



Curriculum

MS Otorhinolaryngology, Head & Neck Surgery

Revised November 2024

"Medical education is a lifelong journey; it begins with a passion for healing and never truly ends."

Abraham Flexner

PREFACE



The horizons of medical education are expanding, reflecting a global surge in interest in postgraduate medical education. There is an increasing recognition of the necessity for healthcare professionals to gain expertise in educational skills and the importance of formal acknowledgment of postgraduate training in Internal Medicine.

We are witnessing a significant rise in enrollment in postgraduate courses in medical education, more frequent publication of medical education journals, and the development of e-journals and other innovative online resources. Consequently, there is a pressing need to provide robust support in postgraduate medical education for a diverse, national group of colleagues across all specialties and at every stage of their professional development.

Our objective is succinct: to enhance the teaching capabilities of clinical colleagues and to facilitate advanced learning for students. This book represents the state-of-the-art activities of the MD Internal Medicine program at Rawalpindi Medical University (RMU). For the convenience of supervisors and residents, the curriculum is comprehensively incorporated into this book.

The MS curriculum is anchored on the six core-competencies outlined by the Accreditation Council for Graduate Medical Education (ACGME), which include: **Patient Care, Medical Knowledge, System Based Practice, Practice Based Learning, Professionalism, Interpersonal and Communication Skills**. The mission of Rawalpindi Medical University is to enhance the health of the communities we serve through education, biomedical research, and healthcare. Integral to this mission is fostering a research culture and establishing a comprehensive research structure and curriculum for residents, which are detailed in this book.

This preface outlines the guiding principles and aims of the MD Internal Medicine program at RMU, underscoring our commitment to educational excellence and the continual advancement of medical knowledge and practice.

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REVISION CONTRIBUTORS

The field of medicine is constantly evolving, driven by new discoveries and advancements that demand continuous updates to educational curricula. It is with great pride that we present the revised and updated MS Otorhinolaryngology Curriculum at RMU. This comprehensive revision reflects our commitment to providing a robust and contemporary education that prepares our students for the challenges and opportunities of modern medical practice.

The revision process was a collaborative effort among our esteemed faculty members, each bringing their expertise and dedication to ensure the curriculum meets the highest standards of medical education. The curriculum sections were meticulously reviewed and updated to incorporate the latest medical knowledge and pedagogical practices.

- Section I and VI were revised by Prof Dr Sadia Chaudhry.
- Section II and III were diligently updated by Prof Dr Ahmed Hassan
- Section IV and V of the previous version were declared fine by Dr. Haitham Akash.
- Section VII-IX were meticulously reviewed and updated by Dr. Tabusum Aziz and Dr Fatima Shahid.
- The Section IV was revised and entire document was expertly compiled by Dr. Muhammad Arshad.

This revised curriculum represents a significant milestone in our ongoing mission to provide an exceptional medical education. We are confident that these updates will greatly benefit our students, equipping them with the knowledge and skills necessary to excel in their medical careers and contribute meaningfully to the healthcare field.

We extend our heartfelt thanks to all faculty members involved in this revision for their hard work and dedication. It is through their collective efforts that we continue to advance the standards of medical education at RMU.

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SECTION I

PREMABLE

1.1 MISSION & VISION:

The mission & vision of the Otorhinolaryngology Residency Program at Rawalpindi Medical University is to:

Mission Statement

“Our mission is to train compassionate, skilled, and knowledgeable otolaryngologists who excel in patient care, medical research, and lifelong learning. We are dedicated to fostering a rigorous, supportive, and inclusive learning environment that emphasizes evidence-based medicine, innovation, and surgical excellence across all subspecialties of otolaryngology. Through hands-on training, mentorship, and interprofessional collaboration, we prepare our residents to become leaders in the field, dedicated to advancing the standards of otolaryngology and improving patient outcomes in the communities they serve”.

Vision Statement

"To be a leading residency program recognized for excellence in clinical training, innovative research, and contributions to the advancement of otolaryngology. We strive to cultivate otolaryngologists who are not only clinically skilled but also compassionate, forward-thinking, and equipped to drive the evolution of patient care in a diverse, ever-changing healthcare landscape. By fostering an environment of intellectual curiosity and collaboration, we aim to shape future leaders and pioneers in the field, who will improve the quality of life for patients and elevate the standards of otolaryngology worldwide”.

1.2 AIM OF THE PROGRAM:

The MS Otolaryngology program at Rawalpindi Medical University aims to train skilled, compassionate otolaryngologists proficient in patient-centered care, advanced clinical skills, and lifelong learning. Our objectives focus on developing expertise in diagnosing and managing ENT conditions, fostering empathy and ethical practice, and encouraging research and innovation. We prioritize leadership, collaboration, and healthcare advocacy to prepare residents for diverse roles in patient care and community health. Through a comprehensive approach, our program cultivates well-rounded otolaryngologists ready to excel in clinical practice, research, and leadership within the field.

1.3 FRAMEWORK OF THE PROGRAMME:

Below is the detailed framework of the MS Otolaryngology program at Rawalpindi Medical University

Component	Details
Course Title	MS Otorhinolaryngology, Head & Neck Surgery
Training Center	Department of Otorhinolaryngology, Head & Neck Surgery, Rawalpindi Medical University (RMU)
Duration of Course	4 years
Credit Hours	132 Hours
Supervision	Structured training under the guidance of an approved supervisor in a recognized Otolaryngology Unit.
Induction Period	- Duration: First 6 months in the Department of Otolaryngology - Focus: Orientation to Otolaryngology and mandatory workshops
Basic Training (Part I)	- Duration: 18 months - Content: Training in basic principles of Otolaryngology - Research Requirement: Research synopsis approval by ERB and BASR
Rotations (Part I)	- General Surgery (2 months) - Neurosurgery (2 months) - Maxillofacial Surgery (2 months)
Assessment (Part I)	Continuous internal assessment based on competency & Formative assessment: In-Training- Assessment Year-1 (at the end of year 1)
Mid Term Assessment (MTA)	At the end of 2 years, candidates will take the Mid Term Assessment (Summative)
Advanced Training (Part II)	- Duration: 3rd and 4th year - Focus: Advanced Otorhinolaryngology, Specialty rotation, Research, and Thesis writing
Rotations (Part II)	- Plastic Surgery (2 months)

Assessment (Part II)	Competency-based continuous internal assessment & Formative assessment: In-Training Assessment Year-3 (at the end of year 3)
Research Component	Research component aligned with the Research Cycle, including thesis writing and submission according to RMU guidelines

1.4 RULES AND REGULATIONS:

Admission Criteria:

Applications for admission to MS Training Programs will be invited through print and electronic media advertisements, specifying the application deadline and the Entry Examination date. At present induction is being done according to Punjab Health Departments Central Induction Policy.

