.4 Describe the principles of osseointegration (see also K2.8.1).
- K4.9.5 Explain speech-processing strategies.

Clinical skills (CS4.9)

- CS4.9.1 Take proper history and perform clinical examination.
- CS4.9.2 Interpret radiological findings.
- CS4.9.3 Plan for patient management.

Attitude (A4.9)

- A4.9.1 Demonstrate communication skills and empathy.
- A4.9.2 Advise the patient/parents or caregivers of the treatment options.
- A4.9.3 Discuss risks, potential benefits, and potential complications.
- A4.9.4 Obtain informed consent.
- A4.9.5 Define the role of extended teamwork.

4.10. Facial paralysis in adults (see also K2.6)*Knowledge (K4.10)*

- K4.10.1 Outline the anatomy, physiology, and functions of the facial nerve.
- K4.10.2 List the causes and types of facial paralysis in adults.
- K4.10.3 Outline the psychological effects of facial disfigurement in adults.
- K4.10.4 Describe the relevant clinical, neurological, vascular, radiological, biochemical, serological, and electrophysiological investigations in adults.

- K4.10.5 Outline the principles of management and rehabilitation for facial paralysis in adults.

Clinical skills (CS4.10)

- CS4.10.1 Assess adult patients with facial paralysis.
- CS4.10.2 Interpret neurophysiological tests and radiological findings in adults.
- CS4.10.3 Plan for patient management.

Attitude (A4.10)

- A4.10.1 Demonstrate communication skills and empathy.
- A4.10.2 Advise the patient of the treatment options.
- A4.10.3 Discuss risks, potential benefits, and potential complications and obtain informed consent.

4.11. Ear trauma*Knowledge (K4.11)*

- K4.11.1 Describe the effects of trauma on the pinna, ear canal, tympanic membrane, middle ear, inner ear, and temporal bone.
- K4.11.2 Describe the effects of barotrauma on the middle and inner ear.
- K4.11.3 Outline the surgical and nonsurgical management of trauma to the external, middle, and inner ear.

Clinical skills (CS4.11)

- CS4.11.1 Take clinical history and elicit clinical signs.
- CS4.11.2 Perform proper otoscopic and microscopic examination.
- CS4.11.3 Interpret neurophysiological tests and radiological findings.
- CS4.11.4 Plan for patient management.

Attitude (A4.11)

- A4.11.1 Demonstrate communication skills and empathy.
- A4.11.2 Advise the patient/parents or caregivers of the treatment options.
- A4.11.3 Discuss risks, potential benefits, and potential complications and obtain informed consent.

4.12. Otagia*Knowledge (K4.12)*

- K4.12.1 Outline the neurophysiology of pain.
- K4.12.2 Discuss the neuroanatomy of pain.

- K4.12.3 List the causes of otalgia and their management.
- K4.12.4 Discuss stylohyoid syndrome investigation and management.
- K4.12.5 Discuss the principles of patient management presented by otalgia.

Clinical skills (CS4.12)

- CS4.12.1 Take clinical history.
- CS4.12.2 Elicit clinical signs.
- CS4.12.3 Interpret relevant neuroradiological investigations.
- CS4.12.4 Examine temporomandibular joint (TMJ), oral cavity including dental examinations with careful evaluation of the upper aerodigestive tract.
- CS4.12.5 Plan for patient management.

Attitude (A4.12)

- A4.12.1 Demonstrate communication skills and empathy.
- A4.12.2 Discuss with the patient/parents or caregivers of the treatment options.
- A4.12.3 Discuss risks, potential benefits, and potential complications and obtain informed consent.
- A4.12.4 Refer appropriately to other specialties when needed.

Surgical skills in otology (SS)

- SS4.1 Perform independently microscopic assessment of the ear.
- SS4.2 Perform independently drainage of auricular hematomas.
- SS4.3 Perform independently aural polypectomy.
- SS4.4 Perform independently aural microsuction and insertion of dressings.
- SS4.5 Observe corrective surgery for bat ears (if available).
- SS4.6 Perform independently myringotomy, microsuction, and insertion of grommets.
- SS4.7 Perform independently myringoplasty.
- SS4.8 Perform independently cortical mastoidectomy.
- SS4.9 Perform independently tympanoplasty.
- SS4.10 Perform with assistance (if needed) open cavity surgery.
- SS4.11 Observe some ossiculoplasty procedures (if available).
- SS4.12 Perform under supervision stapedectomy procedure.
- SS4.13 Observe fixation of bone anchored hearing aids and bone anchored prosthesis (if available).

