CURRICULUM / STATUTES & REGULATIONS
FOR
5 YEARS DEGREE PROGRAMME
IN
OTOLARYNGOLOGY
(MS Otolaryngology)

UNIVERSITY OF HEALTH SCIENCES, LAHORE

STATUTES

1. Nomenclature Of The Proposed Course

The name of degree programme shall be MS Otolaryngology. This name is well recognized and established for the last many decades worldwide.

2. Course Title:

MS Otolaryngology

3. Training Centers

Departments of Otolaryngology (accredited by UHS) in affiliated institutes of University of Health Sciences Lahore.

4. Duration of Course

The duration of MS Otolaryngology course shall be five (5) years (first year in Part I, first two years in Part II and next three years in Part III) with structured training in a recognized department under the guidance of an approved supervisor. The course is structured in three parts:

Part I is structured for the 1st calendar year. The candidate shall undertake didactic training in Basic Medical Sciences, Behavioural Sciences and Biostatistics & Research Methodology. At the end of first year the examination shall be held in above mentioned disciplines. The clinical training in fundamental concepts of Surgery shall start from the 1st day of enrollment.

Part II is structured for the 1st and 2nd calendar year. The candidate shall undertake clinical training in fundamental concepts of Surgery. At the end of 2nd year the examination shall be held in fundamental concepts of Surgery. The clinical training in Otolaryngology shall start from 3rd year onwards in the in recognized institutions.

Part III is structured for 3rd, 4th and 5th calendar years in MS Otolaryngology. It has two components; Clinical and Research. The candidate shall undergo clinical training to achieve educational objectives of MS Otolaryngology (knowledge & skills) along with rotation in relevant fields

Over the five years duration of the course, candidate will spend total time equivalent to one calendar year for research during the training. Research can be done as one block in 5th year of training or it can be done in the form of regular periodic rotations over five years as long as total research time is equivalent to one calendar year.

5. Admission Criteria

I. For admission in MS Otolaryngology course, the candidate shall be required to have:

- MBBS degree
- Completed one year House Job
- One year experience in Otolaryngology/General surgery/Allied surgical discipline in the given order of preference
- Registration with PMDC
- Passed Entry Test conducted by the University & aptitude interview by the Institute concerned
- Having up to the mark credentials as per UHS rules (no. of attempts in each professional, any gold medals or distinctions, relevant work experience, Rural/ Army services, research experience in a recognized institution, any research article published in a National or International Journal) may also be considered on case to case basis.

II. Exemptions: A candidate holding FCPS/MRCS/Diplomate/equivalent qualification in General Surgery shall be exempted from Part-I & Part-II Examinations and shall be directly admitted to Part-III Examinations, subject to fulfillment of requirements for the examination.

6. Registration and Enrollment

- Total number of students enrolled for the course must not exceed 2 per supervisor/year.

- The maximum number of trainees that can be attached with a supervisor at a given point of time (inclusive of trainees in all years/phases of MS training), must not exceed 6.
- Beds to trainee ratio at the approved teaching site shall be at least 5 beds per trainee.
- The University will approve supervisors for MS courses.
- Candidates selected for the courses after their enrollment at the relevant institutions shall be registered with UHS as per prescribed Registration Regulation.

7. *Accreditation Related Issues of The Institution*

A). Faculty

Properly qualified teaching staff in accordance with the requirements of Pakistan Medical and Dental Council (PMDC)

B). Adequate Space

Including class-rooms (with audiovisual aids), demonstration rooms, computer lab and clinical pathology lab etc.

C). Library

Departmental library should have latest editions of recommended books, reference books and latest journals (National and International).

- Accreditation of Otolaryngology training program can be suspended on temporary or permanent basis by the University, if the program does not comply with requirements for residents training as laid out in this curriculum.
- Program should be presented to the University along with a plan for implementation of curriculum for training of residents.
- Programs should have documentation of residents training activities and evaluation on monthly basis.
- To ensure a uniform and standardized quality of training and availability of the training facilities, the University reserves the right to make surprise visits of the training program for monitoring purposes and may take appropriate action if deemed necessary.

AIMS AND OBJECTIVES OF THE COURSE

AIM

The aim of five years MS programme in Otolaryngology is to train residents to acquire the competency of a specialist in the field so that they can become good teachers, researchers and clinicians in their specialty after completion of their training.

GENERAL OBJECTIVES

MS Otolaryngology training should enable a student to:

1. Access and apply relevant knowledge to clinical practice:
    - Maintain currency of knowledge
    - Apply scientific knowledge in practice
    - Appropriate to patient need and context
    - Critically evaluate new technology
2. Safely and effectively performs appropriate surgical procedures:
    - Consistently demonstrate sound surgical skills
    - Demonstrate procedural knowledge and technical skill at a level appropriate to the level of training
    - Demonstrate manual dexterity required to carry out procedures
    - Adapt their skills in the context of each patient and procedure
    - Maintain and acquire new skills
    - Approach and carries out procedures with due attention to safety of patient, self and others
    - Critically analyze their own clinical performance for continuous improvement
3. Design and implement effective management plans:
    - Recognize the clinical features, accurately diagnose and manage neurological problems
    - Formulate a well-reasoned provisional diagnosis and management plan based on a thorough history and examination
    - Formulate a differential diagnosis based on investigative findings

- Manage patients in ways that demonstrate sensitivity to their physical, social, cultural and psychological needs
- Recognize disorders of the nervous system and differentiate those amenable to surgical treatment
- Effectively manage the care of patients with ENT trauma including multiple system trauma
- Effectively recognize and manage complications
- Accurately identify the benefits, risks and mechanisms of action of current and evolving treatment modalities
- Indicate alternatives in the process of interpreting investigations and in decision-making
- Manage complexity and uncertainty
- Consider all issues relevant to the patient
- Identify risk
- Assess and implement a risk management plan
- Critically evaluate and integrate new technologies and techniques.

4. Organize diagnostic testing, imaging and consultation as needed:
    - Select medically appropriate investigative tools and monitoring techniques in a cost-effective and useful manner
    - Appraise and interpret appropriate diagnostic imaging and investigations according to patients' needs
    - Critically evaluates the advantages and disadvantages of different investigative modalities
5. Communicate effectively:
    - Communicate appropriate information to patients (and their family) about procedures, potentialities and risks associated with surgery in ways that encourage their participation in informed decision making
    - Communicate with the patient (and their family) the treatment options including benefits and risks of each
    - Communicate with and co-ordinate health management teams to achieve an optimal surgical environment
    - Initiate the resolution of misunderstandings or disputes

- Modify communication to accommodate cultural and linguistic sensitivities of the patient

6. Recognize the value of knowledge and research and its application to clinical practice:
   - Assume responsibility for self-directed learning
   - Critically appraise new trends in Otolaryngology
   - Facilitate the learning of others.
7. Appreciate ethical issues associated with Otolaryngology:
   - Consistently apply ethical principles
   - Identify ethical expectations that impact on medico-legal issues
   - Recognize the current legal aspects of informed consent and confidentiality
   - Be accountable for the management of their patients.
8. Professionalism by:
   - Employing a critically reflective approach to Otolaryngology
   - Adhering with current regulations concerning workplace harassment
   - Regularly carrying out self and peer reviewed audit
   - Acknowledging and have insight into their own limitations
   - Acknowledging and learning from mistakes
9. Work in collaboration with members of an interdisciplinary team where appropriate:
   - Collaborate with other professionals in the selection and use of various types of treatments assessing and weighing the indications and contraindications associated with each type
   - Develop a care plan for a patient in collaboration with members of an interdisciplinary team
   - Employ a consultative approach with colleagues and other professionals
   - Recognize the need to refer patients to other professionals.
10. Management and Leadership
    - Effective use of resources to balance patient care and system resources
    - Identify and differentiate between system resources and patient needs

- Prioritize needs and demands dealing with limited system resources.
- Manage and lead clinical teams
- Recognize the importance of different types of expertise which contribute to the effective functioning of clinical team.
- Maintain clinically relevant and accurate contemporaneous records

11. Health advocacy:
    - Promote health maintenance of patients
    - Advocate for appropriate health resource allocation
    - Promote health maintenance of colleagues and self scholar and teacher

SPECIFIC LEARNING OUTCOMES

On completion of the training programme, Otolaryngology trainees pursuing an academic pathway will be expected to have demonstrated competence in all aspects of the published syllabus. The specific training component would be targeted for establishing clearly defined standards of knowledge and skills required to practice Otolaryngology at secondary and tertiary care level with proficiency in the Basic and applied clinical sciences, Basic Otolaryngologic care, ENT intensive care, Emergency (A&E) medicine and Complementary surgical disciplines.