Eligibility: Applicants must meet the following criteria by the application deadline:

- I. **Basic Medical Qualification:** MBBS or equivalent, recognized by the Pakistan Medical & Dental Council (PMDC).
- II. **House Job Experience:** Certificate of one year's completed House Job experience in an institution recognized by the PMDC is essential at the time of interview.
- III. **PMDC Registration:** Valid permanent or provisional registration certificate from the PMDC.

Registration and Enrollment:

Supervisor and Trainee Limits: In accordance with PMDC policy, the maximum number of postgraduate trainees per supervisor is five (5) per year across all postgraduate programs, including minor programs (if any).

Bed to Trainee Ratio: The approved teaching site must have a minimum of five (5) beds per trainee.

Supervisor Approval: RMU will approve supervisors for MS Otolaryngology course.

University Registration: Selected candidates must register with RMU according to prescribed Registration Regulations after enrollment at the relevant institution

1.5 CORE COMPETENCIES OF THE PROGRAMME:

The MS Otorhinolaryngology curriculum at Rawalpindi Medical University, Rawalpindi, is structured based on the competency and performance-based framework of the Accreditation Council for Graduate Medical Education (ACGME). The curriculum emphasizes the following core competencies:

- 1: Medical Knowledge:** Mastery of the fundamental biomedical sciences and clinical knowledge.
- 2: Patient Care:** Proficiency in delivering patient-centered care that is compassionate, appropriate, and effective.
- 3: Interpersonal and Communication Skills:** Development of skills necessary for effective information exchange and collaboration with patients, their families, and health professionals.
- 4: Professionalism:** Commitment to professional responsibilities, adherence to ethical principles, and sensitivity to diverse patient populations.
- 5: Practice-Based Learning and Improvement:** Ability to investigate and evaluate patient care practices, appraise and assimilate scientific evidence, and continuously improve patient care based on constant self-evaluation and life-long learning.
- 6: Systems-Based Practice:** Understanding of and responsiveness to the larger context and system of health care, including the ability to effectively call on system resources to provide optimal care.
- 7: Research:** Engagement in scholarly activities that contribute to the advancement of medical knowledge and practice through research and innovation.

This curriculum aims to produce surgeons who are not only clinically proficient but also equipped with the skills necessary for continuous professional development and contribution to the medical field through research and system improvement.

1.6 PROGRAMME LEARNING OUTCOMES:

The MS Otolaryngology program aims to develop residents with the following learning outcomes::

(A) Medical Knowledge

1. Develop a basic understanding of core otorhinolaryngology concepts.
2. Interpret etiology, pathophysiology, clinical manifestations, disease course, prognosis, investigation, and management of common otorhinolaryngology diseases.
3. Stay updated on the scientific basis and recent advances in otorhinolaryngology.

4. Recognize the spectrum of clinical manifestations and interaction of multiple medical diseases in patients.
5. Interpret the psychological and social aspects of otorhinolaryngology illnesses.
6. Effectively use and interpret investigations and special diagnostic procedures.
7. Critically analyze the efficacy, cost-effectiveness, and cost-utility of treatment modalities.
8. Ensure patient safety and risk management.
9. Conduct medical audits and quality assurance.
10. Apply ethical principles and address medico-legal issues related to otorhinolaryngology illnesses.
11. Stay informed on evidence-based medicine and its implications for diagnosis and treatment.
12. Familiarize with different care approaches and healthcare facilities.
13. Appreciate patient safety and clinical risk management.
14. Be aware of the cost-effectiveness and risk-benefits of advanced treatment modalities.
15. Interpret administration and management concepts for a general medical unit.

(B) Skills

1. Take detailed patient histories and gather relevant data to develop diagnostic and management plans.
2. Record comprehensive initial histories, physical examinations, follow-up notes, and deliver oral presentations.
3. Elicit abnormal physical signs and interpret their significance.
4. Relate clinical abnormalities to pathophysiologic states and diagnose diseases.
5. Select relevant investigations and diagnostic and therapeutic procedures.
6. Interpret basic and advanced laboratory data related to otorhinolaryngology disorders.
7. Understand routine laboratory and ancillary tests, including sensitivity, specificity, pre-test probability, and Bayes' theorem.
8. Formulate differential diagnoses using scientific evidence and clinical judgment.
9. Assess the risks, benefits, and costs of treatment options and involve patients in decision-making.
10. Perform essential otorhinolaryngology procedures competently, including technical proficiency in informed consent, indications, contraindications, interpretations, and handling complications.
11. Learn additional procedural skills based on the training environment and practice expectations.
12. Perform basic, diagnostic, and therapeutic otorhinolaryngology procedures.
13. Develop competence in managing acute and chronic otorhinolaryngology problems.
14. Present clinical problems and literature reviews in grand rounds and seminars.
15. Build good communication skills and interpersonal relationships with patients, families, and healthcare professionals.
16. Mobilize appropriate resources for patient management at different stages of otorhinolaryngology illnesses.

17. Diagnose and manage otorhinolaryngology emergencies and complex cases with unusual presentations.
18. Implement strategies for preventive care and early detection of diseases in collaboration with primary and community care doctors.
19. Interpret medical statistics and critically appraise published work and clinical research.
20. Practice evidence-based learning with reference to research and scientific knowledge.
21. Recognize the cost-effectiveness of treatment modalities.
22. Identify key information resources and utilize medical literature to expand knowledge and search for answers to medical problems.

(C) Attitudes

1. Prioritize the well-being and restoration of patients' health.
2. Develop empathy and rapport with patients and their relatives.
3. Aspire to be a team leader in total patient care involving nursing and allied medical professionals.
4. Recognize the cost-effectiveness of investigations and treatments.
5. Respect patient privacy, confidentiality, and the sanctity of life.
6. Interpret informed consent, advanced directives, and the physician-patient relationship.
7. Appreciate the psychological and socio-economic effects of diseases on patients.
8. Stay updated with advances in Otolaryngology and other Specialties.
9. Refer patients to appropriate specialties timely.
10. Promote health through immunizations, periodic health screening, and risk factor assessment.
11. Acknowledge the importance of teaching and research for professional advancement.

1.7 TEACHING AND LEARNING STRATEGIES:

The MS Otolaryngology curriculum at Rawalpindi Medical University emphasizes a diverse, evidence-based approach to learning, fostering the development of both clinical and academic excellence. **Teaching strategies include hands-on clinical exposure, interactive case-based learning, and procedural training in various inpatient and outpatient settings. Residents are actively engaged in interdisciplinary collaboration and are provided opportunities to lead presentations and participate in problem-solving discussions.** The program offers a broad range of elective rotations in subspecialties, allowing residents to tailor their training and gain expertise in specific areas, further supplemented by dedicated mentorship and research projects aimed at fostering critical thinking and lifelong learning.