- SS4.14 Observe cochlear implantation procedures (if available).
- SS4.15 Observe surgical interventions for vertigo.
- SS4.16 Perform repositioning maneuvers.

5. Rhinology**Objective**

To understand the etiology, presenting signs, symptoms, and management of common rhinological conditions. This module gives some indication of the breadth and depth of required knowledge and surgical skills. The list should not be considered fully inclusive or exhaustive.

5.1. Congenital abnormalities*Knowledge (K5.1)*

- K1.1.2.1.1 Outline the anatomy and embryology of the upper and lower respiratory tract, including the nose and paranasal sinuses and nasopharynx, trachea, and bronchial tree.
- K1.1.2.2 List common anatomical variations of the upper and lower respiratory tract and lungs.
- K5.1.1 Describe the etiology and clinical picture of congenital deformities of the nose and paranasal sinuses.
- K5.1.2 List other associated syndromes.

Clinical skills (CS5.1)

- CS5.1.1 Assess the patient competently.
- CS5.1.2 Outline the management plan.

Attitude (A5.1)

- A5.1.1 Demonstrate communication skills and empathy, including teamwork and issues relating to pediatric practice.
- A5.1.2 Deal according to specific issues relating to patients with multiple handicaps and their psychological assessment.

5.2. Rhinosinusitis*Knowledge (K5.2)*

- K5.2.1 Discuss the pathology and management of intermittent and persistent allergic rhinosinusitis.
- K5.2.2 Discuss classification, pathology, and management of infectious rhinosinusitis.
- K5.2.3 Outline the different types of nonallergic, noninfectious inflammatory conditions of the nose and sinuses.

Clinical skills (CS5.2)

- CS5.2.1 Assess the patient accurately.

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|---------|--|--|
| CS5.2.2 | Perform speculum and endoscopic examination. | <i>Clinical skills (CS5.4)</i> |
| CS5.2.3 | Interpret hematological and imaging studies. | CS5.4.1 Assess the patient accurately. |
| CS5.2.4 | Properly manage nose and sinus infections. | CS5.4.2 Perform speculum and endoscopic examination. |
| | | CS5.4.3 Interpret imaging studies, hematological investigations, and other investigations. |
| | | CS5.4.4 Diagnose and properly manage mucocoeles. |

Attitude (A5.2)

- | | | |
|--------|---|--|
| A5.2.1 | Advise the patient of the treatment options and risks. | <i>Attitude (A5.4)</i> |
| A5.2.2 | Demonstrate communication skills and empathy, including teamwork and issues relating to practice. | A5.4.1 Advise the patient of the treatment options and risks. |
| | | A5.4.2 Demonstrate communication skills and empathy, including teamwork and issues relating to practice. |

5.3. Granulomatous conditions of the nose and sinuses*Knowledge (K5.3)*

- K5.3.1 Define granuloma and list the different types of nasal granulomas.
- K5.3.2 Discuss the management of infective granulomatous conditions of the nose and sinuses (bacterial, fungal, and protozoal).
- K5.3.3 Discuss the pathology and management of inflammatory granulomas (Wegener's, sarcoidosis, Churg–Staruss syndrome, cholesterol granulomas, and eosinophilic granulomas).
- K5.3.4 Discuss the pathology and management of neoplastic granulomas.

Clinical skills (CS5.3)

- CS5.3.1 Assess the patient accurately.
- CS5.3.2 Perform speculum and endoscopic examination.
- CS5.3.3 Interpret pathological and imaging studies.
- CS5.3.4 Diagnose and properly manage granulomatous conditions of the nose and sinuses.

Attitude (A5.3)

- A5.3.1 Advise the patient of the treatment options and risks.
- A5.3.2 Demonstrate communication skills and empathy, including teamwork and issues relating to practice.

5.4. Mucocoeles*Knowledge (K5.4)*

- K5.4.1 Outline the definition, sites, etiology, clinical presentation, and differential diagnosis of mucocoeles.
- K5.4.2 Outline the prognosis, and medical and surgical management.

