GUIDELINES FOR COMPETENCY BASED POSTGRADUATE TRAINING PROGRAMME FOR MS IN OTORHINOLARYGOLOGY

Preamble:

A postgraduate specialist having undergone the required training should be able to recognize the health needs of the community, should be competent to handle effectively the medical problems, and should be aware of the recent advances pertaining to his specialty. The postgraduate student should acquire the basic knowledge, attitude and skills in teaching of medical/para-medical students. He/she is also expected to know the principles of research methodology and modes of consulting library including internet use.

SUBJECT SPECIFIC LEARNING OBJECTIVES

At the end of postgraduate training the student should be able to:

1. Practice his specialty ethically keeping in mind the requirement of the patient, his community and people at large.
2. Demonstrate sufficient understanding of basic sciences related to his specialty and be able to integrate such knowledge in his Clinical practice.
3. Diagnose and manage majority of conditions in his specialty (clinically and with the help of relevant investigations)
4. Plan and advise measures for the promotive, preventive and rehabilitative aspects of health and diseases in the specialty of ENT.
5. Play the assigned role in the implementation of National Health Programs
6. Demonstrate competence in basic concepts of research methodology and writing thesis and research papers.
7. Develop good learning, communication and teaching skills.

Specific learning objectives:

1. **Theoretical knowledge:**

   A student should have fair knowledge of basic sciences (Anatomy, Physiology, Biochemistry, Microbiology, Pathology and Pharmacology) as applied to ENT and be able to integrate such knowledge in his clinical practice. He/she should acquire in-depth knowledge of his subject including recent advances. He should be fully conversant with the bedside procedures (diagnostic and therapeutic) and having knowledge of latest diagnostics and therapeutics available.

2. **Clinical / Practical skills:**

   A student should be adept at good history taking, physical examination, providing basic life support and advanced cardiac life support, common procedures like FNAC, Biopsy, aspiration from serous cavities, lumber puncture etc. He/she should be able to choose the required investigations to enhance the attitude, communication skills, including dealing with patient's relatives with the required empathy, adapt to changing trends in education, learning methods and evolving new diagnostic and therapeutic techniques in the subject of ENT.

3. **Research:**

   He/she should know the basic concepts of research methodology, plan a research project, plan and write a thesis and should know how to use library facilities. Basic knowledge of statistics is also required. Knowledge about use of internet resources is required.

4. **Teaching:**

   Should learn the basic methodology of teaching and assessment and develop competence in teaching medical/paramedical students and their assessment.

CURRICULUM

SUBJECT SPECIFIC THEORETICAL COMPETENCIES

Course Contents

The course contents may be divided into '*must know*" and "*good to know*" areas.

Must Know:

1. Anatomy and Physiology of Ear, Nose and Throat, Trachea and esophagus.
2. The generation and reception of speech
3. Radiographic anatomy of the ear, nose, throat and imaging.
4. Bacteriology in relation to Otorhinolaryngology
5. Allergy and rhinitis
6. Haematology in relation to Otolaryngology
7. Anaesthesia for Otolaryngology
8. Pharmacology of drugs used in ENT
9. Electrolyte, fluid balance/shock conditions
10. Use of teaching aids
11. Routine blood, urine testing
12. Preparation of slides
13. Facial nerve stimulation test

14. Audiometric tests like pure tone Audiometry, Impedance Audiometry, Free field Audiometry, Specialized tests of hearing including SISI, Tone decay, ABLB, Speech discrimination score etc.
15. Vestibular tests like caloric testing (Water and Air) stopping test, Fukuda's test,
16. Evoked response audiometry.

Ear:

1. The physical and functional examination of the ear
2. The functional and physical examination of the vestibular system.
3. Tinnitus
4. Affections of external ear
5. Repair of deformities of the external ear.
6. Congenital conditions of the middle ear cleft
7. Traumatic conductive deafness
8. Acute inflammation of the middleear cleft
9. Non-suppurative otitis media
10. Chronic suppurative otitis media
11. Management of chronic suppurative otitis media
12. Complications of infections of middle ear.
13. Tumors of the middle ear cleft and temporal bone
14. Diseases of the otic capsule-otosclerosis
15. Diseases of the otic capsule-other diseases
16. The deaf child
17. Acoustic neuroma
18. Ototoxicity
19. Presbycusis
20. Diagnosis and management of sudden and fluctuant sensorineural hearing loss
21. Meniere's disease
22. Neurologic aspects of vertigo
23. Facial paralysis
24. Rehabilitation of adults with acquired Hearing loss-Hearing aids
25. The cochlear Implants
26. Nystagmus
27. Otoacoustic emissions