1.8 ASSESSMENT AND EVALUATION METHODS:

The assessment of MS Otolaryngology residents at Rawalpindi Medical University will comprehensively evaluate their knowledge, skills, and attitudes through a combination of formative, summative, and workplace-based assessments (WPBA). These assessments are structured in accordance with Miller's Pyramid of Clinical Competence, ensuring a progressive evaluation of residents' abilities from foundational knowledge to the application of clinical skills in real-world settings. A variety of methods will be employed to measure competence across all domains, aligning with the curriculum's objectives to produce clinically proficient, research-oriented, and professionally ethical physicians.

1.9 TOOLS OF ASSESSMENT:

MILLER'S PYRAMID OF CLINICAL COMPETENCY

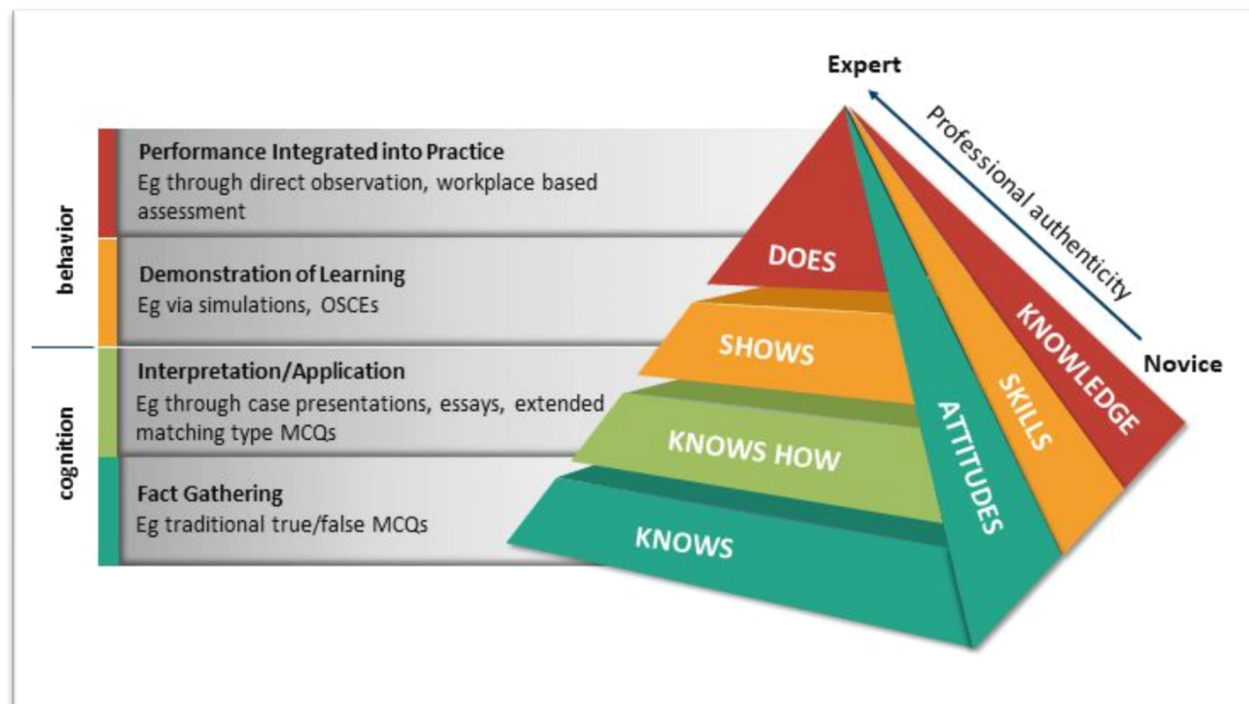


Fig 1: Adapted from Burns and Mehay (2009) Miller' Prism of clinical competency

SECTION II

COURSE CONTENT

2.1 INTRODUCTION:

The content of the MS Otolaryngology curriculum encompasses a comprehensive framework designed to equip postgraduate trainees with the necessary competencies in Otolaryngology. It includes theoretical knowledge, clinical skills, Surgical skills and professional attitudes essential for the diagnosis, management, and care of patients with a wide range of medical conditions. This content is structured to align with international standards such as the ACGME Core Competencies while ensuring relevance to the healthcare landscape of Pakistan.

This structured approach, adhering to ACGME Core Competencies, ensures that MS Otolaryngology graduates from RMU are fully equipped to meet the evolving challenges of Otolaryngology practice both locally and globally. The curriculum is based on the following components.

Domain	Details
Knowledge	The curriculum provides a robust foundation in the understanding of pathophysiology, clinical features, diagnostics, surgical and therapeutic options across various specialties, including General surgery, Maxillofacial surgery, Neurosurgery and Plastic surgery. Emphasis is placed on evidence-based practice, interpretation of laboratory and imaging data, and the integration of clinical guidelines into patient care.
Skills	Skills emphasize hands-on clinical proficiency. Residents are trained in essential procedures such as Tracheostomy and other lifesaving procedures. They are also taught to perform comprehensive patient assessments, interpret diagnostic tests, and develop management plans. Clinical reasoning, problem-solving, and procedural competence are refined through ward rounds, case-based discussions, and simulated patient encounters.
Attitude	The curriculum aims to instill professionalism, ethical practice, and effective communication. Residents are trained to exhibit compassion, maintain patient confidentiality, and uphold a commitment to lifelong learning. In the Pakistani context, special attention is given to cultural sensitivity, resource management, and delivering high-quality care in resource-constrained settings. Additionally, residents are expected to engage in teamwork and demonstrate leadership in multidisciplinary environments.

This section outlines the content to be covered during the four-year MS Otolaryngology residency program, along with the learning outcomes residents are expected to achieve by the end of each academic year. The curriculum is structured to progressively build the residents' knowledge, clinical skills, and professional competencies. Each year of training introduces more complex topics and responsibilities, ensuring that by the end of the program, residents are fully prepared to manage a broad range of Otolaryngology cases independently.

2.2 STANDARDS FOR DEPTH OF KNOWLEDGE DURING TRAINING:

In the specialty training the following methodology is used to define the relevant depth of knowledge required of the surgical trainee.

- 1 - knows of
- 2 - knows basic concepts
- 3 - knows generally
- 4 - knows specifically and broadly

Standards for clinical and technical skills

The practical application of knowledge is evidenced through clinical and technical skill. Unless otherwise stated in this document, the clinical skills listed below are expected to be at level IV at the end of Year-4.

1. Has observed-(Level-1)

At this level the trainee:

- Has adequate knowledge of the steps through direct observation.
- Demonstrates that he/she can handle instruments relevant to the procedure appropriately and safely.
- Can perform some parts of the procedure with reasonable fluency.