5.5. Nasal polyposis*Knowledge (K5.5)*

- K5.5.1 Describe the definition, etiology, associated diseases, and epidemiology of nasal polyposis.
- K5.5.2 Describe the pathology and pathogenesis of nasal polyposis.
- K5.5.3 Describe the clinical presentation of nasal polyposis.
- K5.5.4 Describe differential diagnosis (DD) and complications of nasal polyposis.
- K5.5.5 Describe the medical and surgical management of nasal polyposis.

Clinical skills (CS5.5)

- CS5.5.1 Assess the patient accurately and interpret imaging studies.
- CS5.5.2 Plan for the management of nasal polyposis.

Attitude (A5.5)

- A5.5.1 Advise the patient of the treatment options and risks.

5.6. Complications of rhinosinusitis*Knowledge (K5.6)*

- K5.6.1 Outline the definitions, classification, and clinical presentation of the complications of rhinosinusitis.
- K5.6.2 Outline prognosis, medical, and surgical management.

Clinical skills (CS5.6)

- CS5.6.1 Assess the patient accurately.
- CS5.6.2 Perform speculum and endoscopic examination.
- CS5.6.3 Interpret imaging studies, hematological investigations, and other investigations.

CS5.6.4 Diagnose and properly manage the complications of rhinosinusitis.

Attitude (A5.6)

A5.6.1 Advise the patient of the treatment options and risks.

A5.6.2 Demonstrate communication skills and empathy, including teamwork and issues relating to practice.

5.7. Complications of endoscopic sinus surgery

Knowledge (K5.7)

K5.7.1 Describe the indications of endoscopic sinus surgery.

K5.7.2 Describe the possible complications of endoscopic sinus surgery.

K5.7.3 Describe the preoperative planning to prevent complications of endoscopic sinus surgery.

K5.7.4 Describe intraoperative strategies for avoiding and managing complications, especially in revision cases of endoscopic sinus surgery.

Clinical skills (CS5.7)

CS5.7.1 Assess the patient accurately.

CS5.7.2 Plan for the management of complications after endoscopic sinus surgery.

Attitude (A5.7)

A5.7.1 Demonstrate communication skills and empathy, including teamwork and issues relating to practice.

A5.7.2 Discuss risks, potential benefits, and potential complications and obtain informed consent.

5.8. Diseases of the septum

Knowledge (K5.8)

K5.8.1 Discuss nasal septal deviation, symptoms, and management.

K5.8.2 Describe septal perforation and its management.

K5.8.3 Discuss septal disease in systemic disorders (including vascular diseases, infectious diseases, autoimmune diseases, and miscellaneous) (see also K5.3.3).

K5.8.4 Describe septal hematoma.

K5.8.5 Describe septal abscess.

Clinical skills (CS5.8)

CS5.8.1 Assess the patient accurately, interpret imaging studies, and diagnose.

CS5.8.2 Plan the management of septal disease.

Attitude (A5.8)

A5.8.1 Advise the patient of the treatment options and risks.

5.9. Foreign bodies

Knowledge (K5.9)

K5.9.1 Outline the clinical picture and complications of foreign bodies.

K5.9.2 Describe the management.

Clinical skills (CS5.9)

CS5.9.1 Assess the patient accurately, interpret imaging studies, and diagnose.

CS5.9.2 Plan for the management of FB impaction.

Attitude (A5.9)

A5.9.1 Advise the patient of the treatment options and risks.

5.10. Epistaxis

Knowledge (K5.10)

K5.10.1 Describe the blood supply to the nose.

K5.10.2 List the causes of epistaxis.

K5.10.3 Outline the clinical picture and classification of epistaxis.

K5.10.4 Describe the medical and surgical management of epistaxis.

Clinical skills (CS5.10)

CS5.10.1 Assess the patient accurately, interpret imaging studies, and diagnose.

CS5.10.2 Manage appropriately patient presented with epistaxis.

Attitude (A5.10)

A5.10.1 Advise the patient of the treatment options and risks.

5.11. Nasal fracture and fractures of the facial skeleton

Knowledge (K5.11)

K5.11.1 Describe the etiology and complications.