Nose:

1. Examination of the nose
2. Conditions of the external nose
3. Injuries of the facial skeleton
4. Congenital diseases of the nose

5. The nasal septum
6. Foreign bodies in the nose, rhinolith
7. Epistaxis
8. Acute chronic inflammations of the nasal cavities
9. Vasomotor rhinitis-allergic and non-allergic
10. Nasal polyposis
11. Abnormalities of smell
12. Acute sinusitis
13. Chronic sinusitis
14. Nasal Allergy/Fungal allergic sinusitis
15. Complications of acute and chronic sinusitis
16. Tumors of nose and sinuses
17. Facial pains
18. Trans-ethmoidal hypophysectomy
19. FESS

Throat:

1. Methods of examination of the mouth and pharynx
2. Diseases of the mouth
3. Diseases of the salivary glands
4. Pharyngeal lesions associated with general diseases
5. Diseases of the tonsils and adenoids (excluding neoplasms)
6. Tumors of the pharynx
7. Hypopharyngeal diverticulum (Pharyngeal Pouch)
8. Methods of examining and larynx and tracheobronchial tree
9. Congenital diseases of the larynx
10. Laryngeal disorders in singers and other voice users
11. Neurological affections of larynx and pharynx
12. Intubation of the larynx, laryngotomy and tracheostomy
13. Cervical node dissection
14. Skin grafts in Otolaryngology and reconstructive methods including regional and distant flaps for repair of defects after excision of tumors or trauma.
15. Micro laryngeal surgery/thyroplasty

Miscellaneous and head and neck:

1. Cranial nerves
2. Raised intracranial tension-causes, diagnosis, management with particular reference to otitis hydrocephalus
3. Head injuries and I.C. Haemorrhage
4. Pituitary gland, anatomy, physiology hypo - and hyper - pituitarism, new growths.

5. Intracranial venous sinuses and their affections
5. Osteology: skull, mandible cervical and thoracic vertebral sternum
6. Cervical fascia, facial spaces in neck, retro-pharyngeal and parapharyngeal Abscesses
7. Anatomy and physiology of thyroid gland, goitre, diseases of the thyroid and carcinoma of thyroid
8. Large blood vessels in neck, thoracic duck development of major cervical and thoracic blood vessels.
9. Head and neck reconstructive surgery.

General:

1. Physiology of circulation, regulation of blood pressure, reactions of body to haemorrhage, patho-physiology of shock, fluid balance, blood transfusion and its hazards, fluid replacement therapy, burns.
2. Agents used in shock like states.

Good to know

1. The ears and nasal sinuses in the aerospace environment
2. Physiological consideration of pressure effects on the ear and sinuses in deep water diving
3. The principles of cancer immunology with particular reference to head and neck cancer
4. Principles of chemotherapy in head and neck cancer
5. Recording of nystagmus by ENG and its interpretation.

Ear:

1. Traumatic lesions of the inner ear
2. Inflammatory lesions of the vestibular and auditory nerve
3. Vascular lesions of the inner ear
4. Electronystagmography
5. Skull base/Neurologic surgery

Nose:

1. Cosmetic surgery of the nose
2. Non-healing granuloma of the nose
3. Surgery of the pterygopalatine fossa.
4. LASER Surgery

Throat:

1. Oesophageal conditions in the practice of ear, nose and throat surgery
2. Disorders of speech
3. Lower respiratory conditions in Otolaryngology

Miscellaneous and head and neck

1. Functional Anatomy of cerebellum and brainstem
2. Anatomy of mediastinum
3. Pleura, plural cavity, broncho-pulmonary segments and their clinical importance
4. Facial plastic surgery

Drugs used in Ent:

1. Antibiotics Antihistaminic
2. Nasal vasoconstrictors
3. Local anaesthetics
4. Corticosteroids
5. Cyto-toxic agents
6. Antibiotics
7. Radioactive isotopes
8. Antifungal agents
9. Vaspressive and other agents used in shock like states.