1. **Cognitive knowledge:** Describe embryology, applied anatomy, physiology, pathology, clinical features, diagnostic procedures and the therapeutics including preventive methods, (medical/surgical) pertaining to Otolaryngology – Head & Neck Surgery.
2. **Clinical Decision Making Ability & Management Expertise:** Diagnose conditions from history taking, clinical evaluation and investigations and develop expertise to manage medically as well as surgically the commonly encountered, disorders and diseases in different areas as follows:

   Otology, Neurology & Skull-base Surgery: External, middle and internal ear diseases, deafness including the common complications associated with middle ear inner facial Nerve palsy, tinnitus, vertigo and other conditions such as acoustic neuroma, malignant tumours, glomus tumor and petrous apex cholesteatoma etc. and to be capable of doing early diagnosis of these conditions and also to acquire adequate knowledge about principles of therapy of these diseases.
3. **Rhinology:** Able to Diagnose and manage Nose and paranasal sinus conditions such as infection, polyps and allergy. Acquire some surgical skills to do septorhinoplasty, septoplasty, functional endoscopic sinus surgery (FESS). Develop capability to do oncologic diagnosis and therapy planning for proper management of such patients in collaboration with radiotherapists and medical oncologists.

4. **Laryngology:** Able to diagnose and manage benign lesions of the larynx including voice-disorders and pharyngeal and nasopharyngeal diseases, viz-adenoids and angiofibroma. Capable to do diagnosis of oncologic conditions such as laryngeal carcinoma and plan its therapy strategies.
5. **Oral cavity/salivary glands:** Learn about Oral cavity and salivary gland diseases, their diagnosis and therapy planning with referral strategies for cancer patients to advanced cancer centers/ Hospital.
6. **Head/Neck conditions/diseases:** Learn about head and neck diseases including Parotid gland and thyroid diseases, neurogenic tumours and neck space infections/and their management.
7. **Broncho-esophageal region:** Learn about broncho-esophageal diseases/disorders such as congenital disorders, diagnosis of Foreign bodies in wind/food pipes with their management policies. Capable to perform panendoscopies for oncologic evaluation in the head-neck region, including oesophageal malignancy.
8. **Plastic reconstruction following major head neck surgery & trauma:** Acquire general principles of reconstructive surgery and its referral needs.
9. **Advanced Surgical methods:** Acquire knowledge about phonosurgery like microlaryngoscopic surgery, palatopharyngoplasty for VPI & Cleft palate, and thyroplasty for voice-disorders.
10. **General principles of newer therapy/Surgery:** Newer knowledge about ENT diseases in general, including technological (Laser) and pharmacologic advances (medicines) and newer method of therapy for certain conditions such as Obstructive sleep apnoea syndrome and asthma.
11. **Traumatology & Facio-maxillary Injury:** Acquire knowledge in the management of Traumatology in general and facio-maxillary injury in particular, including nasal fractures. Be capable of doing screening in the community, of the audiological & speech related disabilities, and also to do early identification of malignancies and create its awareness in the community/ society to eventually get better cooperation from people in health management.
12. **Radiology:** Acquire knowledge about radiology/imaging and to interpret different radiological procedures and imaging in Otolaryngology – Head and

Neck and skull base regions. There should be collaboration with Radiology department for such activities.

13. **Audiology & Rehabilitation:** Perform different audiological and neuro-otological tests for diagnosis of audiologic/vestibular disorders/diseases and become capable to interpret these findings and to incorporate their implication in diagnosis and their treatment including the rehabilitative methods in Audiology and speech pathology including hearing aids and other assistive and implantable devices.
14. **Psychologic and social aspect:** Some elementary knowledge in clinical Psychology and social, work management is to be acquired for management of patients, especially those terminally ill and disable-persons and interacting with their relatives.
15. **Preventive Otolaryngology:** Acquire knowledge about prevention of some conditions especially in children such as middle ear and sinus infection, hereditary deafness and early diagnosis of head-neck malignancy. Hence he/she should know about the preventive Otorhinolaryngology (ENT).
16. **Identification of a special areas within the subject:** To further develop higher skills within the specialty in a specialized are such as Otology, Neurology, Rhinology, head and neck oncology, skull base surgery and Audiological medicine, Resident may identify some area of interest, during the Residency Programme in one of such areas like Otology.
17. **Research Experience:**

    All residents in the categorical program are required to complete an academic outcomes-based research project during their training. This project can consist of original bench top laboratory research, clinical research or a combination of both. The research work shall be compiled in the form of a thesis which is to be submitted for evaluation by each resident before end of the training. The designated Faculty will organize and mentor the residents through the process, as well as journal clubs to teach critical appraisal of the literature.

PRACTICAL TRAINING

1. A Resident doctor, pursuing MS Degree course is expected to perform major and minor surgical procedures first through observation and then under supervision of a supervisor/faculty member till he/she is proficient to perform major and minor surgical maneuvers independently such as: (Few examples only given):
   - Tracheostomy
   - Tonsillectomy
   - Adenoidectomy/grommet insertion,
   - Nasal Polypectomy
   - Incision/drainage of quinsy/other abscesses,
   - S.M.R. & Septoplasty
   - Cortical mastoidectomy
   - Modified radical Mastoidectomy.
2. Be able to manage common emergencies like, fracture nasal bone, stridor requiring a tracheostomy, epistaxis, subperiosteal abscess, and Peritonsillar abscess.
3. He/she should be capable to do minor operations independently (Few examples only given)
   - Myringotomy and myringoplasty
   - Antral washout and nasal biopsy
   - Sub-mandibular salivary gland removal
   - Biopsy from a neck mass, such as a node
   - Direct Laryngoscopy
   - Nasophayrngoscopy
   - Flexible Bronchoscopy and Oesophagoscopy
   - Aural polypectomy
4. He/she should be able to do the following operations under supervision/guidance of senior colleagues/ faculty member (Few examples only given):
   - Fibre-optic rigid endoscopy of oesophagus
   - Intranasal ethmoidectomy
   - External ethmoidectomy
   - External fronto ethmoidectomy

- Maxillectomy (Partial and Total)
- Excision of thyroglossal cyst
- Superficial Parotidectomy
- Radical block dissection of the neck for metastatic nodes.
- Total Laryngectomy for cancer.
- Laryngofissure
- Repair of laryngotracheal trauma.
- Ligation external carotid artery

5. He/she should be able to do under guidance/supervision the following specialized operative procedures (Few examples only given):
   - Facial nerve decompression
   - Pinna-Repair (Post-traumatic)
   - Surgery of choanal atresia,
   - External canal atresia-surgery,
   - Functional endoscopic/sinus surgery,
   - Stapedectomy
   - Tympanoplasty with mastoid surgery
   - Rhinoplasty for cosmetic purposes.
   - Fibre-optic bronchoscopy and oesophagoscopy including foreign body removal
   - Cryo/Laser surgery in ENT
   - Micorlaryngoscopic voice-surgery for vocal nodules, polyps/ cyst etc
   - Phonosurgery for cord palsy including type I thyroplasty.
   - Skull base/parapharyngeal space surgery
   - Thyroid surgery,
   - Laryngo-tracheal stenosis – surgical correction,
   - Facio-maxillary injury etc.