K5.11.2 Describe the classification, clinical presentation, investigation, and pathophysiology.

K5.11.3 Plan for the management of a patient with maxillofacial fractures.

Clinical skills (CS5.11)

- CS5.11.1 Assess the patient accurately.
- CS5.11.2 Perform speculum and endoscopic examination, interpret imaging studies, and diagnose.
- CS5.11.3 Manage properly nose and facial skeleton fractures.

Attitude (A5.11)

- A5.11.1 Demonstrate communication skills and empathy, including teamwork and issues relating to practice.
- A5.11.2 Advise the patient/parents or caregivers of the treatment options.
- A5.11.3 Discuss risks, potential benefits, and potential complications and obtain informed consent.

5.12. Cerebrospinal fluid (CSF) rhinorrhea*Knowledge (K5.12)*

- K5.12.1 Describe the physiology of CSF and definition and causes of CSF rhinorrhea.
- K5.12.2 Describe the investigations and management.

Clinical skills (CS5.12)

- CS5.12.1 Assess the patient accurately.
- CS5.12.2 Perform speculum and endoscopic examination, interpret imaging studies, and diagnose.
- CS5.12.3 Plan for the management of a patient presenting with CSF rhinorrhea.

Attitude (A5.12)

- A5.12.1 Demonstrate communication skills and empathy, including teamwork and issues relating to practice.
- A5.12.2 Advise the patient/parents or caregivers of the treatment options.
- A5.12.3 Discuss risks, potential benefits, and potential complications and obtain informed consent.

5.13. Oroantral fistula*Knowledge (K5.13)*

- K5.13.1 Discuss the causes of oroantral fistula.
- K5.13.2 Discuss the diagnosis, complications, and management of oroantral fistula.

Clinical skills (CS5.13)

- CS5.13.1 Assess the patient accurately.
- CS5.13.2 Perform endoscopic and oral examination.

- CS5.13.3 Interpret imaging studies.

Attitude (A5.13)

- A5.13.1 Demonstrate communication skills and empathy, including teamwork and issues relating to practice.
- A5.13.2 Advise the patient/parents or caregivers of the treatment options.

5.14. Smell disorders*Knowledge (K5.14)*

- K1.1.2.1.2 Outline the anatomy of the olfactory system and its central connections.
- K5.14.1 Outline the anatomy and physiology of the nose (in relation to smell).
- K5.14.2 Describe the classification of olfactory disorder and causes of smell disturbance.
- K5.14.3 Describe the clinical evaluation of smell function and different lines of management.

Clinical skills (CS5.14)

- CS5.14.1 Assess the patient accurately.
- CS5.14.2 Perform speculum and endoscopic examination, interpret imaging studies, perform quantitative olfactory testing, and diagnose.
- CS5.14.3 Plan for the management of smell disorders.

Attitude (A5.14)

- A5.14.1 Demonstrate communication skills and empathy, including teamwork and issues relating to practice.
- A5.14.2 Advise the patient/parents or caregivers of the prognosis.
- A5.14.3 Discuss risks, potential benefits, and potential complications and obtain informed consent.

5.15. Orbital and optic nerve decompression*Knowledge (K5.15)*

- K5.15.1 Describe applied surgical anatomy and radiological evaluation of the orbit.
- K5.15.2 Describe the indications, therapeutic option, and preoperative assessment.

Clinical skills (CS5.15)

- CS5.15.1 Assess the patient accurately.
- CS5.15.2 Perform speculum and endoscopic examination, interpret imaging studies, and diagnose.

CS5.15.3 Plan for patient management.

Attitude (A5.15)

- A5.15.1 Demonstrate communication skills and empathy, including teamwork and issues relating to practice.
- A5.15.2 Discuss risks, potential benefits, and potential complications and obtain informed consent.

5.16. Facial pain and headache

Knowledge (K5.16)

- K5.16.1 List the causes, classification, and differential diagnosis of facial pain and headache.
- K5.16.2 Describe medical and surgical management.

Clinical skills (CS5.16)

- CS5.16.1 Assess the patient accurately, interpret imaging studies, and diagnose.
- CS5.16.2 Plan for patient management.

Attitude (A5.16)

- A5.16.1 Advise the patient of the treatment options and risks.