Syllabus for Individual Papers:

Paper I: Basic Sciences related Otolaryngology

- Physiology - Mechanism of perception of smell and taste, mechanism of breathing and voice production, lacrimation, deglutition and salivation. Functional tests of the nose and paranasal sinuses, mechanism of cough and sneezing.
- Physics of sound, theories of hearing, mechanism of perception of sound and speech production, physiology of equilibrium and cerebral function. Physiology of brain in connection with hearing, speech, smell and phonation. Audiologic tests like audiometry, impedance, evoked potentials, OAE, Speech audiometry.
- Physiology of larynx, tracheobronchial tree and oesophagus - Histology of mucous membranes, internal ear and other associated organs and structures, nose, PNS NPx, Larynx, Tracheo-Bronchial tree, Lymphoepithetical system. Mechanism of immune system/immunology and genetics.

- Anatomy - Embryogenesis of ear, nose and throat including palate and the larynx, Oesophagus, trachea and lungs, tongue, salivary gland Head and Neck and skull base etc.
- Parapharyngeal spaces in the neck including connective tissue barriers of larynx.
- Applied anatomy of the skull bones, accessory sinuses, external, middle and inner ears, nose, PNS, nasopharynx, meninges, brain, pharynx, larynx, trachea and bronchi, lungs, pleurae, oesophagus and the mediastinum.
- Anatomy of all cranial nerves with their functions.

Paper II: Principles and Practices of Otolaryngology

- Clinical Methodology as applied to ORL HN diseases in adult and children and the accessory sinuses, diagnosis and surgical treatment of diseases of nose, throat and ear in adult and children. Prevention and treatment, infectious diseases of Otolaryngology and Head Neck region. Circulatory and nervous disturbances of the nose, throat and ear and their effects on other organs of the body. Deformities, injuries sinus infections, polyps and the tumors of the nose, and paranasal sinuses.
- Examination of the ear, deafness and allied diseases, complications of diseases of the ear. Injuries, tumors, nervous and circulatory neurological disturbances of the ear. Diagnosis and treatment of tinnitus and vertigo. Diagnosis and rehabilitation of the Hearing handicapped including, dispensing of hearing aid other vibrotatile aids.
    - Surgical pathology of Otolaryngology and Head Neck region.
    - Basic knowledge of anaesthesia as related to ENT.
    - Examination of diseases of children (Paediatric ORL) in connection with throat and larynx. Neurological and vascular disturbances. Congenital and neonatal stridor.
    - Pathology of various diseases of the larynx and throat, tracheo-bronchial tree and their causative organisms.
    - Indications and various techniques of direct laryngoscopy, nasal endoscopy. Bronchoscopy and oesophagoscopy, including microlaryngoscopic procedures.
    - Reading of radiograms, scans, audiograms, nystagmograms and tympanograms in connection with ENT diseases/disorders.
    - Special apparatus for the diagnosis and treatment of the diseases of ear, nose and throat including audiometer, BERA, Speech analyser etc.

Paper III: Recent advances in Otolaryngology and Head Neck surgery

- Recent developments in the diagnosis, pathogenesis and treatment of the ENT diseases.

- The knowledge of the frontiers of the oto-laryngology and lateral skull base surgery.
- Rhinoplasty, endoscopic sinus surgery, and anterior cranial fossa surgery.
- Knowledge of LASERS and fibre optics.
- Other methods of managing Hearing loss.
- Implantable hearing aids cochlear implants.
- Phonosurgery
- Etiology and Managements of sleep apnoea/snoring,
- Hypophysectomy and optic nerve decompressions.
- Immunotherapy and modalities of the gene therapy
- Newer techniques for Radiotherapy including, use of gamma knife for treatment of Intracranial tumors and other malignancy.
- Chemotherapy of cancer.

Paper IV: General Surgical Principles and Head-Neck Surgery

- General Surgery, Head and Neck oncology, and Medicine as applicable to the ENT disorders/diseases. Surgery of congenital deformities of nose, ear (Pinna) and trachea/oesophagus etc.
- Radiology, Imaging – computed tomography and magnetic resonance imaging, (MRI) and intervention radiology and angiography as related to ENT.
- General Pathologic aspects such as wound healing and also pathology and Pathogenesis of ENT diseases, Pharmacology, molecular biology, genetics, cytology, haematology, and immunology as applicable to otolaryngology.
- General Principles of faciomaxillary traumatology and neck injury.
- Plastic Surgery as applicable to Otolaryngology.