2. Can do with assistance (Level-II)

At this level the trainee:

- Knows all the steps - and the reasons that lie behind the methodology.
- Can carry out a straightforward procedure fluently from start to finish.
- Knows and demonstrates when to call for assistance/advice from the supervisor (knows personal limitations).

3. Can do whole but may need assistance (Level-III)

At this level the trainee:

- Can adapt to well-known variations in the procedure encountered, without direct input from the trainer.
- Recognizes and makes a correct assessment of common problems that are encountered.
- Is able to deal with most of the common problems.
- Knows and demonstrates when he/she needs help.
- Requires advice rather than help that requires the trainer to scrub.

4. Competent to do without assistance, under indirect supervision, which means that if needed by the trainee the supervisor must be readily available (Level IV)

At this level the trainee:

- With regard to the common clinical situations in the specialty, can deal with straightforward and difficult cases to a satisfactory level and without the requirement for external input.

5. Competent to do independently (Level- V)

At this level one would expect a consultant surgeon to function.

- Is capable of supervising trainees.

2.3 SYLLABUS:

The syllabus is organized by topics which are the presenting conditions of patients in relation to the specialty

OTOLOGY

Topic	Non-infective, acquired lesions of the pinna and external ear canal
Category	Otology
Sub-category:	Non infective conditions of the external ear
Objective	To understand the etiology, pathology, presentation and management of non-infective conditions of the external ear. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive
Knowledge	Anatomy, physiology and pathology of the external ear and relationship of disease to the temporal bone. Systemic conditions affecting external ear Dermatological conditions of the external ear Pharmacology of medications used in treatment Etiology, pathology, presentation and management of benign tumours of the pinna and external ear canal Etiology, pathology, presentation and management of malignant tumours of the pinna and external ear canal Etiology of acquired atresia of the external auditory meatus Pathogenesis of effects of ionizing radiation of the ear and temporal bone Etiology, pathology, presentation and management of osteoma /exostosis Management of foreign bodies Understand the implications and management of trauma to the pinna Management including medical and surgical options as appropriate
Clinical Skills	HISTORY AND EXAMINATION Obtain appropriate history, Clinical examination, Otoscopy microscopy DATA INTERPRETATION Interpretation of audiological investigations Awareness and interpretation of radiological investigations

Technical Skills and Procedures	Aural toilet including microsuction and application of dressings Biopsy of lesion of external ear Oncological resection of tumours of the pinna Reconstructive surgery of the pinna Meatoplasty Removal of osteoma/exostosis Otomicroscopy and removal of FBs Drainage of haematoma of pinna Suturing of pinna
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Topic	Infective conditions of the pinna and external ear canal
Category	Otology
Sub-category:	Infective conditions of the external ear and pinna including otitis externa, furunculosis, otomycosis, viral infections, perichondritis & cellulitis
Objective	To understand the etiology, pathology, presentation and management of infective conditions of the external ear. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive
Knowledge	Anatomy, physiology and pathology of the external ear and relationship of disease to the temporal bone. Pathogenesis of infective disorders of the external ear and pinna Necrotising otitis externa Microbiology of external ear and conditions affecting the pinna Knowledge of antimicrobial and antiviral agents and relevant pharmacology of medications used in treatment. Differential diagnosis of infective/inflammatory conditions Management including medical and surgical options as appropriate

Clinical Skills	HISTORY AND EXAMINATION Obtain appropriate history Clinical examination Otoscopy Microscopy DATA INTERPRETATION Awareness and interpretation of radiological investigations Awareness and interpretation of microbiological investigations
Technical Skills and Procedures	Microscopy Suction clearance Biopsy of lesion of external ear canal Drainage of abscess

Topic	Trauma
Category	Otology
Objective	To understand the aetiology, presenting signs, symptoms and management of trauma of the external, middle and inner ear including the temporal bone. This module gives some indication of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive
Knowledge	Anatomy, physiology and pathology of the ear and auditory pathways. Effects of trauma on the pinna, ear canal, tympanic membrane, middle ear, otic capsule and temporal bone. The effects and assessment of poly-trauma and neurological injury. Effects of barotrauma Surgical and non-surgical management of trauma of the external, middle and inner ear. Glasgow Coma Scale Grading of facial nerve function Neurophysiological assessment of facial nerve.

Clinical Skills	HISTORY AND EXAMINATION Obtain appropriate history Clinical examination including neurological assessment Otoscopy Microscopy Audiological and vestibular assessment DATA INTERPRETATION Objective and subjective audiological and vestibular tests Radiological imaging of the temporal bone, head and neck Laboratory investigations for suspected CSF leaks PATIENT MANAGEMENT Be able to advise the patient of the treatment options, discuss risks and potential benefits, potential complications Work where appropriate in a multidisciplinary team & liaise with other professional and organizations Importance of teamwork in managing critically ill patients
Technical Skills and Procedures	Microscopy Suction clearance of ear Meatoplasty Drainage of haematoma of pinna Suturing of pinna Exploratory tympanotomy Myringoplasty Ossiculoplasty Facial nerve decompression/anastomosis Repair of perilymph leak

Topic	Acute otitis media and sequelae
Category	Otology
Sub-category:	Middle ear
Objective	To understand the aetiology, presenting signs, symptoms and management of acute infection of the middle ear. This module gives some indication of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive

Knowledge	Anatomy, physiology and pathology of the ear and temporal bone Microbiology related to acute ear infections. Complications of acute otitis media including mastoiditis, lateral sinus thrombosis, meningitis and intracranial abscess Indications for laboratory and radiological investigations Differential diagnosis of acute otitis media and complications. Medical and surgical management options Relevant pharmacology of medications used in medical treatment
Clinical Skills	HISTORY AND EXAMINATION Obtain appropriate history Clinical examination including neurological assessment Otoscopy Microscopy Audiological assessment DATA INTERPRETATION Interpretation of radiological investigations PATIENT MANAGEMENT Work where appropriate in a multidisciplinary team & liaise with other professional and organisations Importance of teamwork in managing critically ill patients
Technical Skills and Procedures	Microsuction Myringotomy and grommet insertion Cortical mastoidectomy and access mastoidectomy

Topic	Chronic suppurative otitis media and sequelae
Category	Otology
Sub-category:	Middle ear
Objective	To understand the aetiology, presenting signs, symptoms and management of chronic infection/inflammation of the middle ear. This module gives some indication of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive

Knowledge	Anatomy, physiology and pathology of the ear and temporal bone Definition and classification of chronic middle ear disease, including cholesteatoma, retraction pockets, perforations, otitis media with effusion and myringitis. Aetiology and pathophysiology of chronic middle ear disease Microbiology related to chronic middle ear disease Complications of chronic middle ear disease (including intracranial sepsis) Principles and practice of audiology including pure tone audiometry, tympanometry Principles of specialist audiological investigations including speech audiometry, otoacoustic emissions and evoked response audiometry. Indications for radiological investigations Pharmacology of medications used in medical treatment Medical and surgical management options
Clinical Skills	HISTORY AND EXAMINATION Obtain appropriate history Clinical examination including neurological assessment Otoscopy Microscopy Audiological assessment DATA INTERPRETATION Interpretation of audiological investigations Interpretation of radiological investigations
Technical Skills and Procedures	Microsuction Myringotomy and grommet insertion T tube insertion Grommet removal Aural polypectomy Myringoplasty Cortical mastoidectomy and access mastoidectomy Modified radical mastoidectomy Combined approach tympanoplasty Ossiculoplasty

Topic	Adult hearing loss
Category	Otology
Sub-category:	Deafness in adults

Objective	To understand the aetiology, presenting signs, symptoms and management of adults who present with conductive, mixed, progressive or sudden onset of sensorineural deafness. This module gives some indication of the breadth and depth of required knowledge, clinical and surgical skills. This list should not be considered to be fully inclusive or exhaustive. and bone anchored hearing aids. Principles of preventative audiology and hearing conservation
Knowledge	Embryology of the ear Anatomy, physiology and pathology of the ear and auditory pathways. Principles of acoustics and measurement of sound. Principles and practice of audiology including pure tone audiometry, speech audiometry and electrophysiological tests and other objective tests of hearing including oto-acoustic emissions Indications for radiological investigation of hearing loss Genetics of otological diseases Differential diagnosis, aetiology and management of conductive hearing loss including external/middle ear disorders and otosclerosis. Differential diagnosis, aetiology and management of sensorineural hearing loss including noise induced hearing loss, presbycusis, Meniere's disease autoimmune diseases and retro-cochlear pathology. Aetiology, investigation and management of acute sensorineural hearing loss Central auditory processing disorders, auditory neuropathy, obscure auditory dysfunction Auditory rehabilitation including the use of hearing aids and other assistive devices. Social and psychological issues of deafness Principles of non-auditory communication Principles of surgical reconstruction. Management of severe/ profound hearing loss. Principles of and indications for cochlear implants, middle ear implants and bone anchored hearing aids. Principles of preventative audiology and hearing conservation
Clinical Skills	HISTORY AND EXAMINATION Obtain appropriate history Clinical examination Otoscopy Microscopy Audiological assessment DATA INTERPRETATION Interpretation of audiological investigations Interpretation of radiological investigations Interpretation of laboratory investigations PATIENT MANAGEMENT Demonstrate communication skills and empathy Be able to advise the patient of the treatment options, discuss risks and potential benefits, potential complications

	To work where appropriate in a multidisciplinary team & liaise with other professional and organisations Principles of a holistic approach to the management of hearingloss Genetic counselling
Technical Skills and Procedures	Perform pure tone audiometry, tympanometry Microscopy Microsuction Myringotomy + grommet insertion Exploratory tympanotomy Myringoplasty Ossiculoplasty Stapedotomy/stapedectomy Cochlear implantation Middle ear implantation Insertion of Bone anchored hearing aid abutment Closure of perilymph leak The surgical approaches to the CP angle Acoustic neuroma surgery

Topic	Facial palsy
Category	Otology
Sub-category:	Facial Paralysis
Objective	To understand the aetiology, presenting signs, symptoms and management of facial nerve palsy. This module gives some indication of the breadth and depth of required knowledge, clinical and surgical skills. This list should not be considered to be fully inclusive or exhaustive
Knowledge	The anatomy and physiology of facial nerve and related structures The aetiology, classification and neuro-physiology of facial paralysis Indications for investigations including radiology, electrophysiology and laboratory tests. Facial nerve grading Management of acute and chronic facial nerve palsy Management and prevention of ocular complications Principles of peri-operative facial nerve monitoring Principles of rehabilitation for facial paralysis

Clinical Skills	HISTORY AND EXAMINATION Obtain appropriate history Clinical examination including assessment of facial nerve function Otoscopy
	DATA INTERPRETATION Neuro-physiological tests of inner ear function and facial nerve Interpretation of radiological tests Interpretation of laboratory investigations
	PATIENT MANAGEMENT Demonstrate communication skills and empathy Appreciate the psychological effects of facial disfigurement Be able to advise the patient of the treatment options, and liaise with other health care professionals.
Technical Skills and Procedures	Setup and use of intra-operative facial nerve monitor Cortical mastoidectomy Modified radical mastoidectomy Full decompression of facial nerve Facial nerve anastomosis Resection of facial neuroma

Topic	Disorders of balance
Category	Otology
Sub-category:	Vertigo
Objective	To understand the aetiology, presenting signs, symptoms and management of patients with disordered balance. This module gives some indication of the breadth and depth of required knowledge, clinical and surgical skills. The list should not be considered to be fully inclusive or exhaustive.

Knowledge	Anatomy and physiology related to maintenance of balance including the vestibular system, visual, locomotor, central nervous and cardiovascular systems The pathology and various hypotheses relating to the aetiology and management of sudden vestibular failure, Meniere's disease, benign paroxysmal vertigo, vestibular schwannoma, pharmacological and metabolic side effects The handicaps related to age related sensory and proprioceptive degeneration Psychological aspects of dizziness Appropriate investigations for balance disorders including audiological, radiological, laboratory and vestibular tests. The law as it relates to disorders of balance The principles of vestibular rehabilitation The principles of particle repositioning manoeuvres Medical, non-surgical and surgical treatment options
Clinical Skills	HISTORY AND EXAMINATION Obtain appropriate history Clinical examination including neurological assessment Otoscopy DATA INTERPRETATION Interpretation of audiological tests Interpretation of vestibular tests Interpretation of radiological and laboratory tests PATIENT MANAGEMENT Demonstrate communication skills and empathy Be able to advise the patient of the treatment options, discuss risks and potential benefits, potential complications To work where appropriate in a multidisciplinary team & liaise with other professional and organisations

Technical Skills and Procedures	Perform particle re-positioning manoeuvres Myringotomy and grommet insertion Intratympanic instillation of drugs Cortical mastoidectomy Decompression of endolymphatic sac Closure of perilymph fistula Labyrinthectomy Vestibular neurectomy Singular neurectomy Superior SCC dehiscence repair
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Topic	Lateral skull base tumours
Category	Otology
Sub-category:	Head and neck neoplasia
Objective	To understand the aetiology, presenting signs, symptoms and management of lateral skull base neoplasia. This module gives some indication of the breadth and depth of required knowledge, clinical and surgical skills. The list should not be considered to be fully inclusive or exhaustive.
Knowledge	Anatomy of the skull base and neck Anatomy of the inner, middle and external ear Anatomy of the cranial nerves Pathology and pathogenesis of skull base tumours The relevant clinical neurological, vascular, radiological, biological, immunological and serological investigations The genetics of skull base tumours including vestibular schwannomas and genetic counselling. The clinical presentation of skull base tumours The surgical and non-surgical management options. The surgical approaches to the CP angle and skull base

Clinical Skills	HISTORY AND EXAMINATION Obtain appropriate history Clinical examination including neurological assessment Otoscopy DATA INTERPRETATION Interpretation of audiological tests Interpretation of vestibular tests Interpretation of radiological and laboratory tests PATIENT MANAGEMENT Demonstrate communication skills and empathy Be able to advise the patient of the treatment options, discuss risks and potential benefits, potential complications Principles of patient management including multidisciplinary team working
Technical Skills and Procedures	Surgical approaches to the lateral skull base Tympanotomy Resection of glomus tympanicum Management of complications of lateral skull base surgery including CSF leak, lateral sigmoid thrombosis and facial palsy.