5.17. Nasal and paranasal sinus tumors

Knowledge (K5.17)

- K5.17.1 Outline the clinical presentation, classification, and spread of nasal and paranasal sinus tumors.
- K5.17.2 Discuss the relevant clinical, neurological, vascular, pathological, and radiological investigations.
- K5.17.3 Discuss the pathology of different tumors affecting nasal and paranasal sinus tumors.
- K5.17.4 Plan the management options of the nasal and paranasal sinus tumors.

Clinical skills (CS5.17)

- CS5.17.1 Assess the patient accurately, interpret imaging studies, and diagnose.
- CS5.17.2 Plan for the management of nasal and paranasal sinus tumors.

Attitude (A5.17)

- A5.17.1 Advise the patient of the treatment options and risks.
- A5.17.2 Ability to break bad news.

5.18. Rhinoplasty

Knowledge (K5.18)

- K5.18.1 Outline the etiology, psychological issues, and esthetics.
- K5.18.2 Describe the surgical management and techniques of repair.
- K5.18.3 List the complications of rhinoplasty.

Clinical skills (CS5.18)

- CS5.18.1 Assess the patient accurately, interpret imaging studies, and diagnose.
- CS5.18.2 Plan for patient management and obtain informed consent.

Attitude (A5.18)

- A5.18.1 Advise the patient of the treatment options and risks.

Surgical skills in rhinology (SS)

- SS5.1 Perform independently nasal cautery and packing procedures for epistaxis.
- SS5.2 Perform independently reduction of nasal fractures.
- SS5.3 Perform independently septal surgery.
- SS5.4 Perform independently surgical removal of foreign bodies from the nose and sinuses.
- SS5.5 Perform independently endoscopic sinus surgery.
- SS5.6 Manage complications of sinus disease (e.g. orbital cellulites).
- SS5.7 Assist in repair of CSF leaks and other complications.
- SS5.8 Assist in rhinoplasty and septorhinoplasty (reduction, augmentation, including harvesting of grafts).
- SS5.9 Observe and assist in surgery for choanal atresia.
- SS5.10 Observe surgical interventions for nasal and paranasal sinus tumor surgery.

6. Skull base and neuro-otology

Objective

To understand the etiology, presenting signs, symptoms, and management of common skull base conditions. This module gives some indication of the breadth and depth of required knowledge and clinical and surgical skills. The list should not be considered fully inclusive or exhaustive.

6.1. Anatomy of the skull base, infratemporal fossa, and clinical neuroanatomy

Knowledge (K6.1)

- K6.1.1 Anterior skull base.