REGULATIONS

1. Scheme of the Course

A summary of five years course in MS Otolaryngology is presented as under:

Course Structure	Components	Examination
Part I	**Basic Medical Sciences** Anatomy, Physiology, Biochemistry, Pathology, Pharmacology, Behavioural Sciences and Biostatistics & Research Methodology.	Part-I examination at the end of 1st year of MS Otolaryngology programme. • **Written:** Paper I: MCQs Paper II: SEQs
Part-II	• **Fundamental Concepts in Surgery** : Training in basic clinical techniques of Surgery with compulsory rotations for two years starting from first day of enrollment	Part-II examination at the end of 2nd year of MS Otolaryngology programme. • **Written:** Papers 1 & 2 : Basic Principles of Surgery • **Oral & Practical/ Clinical Examination** • OSCE • Clinical Examination (Long case, Short cases • **Log Book**
Part-III	**<u>Clinical component of Part III</u>** • **Professional Education in Otolaryngology** : Training in Otolaryngology during 3rd, 4th & 5th year of MS Otolaryngology programme. Three years of training with compulsory & optional rotations in relevant fields **<u>Research component of Part III</u>** Research work/Thesis writing project must be completed and thesis be submitted before the end of training.	Part-III examination in specialized components of Otolaryngology at the end of 5th year of MS Otolaryngology programme. • **Written:** Papers 1 & 2: Problem-based questions in the subject • **Oral & Practical/ Clinical Examination** • OSCE/ • Clinical Examination (Long case, Short cases) • **Log Book** Part-III thesis examination with defense at the end of fifth (5th) year of MS Otolaryngology programme.

2. Examinations

Part-I Examination

1. All candidates admitted in MS Otolaryngology course shall appear in Part-I examination at the end of 1st calendar year.
2. The examination shall be held on biannual basis.
3. The candidate who fails to pass the examination in 3 consecutive attempts availed or un-availed, shall be dropped from the course.
4. The examination shall have two components:
   - Paper-I MCQs (single best) 100 Marks
   - Paper-II SEQs 100 Marks
5. Subjects to be examined shall be Basic Sciences relevant to Otolaryngology (Anatomy, Physiology, Biochemistry, Pathology, Pharmacology), Behavioural Sciences and Biostatistics & Research Methodology.
6. To be eligible to appear in Part-I examination the candidate must submit;
   i. duly filled, prescribed Admission Form to the Controller of Examinations duly recommended by the Principal/Head of the Institution in which he/she is enrolled;
   ii. a certificate by the Principal/Head of the Institution, that the candidate has attended at least 75% of the lectures, seminars, practical/clinical demonstrations;
   iii. Examination fee as prescribed by the University
7. To be declared successful in Part-I examination the candidate must secure 60% marks in each paper.

Part-II Examination

1. All candidates admitted in MS Otolaryngology course shall appear in Part-II examination at the end of second calendar year.
2. The examination shall be held on biannual basis.
3. The candidate who fails to pass the examination within 3 years of passing the Part-I examination shall be dropped from the course.
4. The examination shall have the following components:
   a. Written 200 Marks
   b. OSCE 50 Marks
   c. Clinical examination 100 Marks
   d. Log Book Evaluation 80 Marks (40 marks per year)
5. There shall be two written papers of 100 marks each:

   Papers 1 & 2: Principles of General Surgery
6. The types of questions shall be of Short/Modified essay type and MCQs (single best).
7. Oral & practical/clinical examination shall be held in clinical techniques in General Surgery.
8. To be declared successful in Part-II examination the candidate must secure 60% marks in each component and 50% in each sub-component.
9. Only those candidates who pass in theory papers, will be eligible to appear in the Oral & Practical/clinical Examination.
10. The candidates, who have passed written examination but failed in oral & practical/ clinical examination, will re-appear only in oral & practical/clinical examination.
11. The maximum number of attempts to re-appear in oral & practical /clinical Examination alone shall be three, after which the candidate shall have to appear in both written and oral & practical/clinical examinations as a whole.
12. To be eligible to appear in Part-II examination the candidate must submit;
    i. duly filled, prescribed Admission Form to the Controller of Examinations duly recommended by the Principal/Head of the Institution in which he/she is enrolled;

ii. a certificate by the Principal/Head of the Institution, that the candidate has attended at least 75% of the lectures, seminars, practical/clinical demonstrations;

iii. a certificate of having passed the Part-I examination;

iv. Examination fee as prescribed by the University.

Part-III Examination

1. All candidates admitted in MS Otolaryngology course shall appear in Part-III (clinical) examination at the end of structured training programme (end of 5th calendar year), and having passed the part I & II examinations. However, a candidate holding FCPS / MRCS / Diplomate / equivalent qualification in General Surgery shall be exempted from Part-I & Part-II Examinations and shall be directly admitted to Part-III Examinations, subject to fulfillment of requirements for the examination.
2. The examination shall be held on biannual basis.
3. To be eligible to appear in Part-III examination the candidate must submit;
   i. duly filled, prescribed Admission Form to the Controller of Examinations duly recommended by the Principal/Head of the Institution in which he/she is enrolled;
   ii. a certificate by the Principal/Head of the Institution, that the candidate has attended at least 75% of the lectures, seminars, practical/clinical demonstrations;
   iii. Original Log Book complete in all respect and duly signed by the Supervisor (for Oral & practical/clinical Examination);
   iv. certificates of having passed the Part-I & part-II examinations;
   v. Examination fee as prescribed by the University.
4. The Part-III clinical examination shall have the following components:

▪ Written	300 marks
▪ Oral & practical/clinical examination	300 marks
▪ Log Book Evaluation	120 marks (40 marks per year)

5. There shall be two written papers of 150 marks each.
6. Both papers shall have problem-based Short/Modified essay questions and MCQs.
7. Oral & practical/clinical examination shall have 300 marks for:

i.	1 Long Case	100
ii.	4 Short Cases	100(25 marks each)
iii.	OSCE	100

8. To be declared successful in Part-III examination the candidate must secure 60% marks in each component and 50% in each sub-component.
9. Only those candidates who pass in theory papers, will be eligible to appear in the Oral & Practical/ Clinical Examination.
10. The candidates, who have passed written examination but failed in Oral & Practical/ Clinical Examination, will re-appear only in Oral & Practical / Clinical examination.
11. The maximum number of attempts to re-appear in oral & practical /clinical Examination alone shall be three, after which the candidate shall have to appear in both written and oral & practical/clinical examinations as a whole.
12. The candidate with 80% or above marks shall be deemed to have passed with distinction.
13. *Log Book/Assignments:* Through out the length of the course, the performance of the candidate shall be recorded on the Log Book.
14. The Supervisor shall certify every year that the Log Book is being maintained and signed regularly.
15. The Log Book will be developed & approved by the Advanced Studies & Research Board.
16. The evaluation will be maintained by the Supervisor (in consultation with the Co- Supervisor, if appointed).
17. The performance of the candidate shall be evaluated on annual basis, e.g., 40 marks for each year in five years MS Otolaryngology course. The total marks for Log Book shall be 200.The log book shall reflect the performance of the candidate on following parameters:
    - Year wise record of the competence of skills.
    - Year wise record of the assignments.
    - Year wise record of the evaluation regarding attitude & behaviour
    - Year wise record of journal club / lectures / presentations / clinico-pathologic conferences attended & / or made by the candidate.

3. Submission / Evaluation of Synopsis

1. The candidates shall prepare their synopsis as per guidelines provided by the Advanced Studies & Research Board, available on UHS website.
2. The research topic in clinical subject should have 30% component related to basic sciences and 70% component related to applied clinical sciences. The research topic must consist of a reasonable sample size and sufficient numbers of variables to give training to the candidate to conduct research, to collect & analyze the data.
3. Synopsis of research project shall be submitted by the end of the 3rd year of MS program. The synopsis after review by an Institutional Review Committee, shall be submitted to the University for consideration by the Advanced Studies & Research Board, through the Principal / Dean /Head of the institution.

4. Submission of Thesis

1. Thesis shall be submitted by the candidate duly recommended by the Supervisor.
2. The minimum duration between approval of synopsis and submission of thesis shall be one year, but the thesis can not be submitted later than 8 years of enrolment.
3. The research thesis must be compiled and bound in accordance with the Thesis Format Guidelines approved by the University and available on website.
4. The research thesis will be submitted along with the fee prescribed by the University.

5. Thesis Examination

1. All candidates admitted in MS course shall appear in Part-III thesis examination at the end of 5th year of their training course.
2. Only those candidates shall be eligible for thesis evaluation who have passed Part I, II & III (clinical) Examinations.
3. The examination shall include thesis evaluation with defense.