RHINOLOGY

Topic	Epistaxis
Category	Rhinology
Sub-category:	None
Objective	To understand the aetiology, presenting symptoms and signs and management of epistaxis. There should be detailed understanding of the presenting features, complications, diagnosis, and management of these problems. This list should not be considered to be fully inclusive or exhaustive

Knowledge	Know the anatomy of the nose Understanding of local and systemic aetiologies of epistaxis. Detailed knowledge of the anatomy and physiology of nasal vasculature Detailed understanding of the presenting symptoms and signs of epistaxis Detailed knowledge of management including first aid measures, nasal cautery, packing and operative techniques in the management of epistaxis Know the complications of epistaxis and the management of them. Understanding of the role of radiology and embolization in managing epistaxis
Clinical Skills	Demonstrate expertise in taking an appropriate clinical history. Ability to elicit physical signs both local and systemic if appropriate Awareness of relevant haematological and imaging investigations. Awareness of management principles in patient with epistaxis Ability to resuscitate critically ill patient
Technical Skills and Procedures	Diagnostic nasendoscopy Packing of nose Removal of nasal packing Cautery of nasal septum Ethmoid Artery ligation Sphenopalatine artery ligation Maxillary artery ligation External Carotid artery ligation Approach to ICA epistaxis

Topic	Nasal trauma and deformity
Category	Rhinology
Sub-category:	None
Objective	To understand the presenting features, diagnosis, complications and management of nasal trauma and deformity. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive.

Knowledge	Know the anatomy of the nose, paranasal sinuses and facial skeleton. Understanding of the mechanisms of trauma responsible for nasal and facial injuries. Understanding of objective assessment of airway e.g. rhinomanometry Knowledge of the appropriate imaging techniques Knowledge of the specific complications of nasal trauma Knowledge of the management of nasal trauma Knowledge of the management of nasal deformity Glasgow Coma Scale
Clinical Skills	Ability to take a relevant history and perform an appropriate clinical examination Knowledge of the relevant special investigations and correct interpretation eg rhinomanometry Ability to adequately resuscitate the critically ill patient
Technical Skills and Procedures	Fracture nose reduction Insertion septal button Packing of nose Management of traumatically induced epistaxis Septoplasty Septorhinoplasty Surgical repair Septal perforation-open and endonasal

Topic	Acute and chronic rhinosinusitis
Category	Rhinology
Sub-category:	None
Objective	To understand the aetiology, pathophysiology, and microbiology. There should be detailed understanding of the presenting features, complications, diagnosis, and management of these infections. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive.

Knowledge	Detailed knowledge of anatomy and physiology of the nose and paranasal sinuses Know the microbiology of acute and chronic rhinosinusitis understanding of special investigations to inform the diagnosis Understanding of the management of acute and chronic rhinosinusitis. Knowledge of the indications for, techniques of, and complications of surgical management Knowledge of the complications of sinusitis and their management.
Clinical Skills	Demonstrate an ability to take an appropriate history and perform a nasal examination with a speculum and endoscope. Awareness of the indications for and ability to interpret imaging including CT and MRI Awareness of indications for other special investigations including microbiology, immunology etc
Technical Skills and Procedures	Preparation of the nose for endoscopic surgery Nasendoscopy Antral washout – direct vision Inferior meatal antrostomy – direct vision + endoscopic Middle meatal antrostomy – endoscopic Nasal polypectomy – endoscopic including microdebrider Middle turbinate partial excision Uncinectomy – endoscopic Anterior ethmoidectomy - endoscopic Caldwell-Luc – direct vision External ethmoidectomy Posterior ethmoidectomy – endoscopic Sphenoidotomy – endoscopic Opening the frontal recess – endoscopic Balloon sinuplasty Surgical management of intra-orbital bleeding Extended frontal sinus procedures Osteoplastic flap Modified endoscopic medial maxillectomy Frontal sinusotomy types 1, 2 and 3

Topic	Nose and sinus inflammation including allergy
Category	Rhinology
Sub-category:	None
Objective	To understand the aetiology and pathophysiology of nasal & paranasal sinus inflammation. There should be detailed understanding of the presenting features, complications, diagnosis, and management of these infections. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive.

Knowledge	Detailed knowledge of anatomy and physiology of the nose and paranasal sinuses Understanding of the aetiologies underlying inflammation of the nose and sinuses. Basic science of allergy Know the role of allergy in the pathophysiology of inflammation of the nose and sinuses. Understanding of the special investigations used in the assessment of nasal allergy. Understanding of the imaging modalities to assess the nose and sinuses Knowledge of the role of management of allergy, and drug treatment in nasal and sinus inflammation. Knowledge of the indications for, techniques of and complications of surgical management Knowledge of systemic conditions that can cause sinonasal inflammation Understanding of scientific basis and methodology of desensitisation
Clinical Skills	Ability to take an appropriate history and perform endoscopic examination of the nose and sinuses. Ability to interpret the result of allergy testing including skin prick testing Know which haematological investigations & radiological imaging are appropriate.
Technical Skills and Procedures	Preparation of the nose for endoscopic surgery Nasendoscopy Antral washout – direct vision Inferior meatal antrostomy – direct vision + endoscopic Middle meatal antrostomy – endoscopic Nasal polypectomy – endoscopic including microdebrider Turbinate surgery Uncinectomy – endoscopic Anterior ethmoidectomy - endoscopic Caldwell-Luc – direct vision External ethmoidectomy Posterior ethmoidectomy – endoscopic Sphenoidotomy – endoscopic Opening the frontal recess – endoscopic Balloon sinuplasty Surgical management of intra-orbital bleeding

Topic	Congenital abnormalities of the nose and sinuses
Category	Rhinology
Sub-category:	None
Objective	To understand the aetiology, clinical features and management of congenital nasal abnormalities. To understand how these may be associated with other syndromes. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive.