K6.1.1.1	Outline the anatomy of the anterior skull base.	<i>Clinical skills (CS6.2)</i> CS6.2.1	Take clinical history and elicit clinical signs.
K6.1.1.2	Describe the surgical anatomy of the anterior skull base.	CS6.2.2	Interpret vestibular assessment, including electrophysiological testing.
K6.1.2	Lateral skull base.	CS6.2.3	Interpret audiovestibular tests.
K6.1.2.1	Outline the anatomy of the lateral skull base.	CS6.2.4	Plan for patient management.
K6.1.2.2	List anatomical subdivision of the lateral skull base, including the infratemporal fossa.	<i>Attitude (A6.2)</i> A6.2.1	Demonstrate communication skills and empathy.
K6.1.2.3	Describe muscles superficial to the lateral skull base.	A6.2.2	Advise the patient of the treatment options.
K6.1.3	Posterior skull base.	A6.2.3	Discuss risks, potential benefits, and potential complications and obtain informed consent.
K6.1.3.1	Outline the anatomy of the posterior skull base.		
K6.1.3.2	Describe structures within the skull base.		
K6.1.4	The cranial nerves.		
K6.1.4.1	Describe the anatomy of the cranial nerves.		
K6.1.4.2	Describe the clinical evaluation and syndromes of the last four cranial nerves.		
<i>Clinical skills (CS6.1)</i>			
CS6.1.1	Proper examination of all cranial nerves.		
<i>Attitude (A6.1)</i>			
A6.1.1	Adopt a surgeon's attitude as medical expert and scholar.		
6.2. Cerebellopontine angle lesions			
<i>Knowledge (K6.2)</i>			
K6.2.1	Describe the surgical anatomy and neuroanatomy of the cerebellopontine angle lesions.	<i>Clinical skills (CS6.3)</i> CS6.3.1	Take clinical history and elicit clinical signs.
K6.2.2	Discuss differential diagnosis of cerebellopontine angle lesions.	CS6.3.2	Interpret vestibular assessment, including electrophysiological testing.
K6.2.3	Describe the relevant clinical neurological, vascular, and radiological investigations, and outline the main principles for management.	CS6.3.3	Interpret audiovestibular tests.
K6.2.4	Describe the principles of surgical and nonsurgical vestibular rehabilitation (see also K4.6.5).	CS6.3.4	Plan for patient management.
K6.2.5	Describe neuroradiological imaging of the inner ear and central vestibular pathways.	<i>Attitude (A6.3)</i> A6.3.1	Demonstrate communication skills and empathy.
K6.2.6	Describe the pathology, clinical picture, incidence, and growth pattern of vestibular schwannoma.	A6.3.2	Advise the patient of the treatment options.
K6.2.7	Outline the management of different cerebellopontine angle lesions, with highlight on vestibular schwannoma.	A6.3.3	Discuss risks, potential benefits, and potential complications and obtain informed consent.
K6.2.8	Describe the surgical approaches to the cerebello pontine (CP) angle and complications of the skull base surgery.		
6.3. Jugular foramen lesions			
<i>Knowledge (K6.3)</i>			
K6.3.1	Describe the anatomy of the jugular foramen with its relation intended learning outcome (ILO).		
K6.3.2	Discuss the relevant clinical, neurological, vascular, and radiological investigations.		
K6.3.3	Discuss the pathology of jugular foramen lesions.		
K6.3.4	Discuss the DD of jugular foramen lesions.		
K6.3.5	Describe the surgical and nonsurgical management options of jugular foramen lesions.		
6.4. Petrous apex lesions			
<i>Knowledge (K6.4)</i>			
K6.4.1	Describe the anatomy of the petrous apex.		
K6.4.2	Discuss different lesions that affect the petrous apex and their pathology.		

- K6.4.3 Discuss the investigations of the petrous apex lesions.
- K6.4.4 Plan the management options of the petrous apex lesions.

Clinical skills (CS6.4)

- CS6.4.1 Take clinical history and elicit clinical signs.
- CS6.4.2 Interpret vestibular assessment, including electrophysiological testing.
- CS6.4.3 Interpret audiovestibular tests (see also CS6.2.3, CS6.2.4).
- CS6.4.4 Plan for patient management.

Attitude (A6.4)

- A6.4.1 Demonstrate communication skills and empathy.
- A6.4.2 Advise the patient of the treatment options.
- A6.4.3 Discuss risks, potential benefits, and potential complications and obtain informed consent.

6.5. Tumors of the temporal bone

Knowledge (K6.5)

- K6.5.1 Describe the anatomy of the temporal bone.
- K6.5.2 List of different tumors affecting the temporal bone.
- K6.5.3 Discuss tumors of the temporal bone and mention their pathological picture.
- K6.5.4 Discuss the relevant clinical neurological, vascular, pathological, and radiological investigations.
- K6.5.5 Plan the management options of the temporal bone tumors.

Clinical skills (CS6.5)

- CS6.5.1 Take clinical history and elicit clinical signs.
- CS6.5.2 Interpret vestibular assessment, including electrophysiological testing and clinical examination.
- CS6.5.3 Interpret audiovestibular tests (see also CS6.2.3, CS6.2.4).
- CS6.5.4 Plan for patient management.

Attitude (A6.5)

- A6.5.1 Demonstrate communication skills and empathy.
- A6.5.2 Advise the patient of the treatment options and break bad news.
- A6.5.3 Discuss risks, potential benefits, and potential complications and obtain informed consent.

Surgical skills in skull base (SS6)

- SS6.1 Observe surgeries for acoustic neuroma and temporal bone resection (if available).

7. Miscellaneous topics in otorhinolaryngology

7.1. Magnetic resonance imaging (MRI)

Objective

To understand the basics behind MRI modalities and interpret MRIs related to the practice of ENT that surgeons will encounter during the management of both adult and pediatric patients with diseases of the ears, nose, and throat, and the recent advances in MRI techniques.