4. The Vice Chancellor shall appoint three external examiners for thesis evaluation, preferably from other universities and from abroad, out of the panel of examiners approved by the Advanced Studies & Research Board. The examiners shall be appointed from respective specialty. Specialists from General Surgery and Allied surgical Disciplines may also be appointed/co-opted, where deemed necessary.
5. The thesis shall be sent to the external examiners for evaluation, well in time before the date of defense examination and should be approved by all the examiners.
6. After the approval of thesis by the evaluators, the thesis defense examination shall be held within the University on such date as may be notified by the Controller of Examinations. The Controller of Examinations shall make appropriate arrangements for the conduct of thesis defense examination in consultation with the supervisor, who will co-ordinate the defense examination.
7. The thesis defense examination shall be conducted by two External Examiners who shall submit a report on the suitability of the candidate for the award of degree. The supervisor shall act as coordinator.

6. Award of MS Otolaryngology Degree

After successful completion of the structured courses of MS Otolaryngology and qualifying Part-I, Part-II and Part-III examinations, the degree with title MS Otolaryngology shall be awarded.

CONTENT OUTLINE

Part I MS Otolaryngology

Basic Sciences:
Student is expected to acquire comprehensive knowledge of Anatomy, Physiology, Pathology (Microbiology), Biochemistry, Pharmacology relevant to surgical practice appropriate for Otolaryngology

1. Anatomy

- *Clinical and functional anatomy with pathological and operative relevance*
- *Surgical approaches to the ear, nose, larynx and head & neck structures*
- *Histology and embryology of ear, nose, larynx and head & neck structures*

- Cell Biology: Cytoplasm – Cytoplasmic matrix, cell membrane, cell organelles, cytoskeleton, cell inclusions, cilia and flagella.
- Nucleus – nuclear envelope, nuclear matrix, DNA and other components of chromatin, protein synthesis, nucleolus, nuclear changes indicating cell death.
- Cell cycle, mitosis, meiosis, cell renewal.
- Cellular differentiation and proliferation.
- Tissues of Body: Light and electron microscopic details and structural basis of function, regeneration and degeneration. Confocal microscopy.
- The systems/organs of body – Cellular organization, light and electron microscopic features, structure function correlations, and cellular organization.

Embryology

- General Features of Human Development
- Features of mitotic and meiotic modes of cell division. Genetic consequences of meiotic division.
- Abnormal miototic and meiotic divisions of clinical importance.
- Gametogenesis: origin of germ cells.
- Oogenesis: prenatal and postnatal development of ova.
- Spermatogenesis: proliferation and maturation of male germ cells. Abnormal gametes, their clinical significance.
- Ovulation, fertilization and the consequences of fertilization.

Early Embryonic Development:
- Cleavage, morula and blastocyst formation and implantation.
- Formation of the three primary germ layers.
- List of the derivatives of the respective germ layers.

Period of the Growing Fetus:
- Various stages and salient features of the fetus development

Extraembryonic Membranes:
- Development, functions and anomalies of yolk sac, amnion, chorion, allantois, umbilical cord and placenta.

Development of the External Body Form:

- Shaping of the head and neck. Common developmental anomalies associated.

The Branchial Apparatus:

- Development and fate of the bronchial grooves, arches and pouches. Their derivatives and anomalies.

Teratogenesis:

- Factors known to be involved in the development of congenital anomalies especially related to the otolaryngological system.
- Concept of critical periods.

Histology:

Structural and Functional Organization of the Tissues of Body

- Classification of tissues and identification of various tissues particularly those related to the musculoskeletal system, in routine histological preparations under the light microscope.

The Epithelial Tissue

- General structure, functions and classification of epithelia
- Their location in the body
- General characters of serous and mucous membranes
- General structural features of exocrine and endocrine glands

The Connective Tissue

- Cartilage
- Structure of bone marrow. Cell lines seen in haemopoiesis.
- Factors required for bone growth.

The Muscular Tissue

- Structural and functional differences between the smooth skeletal and cardiac types of muscle.
- Fine structure of skeletal and cardiac muscle fibers, and its relationship to the mechanism of contraction.
- Specialized conducting tissue of the heart.

The Neural Tissue

- The neuron, morphology of the perikaryon and its processes.
- Coverings of the axons in the peripheral nerves and the central nervous system.
- Types of neuroglia and their functions.
- Process of myelination in the peripheral nerves and the central nervous system.
- Axon terminals and synapses. Nerve fiber degeneration and regeneration.

Surface and Imaging Anatomy

Upper respiratory system including

- Ear (sense of hearing enters via cranial nerve)
- Nose.
- Paranasal Sinuses.
- Oral Cavity
- Pharynx.

- Larynx
- Salivary Glands
- Head and neck
- Blood supply, Nerve supply and the Lymphatic drainage of the ear, nose, throat and trachea, larynx, and accessory sinuses
- Anatomy of the Central Nervous System with particular reference to ear, nose and throat
- Gross Anatomy of neck and chest in relation to trachea and oesophagus
- Comparative study of Anatomy of the ear, nose and throat in relation to lower animals

2. Physiology

- Physiology of ear, nose, throat and oesophagus
- Sound Transmission
- Functions of the nose
- Physiology of olfaction
- Physiology of hearing
- Middle ear impedance transformer mechanism
- Vestibular function in maintaining equilibrium
- Auditory pathway
- Physiology of swallowing
- Speech generation
- Endocrine glandular function, particularly thyroid, parathyroid and pituitary glands
- Shock and circulatory support
- Exocrine glands, particularly salivary glands
- Special senses, particularly hearing, balance and olfaction

3. Pharmacology

- The Evolution of Medical Drugs
- British Pharmacopia
- Introduction to Pharmacology
- Receptors
- Mechanisms of Drug Action
- Pharmacokinetics
- Pharmacokinetic Process
    - Absorption
    - Distribution
    - Metabolism
    - Desired Plasma Concentration
    - Volume of Distribution
    - Elimination
    - Elimination rate constant and half life
    - Creatinine Clearance
- Drug Effect
    - Beneficial Responses
    - Harmful Responses

- Allergic Responses
- Drug Dependence, Addiction, Abuse and Tolerance
- Drug Interactions
- Dialysis
- Drug use in pregnancy and in children
- Ototoxicity and medication

4. Pathology

Pathological alterations at cellular and structural level in infection, inflammation, ischaemia, neoplasia and trauma affecting the ear, nose and upper respiratory tract

Cell Injury and adaptation

- Reversible and Irreversible Injury
- Fatty change, Pathologic calcification
- Necrosis and Gangrene
- Cellular adaptation
- Atrophy, Hypertrophy,
- Hyperplasia, Metaplasia, Aplasia

Inflammation

- Acute inflammation
- Cellular components and chemical mediators of acute inflammation
- Exudates and transudate
- Sequelae of acute inflammation
- Chronic inflammation
- Etiological factors and pathogenesis
- Distinction between acute and chronic (duration) inflammation
- Histologic hallmarks
- Types and causes of chronic inflammation, non-granulomatous & granulomatous,

Haemodynamic disorders

- Etiology, pathogenesis, classification and morphological and clinical manifestations of Edema, Haemorrhage, Thrombosis, Embolism, Infarction & Hyperaemia
- Shock; classification etiology, and pathogenesis, manifestations.
- Compensatory mechanisms involved in shock
- Pathogenesis and possible consequences of thrombosis
- Difference between arterial and venous emboli

Neoplasia

- Dysplasia and Neoplasia
- Benign and malignant neoplasms
- Etiological factors for neoplasia
- Different modes of metastasis
- Tumor staging system and tumor grade

Immunity and Hypersensitivity

- Immunity
- Immune response
- Diagnostic procedures in a clinical Immunology laboratory
- Protective immunity to microbial diseases

- Tumour immunology
- Immunological tolerance, autoimmunity and autoimmune diseases.
- Transplantation immunology
- Hypersensitivity
- Immunodeficiency disorders
- Immunoprophylaxis & Immunotherapy