SUBJECT SPECIFIC PRACTICE BASED OR PRACTICAL COMPETENCIES

A student should be adept at the following:

- good history taking,
- physical examination,
- providing basic life support and advanced cardiac life support,
- common procedures like FNAC, biopsy, aspiration from serous cavities, lumber puncture etc.
- He/she should be able to choose the required investigations to enhance the attitude, communicative skills, including dealing with patient’s relatives with the

required empathy, adapt to changing trends in education, learning methods and evolving new diagnostic and therapeutic techniques in the subject of ENT.

TEACHING AND LEARNING METHODS

Although didactic lectures are of least importance, such lectures may be taken by senior faculty on newer areas in which expertise is available. Emphasis may be made on presenting seminars, journal clubs, symposia, reviews and guest lectures and they should get priority for theoretical knowledge. Bedside teaching, grand rounds, interactive group discussions and clinical demonstrations, CPCs should be the hallmark of clinical/ practical learning. Student should have hand-on training in performing various procedures in ENT on Simulated models and cadavers before practicing on the patient, *albeit* under supervision and develop ability to interpret various tests/investigations. Exposure to newer specialized diagnostic/therapeutic procedures concerning his ENT should be given. During the course, the students are expected to participate in scientific meetings, paper presentations and hands on workshops to enhance clinical exposure.

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TEACHING METHODS:

The following learning methods are to be used for the teaching of the postgraduate students:

1. Journal Club
2. Paper presentation/discussion
3. Seminar: Lecture/discussion: Lectures on newer topics by Faculty, in place of seminar/as per need.
4. Case presentation in the ward
5. Afternoon Special clinics (such as vertigo/otology Tumour clinics).
6. Surgico-pathological Conference: Special emphasis is to be made on the surgical pathology and the radiological aspects of the case in the pathology department. Such exercises help the ENT/Pathology/Radiology Residents.
7. Combined Round/Grand Round: These exercises are to be done for the hospital once/week or twice/month involving presentation of unusual or difficult patients. Presentations of cases are to be done in Clinical Combined Round and a clinical series/research data on clinical materials for benefit of all clinicians/Pathologists/other related disciplines once in a week or fortnightly in the Grand Round.
8. Community camps: For rural exposure and also for experience in preventive aspects in rural situation/Hospital/School, Patient care camps are to be arranged 2-3/year, involving Residents/Junior faculty.
9. Emergency situation: Casualty duty to be arranged by rotation among the PGs with a faculty cover daily by rotation.

Speciality clinics:

1. **Vertigo Clinic**: All the patients of vertigo attending ENT OPD/referred cases are worked up in details by the Junior Residents and are discussed with one/two Faculty and treatment decided upon.

2. **Tumour clinic/Head-neck Cancer Clinic:** In collaboration with the Radiotherapy Department, the patients with head and neck cancer in the field of ENT and Head and Neck are worked up by the Junior Resident and discussed about the their management by the ENT as well as Radiotherapy Consultants and treatment decision, made.

3. **Rhinology Clinic**: For patients with sinus diseases and nasal deformity for rhinoplasty - presented and discussed. Decision for FESS/Rhinoplasty or only other treatment taken.
4. **Otology Clinic:** The ear cases are thoroughly investigated and are discussed by the Junior Residents with the faculty for their management/discussions are made after each case is presented. Audiologist also participates in this clinic.

Clinical training for patient care management and for bedside manners:

Bedside patient care discussions are to be made daily for half to one hour's duration during ward round with faculty and 1-2 hours in the evening by senior resident/Faculty on emergency duty. Faculty should take Teaching Rounds by Rotation

1. **Death Cases:**

   The records of such cases are presented by Senior Residents. The Junior Residents are encouraged to participate actively in the discussion in the presence of Faculty of ENT and Hospital Administration. This programme helps to take corrective measures as well as to maintain accountability in patient management.