Knowledge	Knowledge of the anatomy and physiology of the nose and paranasal sinuses. Knowledge of the embryology of the nose and sinuses. Knowledge of those conditions associated with congenital nasal abnormalities. Understanding of how to manage congenital nasal abnormalities in both the elective and emergency settings. Understanding of imaging modalities appropriate to the investigation of congenital abnormality Principles of genetics relating to congenital abnormalities
Clinical Skills	Ability to take an appropriate history from the parent and child and perform relevant general and specific rhinological examination. Examination including endoscopic
Technical Skills and Procedures	Nasendoscopy Examination under anaesthesia Surgical management of choanal atresia Endoscopic and open approaches to midline congenital lesions

Topic	Facial pain
Category	Rhinology
Sub-category:	None
Objective	To understand the aetiologies, characteristics and management of conditions presenting with facial pain, including those causes not arising in the upper aerodigestive tract
Knowledge	Anatomy and physiology of the head and neck, including the face, TMJ, dentition and cervical spine Understand the differential diagnosis of facial pain including organic and functional causes Understand the various treatment modalities, both medical and surgical Understanding of the pharmacology of drugs used in the management of facial pain Awareness of the multidisciplinary approach to management
Clinical Skills	Ability to take a relevant history of facial pain Ability to perform an appropriate ENT, neurological and locomotor examination Understanding of the appropriate radiological investigations Appropriate management to include onward referral for pharmacological, surgical and counselling therapies

Technical Skills and Procedures	Outpatient endoscopy of upper aerodigestive tract Examination under anaesthesia Biopsy - external nose Biopsy – internal nose
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Topic	Pituitary disease
Category	Rhinology
Sub-category:	None
Objective	To understand the aetiology, classification, clinical features and management of pituitary disease. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive.
Knowledge	Understanding of the anatomy of the nose, paranasal sinuses and parasellar regions Knowledge of the Pathophysiology of the hypothalamic-pituitary axis and associated disorders Understanding of the principles of perioperative care Knowledge of indications for the endonasal and craniotomy approaches Surgical complications
Clinical Skills	Ability to take a relevant history and perform an appropriate clinical examination Knowledge of the relevant pituitary investigations and correct interpretation of them.
Technical Skills and Procedures	Transphenoidal approach to the pituitary fossa

Topic	Disorders of Olfaction
Category	Rhinology
Sub-category:	Olfaction
Objective	To understand the aetiology, clinical presentation and management of olfactory disorders. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive.

Knowledge	Know the anatomy of the olfactory nerve including intracranial connections. Know the physiology of olfaction Know the classification of olfactory dysfunction Know the causes of olfactory dysfunction Understand the scientific basis for the assessment of olfactory dysfunction Know of the commonly used tests of olfaction Know the anatomy and physiology of taste Know the causes of taste dysfunction
Clinical Skills	Be competent at taking a comprehensive history and examination from a patient presenting with olfactory and/ or taste dysfunction. Be competent at performing a formal assessment of olfaction using appropriate validated assessment techniques Be competent at ordering and interpreting appropriate imaging to investigate olfactory dysfunction
Technical Skills and Procedures	Nasendoscopy Examination of nose and postnasal space Nasal biopsy

Topic	Sinonasal neoplasms including anterior skull base tumours
Category	Sinonasal neoplasms
Sub-category:	None
Objective	To understand the aetiology, clinical presentation and management of benign and malignant tumours of the nose and paranasal sinuses. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive.
Knowledge	Knowledge of the anatomy of the nose and paranasal sinuses. Knowledge of the distribution of cervical lymph nodes Understanding of the pattern of spread of malignancy in the head and neck Knowledge of the different histological types of neoplasm in the nose, paranasal sinuses and skull base. Understanding of the principles of medical and surgical management of neoplasms of the nose and sinuses. Knowledge of the complications of both the diseases and their management. Understanding of the multidisciplinary approach to the management of sinonasal/skull base tumours
Clinical Skills	Ability to take a relevant history, perform an appropriate examination and interpret clinical findings correctly Demonstrate a rational approach to special investigations Participation in a multi-disciplinary team approach to management of sinonasal neoplasms

Technical Skills and Procedures	Examination of nose under anaesthesia Biopsy of nose - external Biopsy of nose – internal Anterior skull base approaches including endoscopic Endoscopic medial maxillectomy Lateral rhinotomy Endoscopic excision nasal and sinus tumours Maxillectomy Midfacial degloving Bicoronal flap approach Endoscopic repair of anterior skull base csf leak Osteoplastic flap approach Craniofacial resection
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Topic	CSF LEAKS / SKULL BASE DEFECT
Category	Advanced Rhinology
Sub-category:	None
Objective	To understand the aetiologies, pathophysiology and clinical features of nasal polyps. There should be a detailed knowledge of the diagnostic features, management and complications. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive.
Knowledge	Anatomy of nose and paranasal sinuses Knowledge of aetiology of CSF leaks and meningoencephaloceles relevant to ENT Understanding of pathophysiology and complications of CSF leaks /skull base defects Understanding of the management of CSF leaks/skull base defects Understanding of principles of diagnosis and management of CSF leaks and skull base defects
Clinical Skills	Ability to take an appropriate history and perform an examination including nasal endoscopy. Awareness of and ability to interpret CT/MR imaging and other relevant assessments Lumbar puncture and lumbar drain management Ability to work in a multidisciplinary team
Technical Skills and Procedures	Endoscopic repair with free grafts for small defects Management of larger defects with pedicled nasal flaps Harvesting of nasoseptal flap

Topic	Extended endonasal skull base procedures
Category	Advanced Rhinology
Sub-category:	None
Objective	To understand the aetiology, clinical presentation and management of benign and malignant tumours of the nose and paranasal sinuses. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive
Knowledge	Knowledge of the anatomy of the nose, paranasal sinuses, and skull base Knowledge of tumours/disorders of skull base in the regions of the anterior and posterior fossa and pterygopalatine fossa Understanding of the selection of approaches, both endonasal and transcranial. Principles of perioperative management Complications of surgery and principles of management. Understanding of the multidisciplinary approach to the management of sinonasal/skull base tumours
Clinical Skills	Principles of assessment and perioperative management of midline tumours Ability to interpret relevant CT and MR & angiography / embolization images Principles of lumbar puncture and lumbar drainage Participation in a multi-disciplinary team approach to management of skull base lesions
Technical Skills and Procedures	Examination of nose under anaesthesia Biopsy of nose - external Biopsy of nose – internal SPA ligation endonasal transmaxillary approach to pterygopalatine fossa Vidian neurectomy Anterior skull base approaches including endoscopic Endoscopic medial maxillectomy Lateral rhinotomy Endoscopic excision skull base tumours (team) Midfacial degloving approach to the sinuses Endoscopic repair of anterior / posterior skull base Repair csf leak Craniofacial resection Craniotomy