Related Microbiology

- Role of microbes in various otolaryngological disorders
- Infection source
- Nosocomial infections
- Bacterial growth and death
- Pathogenic bacteria
- Vegetative organisms
- Spores
- Important viruses
- Important parasites
- Surgically important microorganisms
- Sources of infection
- Asepsis and antisepsis
- Sterilization and disinfection
- Infection prevention
- Immunization
- Personnel protection from communicable diseases
- Use of investigation and procedures in laboratory
- Basics in allergy and immunology

Special Pathology

- Foreign body in Ear, Nose & Throat
- Otitis media
- Otitis externa
- Mastoiditis
- Rupture of tympanic membrane
- Meniere's disease
- Nasal allergy
- Nasal Polyp
- Epistaxis
- Sinusitis
- Hearing Loss
- Tonsillitis and peritonsillar abscess
- Pharyngitis
- Ludwig's Angina
- Hoarseness of voice
- Laryngotracheitis
- Laryngeal obstruction
- Diphtheria
- Indication of tracheostomy
- Carcinoma of Larynx
- Wax in ear, Haematoma auris, Furunculosis

- Indications for and interpretation of results of common biochemical and haematological tests
- Macroscopic and microscopic appearances of common or important diseases found in otolaryngology

5. Biostatistics & Research Methodology

- Introduction to Bio-Statistics
- Introduction to Bio- Medical Research
- Why research is important?
- What research to do?
  - Selecting a Field for Research
  - Drivers for Health Research
  - Participation in National and International Research
  - Participation in Pharmaceutical Company Research
  - Where do research ideas come from
  - Criteria for a good research topic
- Ethics in Health Research
- Writing a Scientific Paper
- Making a Scientific Presentation
- Searching the Literature

6. Behavioural Sciences

- Bio-psycho-social (BPS) model of health care
- Use of non-medicinal interventions in clinical practice
- Communication skills
- Counseling
  - Informational skills
  - Crisis intervention/disaster management
  - Conflict resolution
  - Breaking bad news
- Medical ethics, professionalism and doctor-patient relationship
  - Hippocratic oath
  - Four pillars of medical ethics (autonomy, beneficence, non-malficence and justice)
  - Informed consent and confidentiality
  - Ethical dilemmas in a doctor's life
- Delivery of culturally relevant care and cultural sensitivity
  - Psychological aspects of health and disease
  - Psychological aspect of health
  - Psychological aspect of disease
  - Stress and its management
  - Psychological aspect of pain
  - Psychological aspect of aging

Part II
MS Otolaryngology

Fundamental Principles of Surgery

- History of surgery
- Preparing a patient for surgery
- Principles of operative surgery: asepsis, sterilization and antiseptics
- Surgical infections and antibiotics
- Basic principles of anaesthesia and pain management
- Acute life support and critical care:
    - Pathophysiology and management of shock
    - Fluids and electrolyte balance/ acid base metabolism
    - Haemostasis, blood transfusion
- Trauma: assessment of polytrauma, triage, basic and advanced trauma
- Accident and emergency surgery
- Wound healing and wound management
- Nutrition and metabolism
- Principles of burn management
- Principles of surgical oncology
- Principles of laparoscopy and endoscopy
- Organ transplantation
- Informed consent and medicolegal issues
- Molecular biology and genetics
- Operative procedures for common surgical manifestations e.g. cysts, sinuses, fistula, abscess, nodules, basic plastic and reconstructive surgery

Common Surgical Skills

Incision of skin and subcutaneous tissue:
- Langer's lines
- Healing mechanism
- Choice of instrument
- Safe practice

Closure of skin and subcutaneous tissue:
- Options for closure
- Suture and needle choice
- Safe practice

Knot tying:
- Choice of material
- Single handed
- Double handed
- Superficial
- Deep

Tissue retraction:
- Choice of instruments
- Placement of wound retractors
- Tissue forceps

Use of drains:
- Indications
- Types
- Insertion
- Fixation
- Management/removal

Incision of skin and subcutaneous tissue:
- Ability to use scalpel, diathermy and scissors

Closure of skin and subcutaneous tissue:
- Accurate and tension free apposition of wound edges

Haemostasis:
- Control of bleeding vessel (superficial)
- Diathermy
- Suture ligation
- Tie ligation
- Clip application
- Plan investigations
- Clinical decision making
- Case work up and evaluation; risk management

Pre-operative assessment and management:
- Cardiorespiratory physiology
- Diabetes mellitus
- Renal failure
- Pathophysiology of blood loss
- Pathophysiology of sepsis
- Risk factors for surgery
- Principles of day surgery
- Management of comorbidity

Intraoperative care:
- Safety in theatre
- Sharps safety
- Diathermy, laser use
- Infection risks
- Radiation use and risks
- Tourniquets
- Principles of local, regional and general anaesthesia

Post-operative care:
- Monitoring of postoperative patient
- Postoperative analgesia
- Fluid and electrolyte management
- Detection of impending organ failure
- Initial management of organ failure
- Complications specific to particular operation
- Critical care

Blood products:
- Components of blood
- Alternatives to use of blood products
- Management of the complications of blood product transfusion including children

Antibiotics:
- Common pathogens in surgical patients
- Antibiotic sensitivities
- Antibiotic side-effects
- Principles of prophylaxis and treatment

Safely assess the multiply injured patient:
- History and examination
- Investigation
- Resuscitation and early management
- Referral to appropriate surgical subspecialties

Technical Skills
- Central venous line insertion
- Chest drain insertion
- Diagnostic peritoneal lavage
- Bleeding diathesis & corrective measures, e.g. warming, packing
- Clotting mechanism; Effect of surgery and trauma on coagulation
- Tests for thrombophilia and other disorders of coagulation
- Methods of investigation for suspected thromboembolic disease
- Anticoagulation, heparin and warfarin
- Role of V/Q scanning, CT angiography and thrombolysis
- Place of pulmonary embolectomy
- Awareness of symptoms and signs associated with pulmonary embolism and DVT
- Role of duplex scanning, venography and d-dimer measurement
- Initiate and monitor treatment

Diagnosis and Management of Common Paediatric Surgical Conditions:
- Child with abdominal pain
- Vomiting child
- Trauma
- Groin conditions
  - Hernia
  - Hydrocoele
  - Penile inflammatory conditions
  - Undescended testis
  - Acute scrotum
- Abdominal wall pathologies
- Urological conditions
- Constipation
- Head / neck swellings
- Intussusception
- Abscess
- In growing toenail

In terms of general experience it is expected that trainees would have gained exposure to the following procedures and to be able to perform those marked (*) under direct supervision.

- Elective Procedures
  - Inguinal hernia

- (not neo-natal)
  - Orchidopexy
  - Circumcision*
  - Lymph node biopsy*
  - Abdominal wall herniae
  - Insertion of CV lines
  - Management of in growing toenails*
  - EUA rectum*
  - Manual evacuation*
  - Open rectal biopsy
  - Excision of skin lesions*
- Emergency Procedures
  - Appendicectomy
  - Incision and drainage of abscess*
  - Pyloromyotomy
  - Operation for testicular torsion*
  - Insertion of pleural drain*
  - Insertion of suprapubic catheter*
  - Reduction of intussusception

Part III- MS Otolaryngology
Clinical Component

Students should be familiar with typical clinical presentation, key physical findings, radiological findings and differential diagnosis, initial treatment, and referral indications for common otolaryngological diseases

1. Otology

- Examination of Ear.
- Aetiopathology of Inflammatory Conditions of External & Middle Ear
- Pathology of Cochlea.
- Pathology of Vestibular System.
- Diseases of External Ear.
- Ear Trauma.
- Plastic Surgery of the Ear.
- Acute Suppurative Otitis Media.
- Management of Acute Suppurative Otitis Media
- Chronic Suppurative Otitis Media.
- Management of Chronic Suppurative Otitis Media.
- Reconstruction of the Ear.
- Complication of Suppurative Otitis Media.
- Otalgia.
- Otosclerosis.
- Diseases of Temporal Bone.
- Sensorineural Hearing Loss.
- Sudden & Fluctuant Sensorineural Hearing Loss.
- Vertigo.
- Meniere's disease.
- Ototoxicity.
- Vestibular Schwannoma.
- Epithelial Tumours of External Auditory Meatus.
- Glomus & Other Tumours of the Ear.
- Disorders of Facial Nerve.
- Surgery of the Vestibular System.
- Cochlear Implants.
- Presbycusis.
- Implantable Hearing Devices.