2. **Clinical Teaching**:

   In OPD, Ward rounds, Emergency, ICU and the Operation Theatres: Residents/Senior Residents and Faculty on duty in respective places - make discussion on clinical diagnosis/surgical procedures/treatment modalities, including post operative care and preparation discharge slip.

   The student should compulsorily undergo a basic life support course where the skills of endotracheal intubations and tracheotomy are reinforced. This may be assisted by the use of dummies and mannequins.

. Clinical interaction with audiologists/speech therapist: Clinical interaction with Audiologist/speech therapist pertaining to management of the patients with audiological/speech problems are to be made/discussion arranged. Audiologic methods and therapy strategies are to be made known to Resident doctors.

3. General lectures:

Courses and Lectures are to be arranged for the residents for language proficiency by humanity teachers besides few lectures on human values and ethical issues in patient care.

4. Writing Thesis:

Thesis progress is presented periodically and discussion held in the department. Guides/co-guides are to hear the problems of the candidate; can provide assistance to the student. Progress made or any failure of the candidate may be brought to the notice of college Dean/Principal.

5. Cadaveric dissection Lab:

Cadaveric temporal bone. Nose and paranasal sinuses and head and neck dissections must be arranged in the Departmental Laboratory and/or in the Anatomy Department for learning surgical anatomy by dissection as well as for learning different operative procedures under faculty supervision and independently (for middle ear operations using operating microscope and for other head and neck surgical procedures including endoscopic (FESS) sinus surgery using endoscopes during 2nd and 3rd year of Residency on a regular basis before/during exposure of particular batch of students to real operative procedures in patients.

ASSESSMENT

FORMATIVE ASSESSMENT, during the training programme

The formative evaluation should be done by the following:

- Using structured and objective methods
- Maintenance of Log book including evaluation reports of seminars, journal clubs, case presentations etc. which should be evaluated at the time of presentation and entered in Logbook
- The candidate should be trained on cadavers, and anatomical sections for skill development
- Use of simulators for developing clinical and surgical skills would form a part of formative evaluation.
- The candidate should be routinely evaluated for subject knowledge, professional competence, skill demonstration, communicational skills and his attitude to new

learning skills using the conventional method of evaluation as well as Objective Structured Clinical Examination, wherever feasible.

END ASSESSMENT, at the end of the training programme

Postgraduate examination (50% marks for theory and 50% marks for clinical/practical).

The Examination for the degree (MS-ENT) shall consist of:

1. Thesis
2. Theory Examination: 04 Papers
3. Practical Examination: - Clinical, Oral, instruments/specimen/X-rays.

1. Thesis:

Thesis, to be submitted by each candidate at least six months before the theoretical and practical examination. The thesis shall be examined by a minimum of three examiners; one internal and two external examiners, who shall not be the examiners for theory and practical; on the acceptance of the thesis by two examiners, the candidate shall appear for the final examination.

2. Theory:

There shall be four papers, each being of three hours duration.
Each paper may have 8-10 short questions from the curriculum.

Paper I: Basic Sciences related Otolaryngology
Paper II: Principles and Practices of Otolaryngology
Paper III: Recent advances in Otolaryngology and Head Neck surgery.
Paper IV: General Surgical Principles and Head-Neck Surgery.

3. Practical Examination:

a) Identification of Surgical Pathology, excised specimens and discussion, reading X-rays and CT Scan/MRI.

Identification of Instruments and discussion, interpretation as audiovestibular investigations such as audiogram, ABR, ENG etc. simulated surgical situation/steps of operative procedures, required instruments/discussion.

b) Clinical Patient presentation /discussion:

1. One long case: The long case will be structured, comprising – history taking, clinical examination, investigations, decision making, proposed treatment modalities, ethical justification and personal attributes.
2. Two short cases: The short cases will also be structured in which only one particular system may be considered and therapy decision/discussion, made.

Note: Modifications may be made in the method of practical examination to bring about objectivity in the exam and an attempt may be made to eliminate individual bias in the conduction of the exam. **The formative evaluation should be done by using structured and objective methods (as described earlier) while the summative evaluation should be done by a competency based evaluation which should evaluate the subject knowledge, professional competence, skill demonstration, communicational skills and his attitude to new learning skills using the conventional method of evaluation as well as Objective Structured Clinical Examination, wherever feasible.**

Recommended Reading:

Books

Journals