Knowledge (K7.1)

- K7.1.1 Understand the basic principles of MRI.
- K7.1.2 Explain the different modalities of MRI.
- K7.1.3 Know about functional MRI (fMRI).
- K7.1.3.1 Know about BOLD fMRI (blood oxygenation level-dependent fMRI).
- K7.1.3.2 Know about perfusion fMRI.

Clinical skills (CS7.1)

- CS7.1.1 Interpret and report basic and advanced MRI studies in various ENT applications.
- CS7.1.2 Analyze fMRI.

7.2. Positron emission tomography (PET)

Objective

To understand the basics of PET scanning and integrated PET/CT scanning and interpret their findings in relation to the practice of head and neck oncology that surgeons will encounter during the management of both adult and pediatric cancer patients.

Knowledge (K7.2)

- K7.2.1 Understand the role of altered tissue metabolism in different pathologies.
- K7.2.2 Understand the principles of PET scanning.
- K7.2.3 Outline the role of PET scanning in:
- K7.2.3.1 Squamous cell carcinoma.
- K7.2.3.2 Occult primary tumors.
- K7.2.3.3 Other malignant tumors.
- K7.2.4 Outline nononcological applications of PET scanning with special emphasis in cochlear implantation procedures.
- K7.2.5 Understand the concept and benefits of using integrated PET/CT.

Clinical skills (CS7.2)

CS7.2.1 Interpret PET scans and integrated PET/CT scans in adoption with good medical practice guidelines.

visualization and pathology of laryngeal lesions.

Clinical skills (CS7.5)

CS7.5.1 Observe (if available) OCT images.

7.3. Image-guided surgery and 3D planning*Objective*

To understand the role of modern technology and computer advances in relation to otorhinolaryngology practice.

7.6. Contact endoscopy*Objective*

To understand the use of contact endoscopy procedures in ENT.

Knowledge (K7.3)

- K7.3.1 Demonstrate understanding of the 3D view in ENT.
- K7.3.2 Outline the uses and major applications of image-guided surgery (IGS) in otorhinolaryngology.
- K7.3.3 Outline the benefits of IGS in otorhinolaryngology practice.
- K7.3.4 Understand the terms, registration, and tracking in IGS.

Knowledge (K7.6)

- K7.6.1 Understand the use of contact endoscopy in neoplastic conditions of the larynx, nasal cavity, nasopharynx, oropharynx, and oral cavity.

Clinical skills (CS7.3)

CS7.3.1 Observe (if available) image-guided surgery.

Clinical skills (CS7.6)

CS7.6.1 Observe (if available) contact endoscopy images.

7.4. Laser principles in otorhinolaryngology*Objective*

To understand the use of laser in various otorhinolaryngological conditions and recent trends in laser applications.

7.7. HIV and otorhinolaryngology*Objective*

To understand AIDS in relation to ENT practice.

Knowledge (K7.4)

- K7.4.1 Understand the definition and principles of laser–tissue interaction.
- K7.4.2 Outline the nature of laser light and types of lasers.
- K7.4.3 Outline laser–tissue interactions.
- K7.4.4 Discuss laser applications in otolaryngology and its complications.

Knowledge (K7.7)

- K7.7.1 Outline the virology, epidemiology, and pathology of HIV infection.
- K7.7.2 Describe otorhinolaryngological manifestations of AIDS.
- K7.7.3 Discuss the management of otorhinolaryngological manifestations of an AIDS patient.

Clinical skills (CS7.4)

CS7.4.1 Observe (if available) various laser applications in ENT.

7.5. Optical coherence tomography (OCT)*Objective*

To understand the use of OCT in imaging of the larynx.

Knowledge (K7.5)

- K7.5.1 Understand the importance of OCT in the diagnosis of and in improving the

Lectures in ENT curriculum

1. Applied basic science:
 - 1.1. Anatomy.
 - 1.1.1. Otological anatomy.
 - 1.1.2. Respiratory tract and rhinological anatomy.
 - 1.1.3. Head and neck anatomy.
 - 1.2. Physiology.
 - 1.2.1. Physiology of the upper aerodigestive tract.
 - 1.2.2. The outer, middle, and inner ear.
 - 1.2.3. The nose and olfactory system.
 - 1.3. Audiology.
 - 1.3.1. Physics of sound.
 - 1.4. Oncology.
 - 1.4.1. Cancer staging and principles of chemotherapy and radiotherapy.