2. Rhinology

- Examination of Nose.
- Conditions of the External Nose.
- Congenital Anomalies of the Nose.
- Evaluation of the Nasal Airway & Nasal Challenge.
- Abnormalities of Smell.
- Mechanism & Treatment of Allergic Rhinitis.
- Food Allergy & Intolerance.
- Infective Rhinitis & Sinusitis.

- Intrinsic Rhinitis.
- Nasal Polyps.
- The Nasal Septum.
- Surgical Management of Sinusitis.
- Complications of Sinusitis.
- Cerebrospinal Fluid Rhinorrhoea.
- The Upper Airways & their relation to the respiratory System.
- Fracture of Facial Skeleton.
- Rhinoplasty.
- Epistaxis.
- Snoring & Sleep Apnoea.
- Non-Healing Granulomas.
- Facial pain & Headache.
- Aspects of Dental Surgery for Otorhinolaryngology.
- Trans-Sphenoidal Hypophysectomy.
- The Orbit.
- Neoplasms of Nose & Paranasal sinuses.

3. Laryngology & Head, Neck

- Examination & endoscopy of the upper aerodigestive tract.
- Oral cavity.
- Acute & chronic infections of pharynx & tonsils.
- Acute & chronic laryngitis.
- Sleep apnoea.
- Adenoidal and tonsillar pathology
- Disorders of voice.
- Management of obstructed airway & tracheostomy.
- Trauma & stenosis of larynx.
- Neurological affections of larynx & pharynx.
- Pharyngeal pouches.
- Tumours of the larynx.
- Angiofibroma.
- Nasopharynx (the postnasal space).
- Tumours of oropharynx & lymphomas of the head & neck
- Benign diseases of neck.
- Malignant neck diseases;
- The thyroid & parathyroid gland.
- Non-neoplastic salivary gland diseases.
- Benign salivary gland tumours.
- Malignant salivary gland tumours.
- Tumours of infratemporal fossa & parapharyngeal space.
- Cysts, granulomas & tumours of the jaw, nose & sinuses.
- The esophagus in otolaryngology.
- Facial plastic surgery.
- Plastic & reconstructive surgery of the head & neck.
- Terminal Care of Patients with head & neck Cancer.

4. Audiology

- Acoustics
- Computers in Audiology.
- Epidemiology.
- Otological Symptoms & Emotional Disturbances.
- Clinical tests of Hearing & Balance.
- Pharmacological Treatment of Hearing & Balance Disorders.
- Legal & Ethical Matters.
- Prevention of Hearing & Balance Disorders.
- Hearing Overview.
- Causes of Hearing Disorders.
- Noise & the Ear.
- Diagnostic Audiometry.
- Audiological Rehabilitation.
- Hearing Aids.
- Cochlear Implants.
- Tactile Aids.
- Central Auditory Dysfunction
- Tinnitus
- Overview of Balance
- Causes of Balance Disorders.
- Diagnostic Testing of Vestibular System
- Rehabilitation of Balance Disorders.

5. Paediatric Otolaryngology

- Improving Paediatric Otolaryngological Consultation.
- Genetic Factors & Deafness.
- The Causes of Deafness.
- Testing Hearing in Children.
- Screening & Surveillance for Hearing Impairment in Preschool Children.
- Otitis Media with Effusion.
- Acute Suppurative Otitis Media in Children.
- Chronic Suppurative Otitis Media in Children.
- Surgery of Congenital Abnormalities of the External & Middle Ear.
- Management of Hearing Impaired Child.
- Cochlear Implantation in Children.
- Vestibular Disorders in Children.
- Speech & Language.
- Foreign Bodies in the Ear & Nose.
- Congenital Anomalies of the Nose.
- Craniofacial Anomalies.
- Nasal Obstruction & Rhinorrhoea in Infants & Children.
- Tonsils & Adenoids.
- Dental development, Orthodontics, Cleft lip& Cleft palate.
- Sleep Apnoea.
- Stertor & Stridor.
- Congenital Disorders of Larynx, Trachea & Bronchi.
- Stenosis of Larynx.
- Acute Laryngeal Infections.
- Foreign Bodies in Larynx & Trachea.

- Tracheostomy & Decannulation.
- Home care of Tracheostomised Child.
- Neonatal Pulmonary Disorders.
- Diseases of the Esophagus in Children.
- Branchial cleft Anomalies, Thyroglossal cysts & Fistulae.
- Tumours of the Head & Neck in Children.
- Salivary Glands Disorders in Children.
- The Drooling Child.
- Recurrent Respiratory Papillomatosis.
- Paediatric Anesthesia.

1. Emergencies in Otolaryngology-Head and Neck Surgery

- Airway Obstruction.
- Inspired or Ingested Foreign Bodies.
- Sore Throat or Difficulty Swallowing.
- Epistaxis.
- Ear Complaints.
- Head and Neck Infections.
- Laryngeal and Tracheal Trauma.
- Facial Trauma

2. Rehabilitation

- Speech rehabilitation following laryngectomy
- Rehabilitation following maxillectomy – obturator
- Management of hearing loss
- Hearing aids
- Bone anchored hearing aids
- Cochlear implants
- Radiotherapy, Brachytherapy, Chemotherapy, Palliative Care

Recent Advances:

- Advances in laser in ENT applications
- Ultrasonic scalpel
- Gamma Knife
- Computer assisted surgeries
- Intra -Arterial Local Chemotherapy
- Powered instruments

Common Otolaryngological Skills and Procedures

- On completion of the initial training in Part I, the trainees will be competent in all aspects of the basic, operative and non operative care of surgical patients
- During Part II training, they will understand the importance of Otolaryngological care and management with particular reference to common Otolaryngological presentations recognizing and preventing secondary. They will be capable of resuscitating, assessing and initiating the surgical management of patients deteriorating as a result of local and systemic complications. They will demonstrate sound judgment when seeking more senior support, prioritizing medical interventions and escalating the level of medical care.

- Administration of antibiotics in the surgical patient
- Use of blood and its products
- The role/complications of diathermy
- Pain relief in surgery
- Thrombo-embolic
- Prevention and management
- Wound care and nosocomial infection
- Suture techniques and materials
- Initial assessment and management of airway problems
- Initial management of foreign bodies in ENT
- Initial epistaxis and its management
- Initial management of facial fractures

Radiological Interpretations:

- Plain films of the head, neck, sinuses and chest.
- CT scans of the sinuses, petrous bone, neck, chest and brain
- MRI scans of the sinuses, brain, neck, chest, head
- Contrast radiology of swallowing, sialography
- Ultrasound of the neck

Audiology and vestibular testing

- Interpretation of report from an Audiologist
- Simple tests for hearing including a pure tone audiogram, loudness discomfort levels and a tympanogram
- Brain stem evoked response audiometry
- Otoacoustic emissions
- Cortical evoked audiometry
- Electronystagmograph
- Equitest
- Rotating chair test
- Familiarity with different types of hearing aids
- Technique of mould impression
- Clinical neurological examination
- Ophthalmoscopy
- Lumbar puncture
- Electromyograph
- Electroneuronograph
- Electroencephalograph

Otology

- Examination of the ear – Auriscope
- Examination under the microscope – de wax
- External meatus and mastoid cavity
- Suction clearance for otitis externa and insertion of wick
- Removal of simple foreign bodies
- Myringotomy and Grommet insertion
- Incision for mastoid surgery
- Clinical examination of hearing
- Clinical examination of vestibular function

Rhinology

- Examination of the nose and sinuses – anterior
- Rhinoscopy

- Examination of smell
- Rigid endoscopy
- Flexible nasendoscopy
- Examination of the post nasal space
- Suction under endoscopic control of surgical cavity
- Insertion and removal of nasal pack and or balloon for epistaxis
- Simple polypectomy
- Biopsy of the nose and nasopharynx
- Antral washout in the management of acute sinusitis
- Removal of simple foreign bodies
- Drainage of septal haematoma
- Reduction of fractured nose
- Submucous resection
- Reduction of turbinates

Laryngology

- Examination of the larynx – indirect
- Laryngoscopy
- Flexible laryngoscopy
- Direct laryngoscopy
- Biopsy of the larynx, pharynx and oral cavity
- (including tongue)
- Adenoidectomy and tonsillectomy
- Removal of simple foreign bodies from the oropharynx and hyper pharynx
- Incision/drainage of Quinsy

Neck

- Examination of the neck
- Emergency and elective tracheostomy
- Fine needle aspiration biopsy of a neck lump

Part-III Thesis Component
(Fifth year of MS Otolaryngology Programme)

RESEARCH / THESIS WRITING

Total of one year will be allocated for work on a research project with thesis writing. Project must be completed and thesis be submitted before the end of training. Research can be done as one block in 5th year of training or it can be stretched over five years of training in the form of regular periodic rotations during the course as long as total research time is equivalent to one calendar year.

Research Experience

The active research component program must ensure meaningful, supervised research experience with appropriate protected time for each resident while maintaining the essential clinical experience. Recent productivity by the program faculty and by the residents will be required, including publications in peer-reviewed journals. Residents must learn the design and interpretation of research studies, responsible use of informed consent, and research methodology and interpretation of data. The program must provide instruction in the critical assessment of new therapies and of the surgical literature.

Residents should be advised and supervised by qualified staff members in the conduct of research.

Clinical Research

Each resident will participate in at least one clinical research study to become familiar with:

1. Research design
2. Research involving human subjects including informed consent and operations of the Institutional Review Board and ethics of human experimentation
3. Data collection and data analysis
4. Research ethics and honesty
5. Peer review process

This usually is done during the consultation and outpatient clinic rotations.

Case Studies or Literature Reviews

Each resident will write, and submit for publication in a peer-reviewed journal, a case study or literature review on a topic of his/her choice.

Laboratory Research

Bench Research

Participation in laboratory research is at the option of the resident and may be arranged through any faculty member of the Division. When appropriate, the research may be done at other institutions.

Research involving animals

Each resident participating in research involving animals is required to:

1. Become familiar with the pertinent Rules and Regulations of the University of Health Sciences Lahore i.e. those relating to "Health and Medical Surveillance Program for Laboratory Animal Care Personnel" and "Care and Use of Vertebrate Animals as Subjects in Research and Teaching"
2. Read the "Guide for the Care and Use of Laboratory Animals"
3. View the videotape of the symposium on Humane Animal Care

Research involving Radioactivity

Each resident participating in research involving radioactive materials is required to

1. Attend a Radiation Review session
2. Work with an Authorized User and receive appropriate instruction from him/her.

METHODS OF INSTRUCTION/COURSE CONDUCTION

As a policy, active participation of students at all levels will be encouraged.
Following teaching modalities will be employed:

1. Lectures
2. Seminar Presentation and Journal Club Presentations
3. Group Discussions
4. Grand Rounds
5. Clinico-pathological Conferences
6. SEQ as assignments on the content areas
7. Skill teaching in ICU, Operation theatres, emergency and ward settings
8. Attend genetic clinics and rounds for at least one month.
9. Self study, assignments and use of internet
10. Bedside teaching rounds in ward
11. OPD & Follow up clinics
12. Long and short case presentations

In addition to the conventional teaching methodologies interactive strategies like conferences will also be introduced to improve both communication and clinical skills in the upcoming consultants. Conferences must be conducted regularly as scheduled and attended by all available faculty and residents. Residents must actively request autopsies and participate in formal review of gross and microscopic pathological material from patients who have been under their care. It is essential that residents participate in planning and in conducting conferences.

1. Clinical Case Conference

Each resident will be responsible for at least one clinical case conference each month. The cases discussed may be those seen on either the consultation or clinic service or during rotations in specialty areas. The resident, with the advice of the Attending Surgeon on the Consultation Service, will prepare and present the case(s) and review the relevant literature.

2. Monthly Student Meetings

Each affiliated medical college approved to conduct training for MS Otolaryngology will provide a room for student meetings/discussions such as:

a. Journal Club Meeting
b. Core Curriculum Meetings
c. Skill Development

a. Journal Club Meeting

A resident will be assigned to present, in depth, a research article or topic of his/her choice of actual or potential broad interest and/or application. Two hours per month should be allocated to discussion of any current articles or topics introduced by any participant. Faculty or outside researchers will be invited to present outlines or results of current research activities. The article should be critically evaluated and its applicable results should be highlighted, which can be incorporated in clinical practice. Record of all such articles should be maintained in the relevant department.

b. Core Curriculum Meetings

All the core topics of Otolaryngology should be thoroughly discussed during these sessions. The duration of each session should be at least two hours once a month. It should be chaired by the chief resident (elected by the residents of the relevant discipline). Each resident should be given an opportunity to brainstorm all topics included in the course and to generate new ideas regarding the improvement of the course structure

c. Skill Development

Two hours twice a month should be assigned for learning and practicing clinical skills.

List of skills to be learnt during these sessions is as follows:

1. Residents must develop a comprehensive understanding of the indications, contraindications, limitations, complications, techniques, and interpretation of results of those technical procedures integral to the discipline
2. Residents must acquire knowledge of and skill in educating patients about the technique, rationale and ramifications of procedures and in obtaining procedure-specific informed consent. Faculty supervision of residents in their performance is required, and each resident's experience in such procedures must be documented by the program director.
3. Residents must have instruction in the evaluation of medical literature, clinical epidemiology, clinical study design, relative and absolute risks of disease, medical statistics and medical decision-making.
4. Training must include cultural, social, family, behavioral and economic issues, such as confidentiality of information, indications for life support systems, and allocation of limited resources.
5. Residents must be taught the social and economic impact of their decisions on patients, the primary care physician and society. This can be achieved by attending the bioethics lectures
6. Residents should have instruction and experience with patient counseling skills and community education.

7. This training should emphasize effective communication techniques for diverse populations, as well as organizational resources useful for patient and community education.
8. Residents should have experience in the performance of Otolaryngology related clinical laboratory and radionuclide studies and basic laboratory techniques, including quality control, quality assurance and proficiency standards
9. Each resident will manage at least the following essential Otolaryngological cases and observe and participate in each of the following procedures, preferably done on patients under supervision initially and then independently. (pg. 33-35)

3. Annual Grand Meeting

Once a year all residents enrolled for MS Otolaryngology should be invited to the annual meeting at UHS Lahore.
One full day will be allocated to this event. All the chief residents from affiliated institutes will present their annual reports. Issues and concerns related to their relevant courses will be discussed. Feedback should be collected and suggestions should be sought in order to involve residents in decision making.
The research work done by residents and their literary work may be displayed.
In the evening an informal gathering and dinner can be arranged. This will help in creating a sense of belonging and ownership among students and the faculty.

LOG BOOK

The residents must maintain a log book and get it signed regularly by the supervisor. A complete and duly certified log book should be part of the requirement to sit for MS examination. Log book should include adequate number of diagnostic and therapeutic procedures observed and performed, the indications for the procedure, any complications and the interpretation of the results, routine and emergency management of patients, case presentations in CPCs, journal club meetings and literature review.

Proposed Format of Log Book is as follows:

Candidate's Name: _____

Roll No. _____

The above mentioned procedures shall be entered in the log book as per format:

Procedures Performed

Sr.#	Date	Name of Patient, Age, Sex & Admission No.	Diagnosis	Procedure Performed	Supervisor's Signature
1					
2					
3					
4					

Emergencies Handled

Sr. #	Date	Name of Patient, Age, Sex & Admission No.	Diagnosis	Procedure/ Management	Supervisor's Signature
1					
2					
3					
4					

Case Presented

Sr.#	Date	Name of Patient, Age, Sex & Admission No.	Case Presented	Supervisor's Signature
1				
2				
3				
4				

Seminar/Journal Club Presentation

Sr.#	Date	Topic	Supervisor's signature
1			
2			
3			
4			

Evaluation Record
(Excellent, Good, Adequate, Inadequate, Poor)

At the end of the rotation, each faculty member will provide an evaluation of the clinical performance of the fellow.