2. Pediatric Otolaryngology:
 - 2.1. Congenital deformities of the ear and temporal bone.
 - 2.2. Disorders of the external ear.
 - 2.3. Acute otitis media in children.
 - 2.4. Chronic otitis media.
 - 2.5. Ear trauma.
 - 2.6. Facial paralysis.
 - 2.7. Deafness in childhood.
 - 2.8. Implantable hearing devices.
 - 2.9. Vertigo in children.
 - 2.10. Congenital nasal abnormalities.
 - 2.11. Nose and sinus infection.
 - 2.12. Noninfectious conditions of the nose.
 - 2.13. Nasal trauma and deformity.
 - 2.14. Epistaxis.
 - 2.15. Airway disorders in childhood.
 - 2.16. Neck masses in infants and children.
 - 2.17. Tumors of the head and neck in children.
 - 2.18. Cervicofacial infections in children.
 - 2.19. Foreign bodies in the ear, nose, and aerodigestive tract.
 - 2.20. Gastroesophageal reflux and aspiration.
3. Head and Neck:
 - 3.1. Salivary gland disease.
 - 3.2. Thyroid disease.
 - 3.3. Head and neck cancer.
 - 3.4. The pharynx and esophagus.
 - 3.5. Adenoidal and tonsillar pathology.
 - 3.6. Pharyngeal suppurations.
 - 3.7. The larynx.
 - 3.8. Airway disorders.
 - 3.9. Voice disorders.
 - 3.10. Cervical lymphadenopathy.
 - 3.11. Sleep apnea.
4. Otology:
 - 4.1. Congenital deformities of the ear and temporal bone.
 - 4.2. Disorders of pinna and the external auditory canal.
 - 4.3. Acute otitis media in adults.
 - 4.4. Chronic otitis media.
 - 4.5. Otosclerosis.
 - 4.6. Balance disorders.
 - 4.7. Deafness in adults.
 - 4.8. Tinnitus.
 - 4.9. Implantable hearing devices.
 - 4.10. Facial paralysis.
 - 4.11. Ear trauma.
 - 4.12. Otalgia.
5. Rhinology:
 - 5.1. Congenital abnormalities.
 - 5.2. Rhinosinusitis.
 - 5.3. Granulomatous conditions of the nose and sinuses.
 - 5.4. Mucoceles.
 - 5.5. Nasal polyposis.
 - 5.6. Complications of rhinosinusitis.
 - 5.7. Complications of endoscopic sinus surgery.
 - 5.8. Diseases of the septum.
 - 5.9. Foreign bodies.
 - 5.10. Epistaxis.
 - 5.11. Nose fracture and fractures of the facial skeleton.
 - 5.12. Cerebrospinal fluid (CSF) rhinorrhea.
 - 5.13. Oroantral fistula.
 - 5.14. Abnormalities of smell.
 - 5.15. Orbital and optic nerve decompression.
 - 5.16. Facial pain and headache.
 - 5.17. Nasal and paranasal sinus tumors.
 - 5.18. Rhinoplasty.
6. Skull base and neuro-otology:
 - 6.1. Anatomy of the skull base, infratemporal fossa, and clinical neuroanatomy.
 - 6.2. Cerebellopontine angle lesions.
 - 6.3. Jugular foramen lesions.
 - 6.4. Petrous apex lesions.
 - 6.5. Tumors of the temporal bone.
7. Miscellaneous topics in otorhinolaryngology:
 - 7.1. Magnetic resonance imaging (MRI).
 - 7.2. Positron emission tomography (PET).
 - 7.3. Image-guided surgery and 3D planning.
 - 7.4. Laser principles in otorhinolaryngology.
 - 7.5. Optical coherence tomography (OCT).
 - 7.6. Contact endoscopy.
 - 7.7. HIV and otorhinolaryngology.

Obligatory courses

- (1) Minor surgical procedures.
- (2) Endoscopic sinus surgery.
- (3) Temporal bone surgery course, etc.

Acknowledgements

Conflicts of interest

None declared.