Sr.#	**Date**	**Method of Evaluation (Oral, Practical, Theory)**	**Rating**	**Supervisor's Signature**
1				
2				
3				
4				

EVALUATION & ASSESSMENT STRATEGIES

Assessment

It will consist of action and professional growth oriented ***student-centered integrated assessment*** with an additional component of ***informal internal assessment***, ***formative assessment*** and measurement-based ***summative assessment*.**

Student-Centered Integrated Assessment

It views students as decision-makers in need of information about their own performance. Integrated Assessment is meant to give students responsibility for deciding what to evaluate, as well as how to evaluate it, encourages students to **'own'** the evaluation and to use it as a basis for self-improvement. Therefore, it tends to be growth-oriented, student-controlled, collaborative, dynamic, contextualized, informal, flexible and action-oriented.

In the proposed curriculum, it will be based on:

- Self Assessment by the student
- Peer Assessment
- Informal Internal Assessment by the Faculty

Self Assessment by the Student

Each student will be provided with a pre-designed self-assessment form to evaluate his/her level of comfort and competency in dealing with different relevant clinical situations. It will be the responsibility of the student to correctly identify his/her areas of weakness and to take appropriate measures to address those weaknesses.

Peer Assessment

The students will also be expected to evaluate their peers after the monthly small group meeting. These should be followed by a constructive feedback according to the prescribed guidelines and should be non-judgmental in nature. This will enable students to become good mentors in future.

Informal Internal Assessment by the Faculty

There will be no formal allocation of marks for the component of Internal Assessment so that students are willing to confront their weaknesses rather than hiding them from their instructors.

It will include:

a. Punctuality
b. Ward work
c. Monthly assessment (written tests to indicate particular areas of weaknesses)
d. Participation in interactive sessions

Formative Assessment

Will help to improve the existing instructional methods and the curriculum in use

Feedback to the faculty by the students:

After every three months students will be providing a written feedback regarding their course components and teaching methods. This will help to identify strengths and weaknesses of the relevant course, faculty members and to ascertain areas for further improvement.

Summative Assessment

It will be carried out at the end of the programme to empirically evaluate cognitive, psychomotor and affective domains in order to award diplomas for successful completion of courses.

MS Otolaryngology Examinations

Part I MS Otolaryngology
Total Marks: 200

All candidates admitted in MS Otolaryngology course shall appear in Part I examination at the end of first calendar year.

Components of Part-I Examination:

Paper-I, 100 MCQs (single best, having one mark each)	100 Marks
Paper-II, 10 SEQs (having 10 marks each)	100 Marks

Topics included in papers:

		Paper-I	Paper-II
1.	Anatomy	(20 MCQs)	(2 SEQs)
2.	Physiology	(20 MCQs)	(2 SEQS)
3.	Pathology	(20 MCQs)	(2 SEQs)
4.	Biochemistry	(15 MCQs)	(1 SEQS)
5.	Pharmacology	(15 MCQs)	(1 SEQ)
6.	Behavioural Sciences	(05 MCQs)	(1 SEQ)
7.	Biostatistics & Research Methodology	(05 MCQs)	(1 SEQ)

Part II- MS Otolaryngology
Total Marks: 430

All candidates admitted in MS Otolaryngology course shall appear in Part II examination at the end of second calendar year.
There shall be two written papers of 100 marks each, Oral & practical/ clinical examination of 150 marks and log book assessment of 80 marks.

Topics included in papers 1 & 2:
Basic Principles of Surgery

Components of Part II Examination

Theory:

Paper 1:	**100 Marks**	**3 Hours**
10 SEQs (No Choice; 05 marks each)	50 Marks	
50 MCQs	50 Marks	

Paper 2:	**100 Marks**	**3 Hours**
10 SEQs (No Choice; 05 marks each)	50 Marks	
50 MCQs	50 Marks	

Only those candidates, who pass in theory papers, will be eligible to appear in the Oral & Practical/Clinical Examination.

Oral & Practical/ Clinical Examination shall be held in clinical techniques relevant to General Surgery.

OSCE **50 Marks**

10 stations each carrying 05 marks of 10 minutes duration; each evaluating performance based assessment with five of them interactive

Clinical **100 Marks**

Four short cases (each 15 marks)	60 Marks
One long case:	40 Marks

Log Book **80 Marks**

Part III MS Otolaryngology
Total Marks: 920

All candidates admitted in MS Otolaryngology course shall appear in Part-III examination at the end of structured training programme (end of 5th calendar year and after clearing Part I & II examinations)

There shall be two written papers of 150 marks each, practical/ clinical examination of 300 marks, log book assessment of 120 marks and thesis examination of 200 marks.

Part III MS Otolaryngology
Clinical Examination
Total Marks: 720

Topics included in paper 1

1. Otology (20 MCQs)
2. Rhinology (20 MCQs)
3. Laryngology & Head, Neck (20 MCQs)
4. Audiology (15 MCQs)

Topics included in paper 2

1. Paediatric Otolaryngology (40 MCQs)
2. Emergencies in Otolaryngology (20 MCQs)
3. Rehabilitation (15 MCQs)

Components of Part III Clinical Examination

Theory

Paper I	**150 Marks**	**3 Hours**
15 SEQs (No Choice)	75 Marks	
75 MCQs	75 Marks	

Paper II	**150 Marks**	**3 Hours**
15 SEQs (No Choice)	75 Marks	
75 MCQs	75 Marks	

Only those candidates who pass in theory papers, will be eligible to appear in the Oral & Practical/ Clinical Examination.

OSCE/ Viva **100 Marks**

10 stations each carrying 10 marks of 10 minutes duration; each evaluating performance based assessment with five of them interactive

Clinical **200 Marks**

Four short cases (each 25 marks)	100 Marks
One long case:	100 Marks

Log Book **120 Marks**

Part III MS Otolaryngology
Thesis Examination
Total Marks: 200

All candidates admitted in MS Otolaryngology course shall appear in Part-III (thesis examination) at the end of 5th year of the MS programme and not later than 8th calendar year of enrolment. The examination shall include thesis evaluation with defense.

RECOMMENDED BOOKS

1. Johnson. A case Approach to Open Structure Rhinoplasty with DVD-ROM
2. Dhingra. Diseases of ENT
3. Lore. An Atlas of Head and Neck Surgery. 4th ed.
4. Glasscock. Glasscock-Shambaugh Surgery of the Ear. 5th ed.
5. Logan. Mcminn's Clor Atlas of Head and Neck Anatomy. 3rd ed.
6. Prescott. Oxford Hand Book of ENT
7. Miller. The Otolaryngolodic Clinics of North America February
8. Kerr. Scott-Brown's Otolaryngology. 6th ed.;1997
9. Watkinson. Stell and Maran's Head and Neck Surgery. 4th ed.
10. Bailey. Head and Neck Surgery –Otolaryngology. 3rd ed.
11. Masud. Text Book of ENT.
12. Wormald. Endoscopic Sinus Surgery
13. Water. Otolaryngology Basic Science and Review.
14. Grewal. Atlas of Surgery of the Facial Nerve.
15. Hazarika. Clinical and Operative Methods in ENT and Head and Neck Surgery
16. Maniglia. Surgical reconstruction of the Face and Anterior Skull Base.
17. Sheen J. H. Assymetrical Alar Base: Secodary Rhinoplasty Video.
18. Salvi-Hende. Auditory System Plasticityand Regeneration
19. Ballenger. Ballenger's Otolaryngology: Head and Neck
20. Rubin J. S. Diagnosis and Treatment of Voice Disorders. 3rd Ed.
21. Yousem M. Head and Neck Surgery: Case Review Series. 2nd ed. (PB)
22. CD-ROM – Laryngoscope 1995-96 CD-ROM
23. Aperilla
24. The British Journal of Otolaryngology
25. Journal of Academy of Otolaryngology and Head and Neck Surgery
26. Otolaryngology Clinics of North America
27. American journal of Otolaryngology
28. Scott Brown Text Book of Otolaryngology
29. Fathalla M. F. and Fathalla M. M. F. A Practical Guide
30. for Health Researcher. Cairo: World Health Organization; 2004.
31. Rana M. H., Ali S. Mustafa M. ***A Handbook of Behavioural Sciences for Medical and Dental Students***. Lahore: University of Health Science; 2007.