Topic	Orbital disorders
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Category	Advanced Rhinology
Sub-category:	Intraorbital
Objective	To understand the aetiologies, characteristics and management of conditions presenting with facial pain, including those causes not arising in the upper aerodigestive tract. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive.
Knowledge	Anatomy and physiology of the orbit and its contents Assessment of visual loss and knowledge of tests of visual and orbital function Understanding of thyroid eye disease Understanding of disorders of the optic nerve as relevant to otolaryngologists Knowledge of the surgical approaches both open and endoscopic to the orbit
Clinical Skills	Ability to take a relevant history from a patient with an orbital disorder Ability to perform an appropriate ENT, neurological and ophthalmic examination Understanding of the appropriate radiological and special
	investigations of visual and orbital function Ability to work in a team with ophthalmological colleagues
Technical Skills and Procedures	Nasal endoscopy Lateral canthotomy Medial orbital endoscopic decompression Medial open orbital decompression Optic nerve decompression

Topic	Orbital disorders
Category	Surgical Management of Epiphora
Sub-category:	Rhinology
Objective	To understand the aetiology and pathophysiology of epiphora. There should be detailed understanding of the presenting features, diagnosis, and management of this disorder. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive.

Knowledge	Anatomy of the lacrimal system Intranasa anatomy Physiology of lacrimation Causes of epiphora 'Red Flag' symptoms
Clinical Skills	Take a comprehensive history from a patient presenting with epiphora Relevant ophthalmic examination Syringing of lacrimal system and understanding of results Dye disappearance test Understand indications for relevant investigations Team working with ophthalmologist
Technical Skills and Procedures	Nasal endoscopy EUA Nose Endonasal DCR

Topic	Septorhinoplasty
Category	Rhinology
Sub-category:	Facial Plastics
Objective	To understand the presenting features, assessment, management and complications of nasal and septal deformity. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive.
Knowledge	Understanding of the anatomy of the nose, paranasal sinuses and facial skeleton. Understanding of the embryology of the nose Understanding of the mechanisms of trauma responsible for nasal and facial injuries. Understanding of methods of assessment of the facial skeleton Knowledge of surgical techniques including use of grafts Knowledge of the specific complications of nasal surgery
Clinical Skills	Ability to take a relevant history and perform an appropriate clinical examination Ability to assess photographs and devise a surgical plan including onwards referral as appropriate

Technical Skills and Procedures	Septoplasty Septorhinoplasty including use of grafts Appropriate dressing and packing of nose
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Topic	Congenital abnormalities of the face
Category	Rhinology
Sub-category:	Facial Plastics
Objective	To understand the aetiology, clinical features and management of congenital facial abnormalities. To understand how these may be associated with other syndromes. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive.
Knowledge	Knowledge of the anatomy and physiology of the facial structures. Knowledge of the embryology of the face including the nose, palate and neck. Knowledge of those conditions associated with congenital facial abnormalities. Understanding of how to manage congenital facial abnormalities in both the elective & emergency settings. Principles of genetics and counselling
Clinical Skills	Ability to take an appropriate history from the parent and child and perform relevant examinations. Nasendoscopy if appropriate
Technical Skills and Procedures	Examination under anaesthesia Excision facial skin lesion including reconstructive techniques Septorhinoplasty in cleft patients

Topic	Cosmetic Surgery
Category	Rhinology
Sub-category:	Facial Plastics

Objective	To understand the presentation and analysis of cosmetic deformity of the face. This involves a detailed understanding of the anatomy of the skin and deeper structures and knowledge of the different facial aesthetic units. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive.
Knowledge	Knowledge of relaxed skin tension lines Understanding of the blood supply and innervation of the face. Knowledge of the planes of dissection available. Knowledge of the methods used to analyse facial features. Knowledge of the various procedures used in cosmetic facial surgery. Knowledge of the limitations and complications of cosmetic facial surgery
Clinical Skills	Ability to take a relevant history and perform an appropriate clinical examination Ability to assess facial deformity and devise a management plan Nasendoscopy Resection of nasal lesion Be able to reconstruct defects with local flaps
Technical Skills and Procedures	Be able to reconstruct defects using Distant flaps Excision skin lesion Harvesting and use of split and full thickness skin grafts Facelift Tissue expansion techniques Neuromuscular blockade

Topic	Skin Cancer
Category	Skin cancer
Sub-category:	Facial plastics
Objective	To understand the aetiology, clinical presentation and management of benign and malignant tumours of the skin. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive.

Knowledge	Know the anatomy and cellular composition of the skin. Know the zones of the face and relaxed skin contour lines. Know the physiology of skin. Understand the principles of carcinogenesis Know of the different types of skin cancer and their classification. Know the presenting features and appearance of different types of skincancer. Know the causes and predisposing factors of skin cancer. Know of the staging of different types of skin cancer. Know of the treatment of different types of skin cancer. Understand the rationale for the strategies to prevent skin cancer.
Clinical Skills	Be able to take a comprehensive history and examination from a patient presenting with symptoms of skin cancer Manage all patients within a multidisciplinary setting when indicated. Be able to recommend correct treatment options to patients Order appropriate imaging.
Technical Skills and Procedures	Skin biopsy Excision of skin cancer and primary closure Excision of skin cancer and reconstruction with local axial or random pattern flaps or grafts Harvesting and use of split and full thickness skin grafts Be able to reconstruct defects using Distant flaps

HEAD AND NECK

Topic	Adenoid and tonsillar pathology in adults
Category	Head and Neck
Sub-category:	None
Objective	To understand the aetiology, presenting signs, symptoms and management of benign adenotonsillar and pharyngeal disease. This module gives some indication of the breadth and depth of required knowledge and surgical skills. The list should not be considered to be fully inclusive or exhaustive.

Knowledge	Demonstrate a detailed knowledge of the anatomy, physiology, pathology & microbiology of the oro and nasopharynx incl relevant anatomical relationships Know the presenting signs and symptoms of benign adenotonsillar & pharyngeal disease Know the complications of adenotonsillar infection. Understand the investigation, differential diagnosis and complications of adenotonsillar hypertrophy Know the 'red flag' indicators of malignant disease of the pharynx
Clinical Skills	Demonstrate expertise at eliciting an appropriate clinical history and physical signs of benign adenotonsillar and pharyngeal disease and the complications of treatment including those involving the airway Diagnosis and medical management of post-operative haemorrhage following adenotonsillar surgery
Technical Skills and Procedures	Incision and drainage of peritonsillar abscess. Manage the compromised airway due to hypertrophy Tonsillectomy and adenoidectomy in adults Surgical management of post-operative bleeding following adenotonsillar surgery

Topic	Airway obstruction in adults
Category	Head and Neck
Sub-category :	None
Objective	To understand the aetiology, presenting signs, symptoms and management of patients presenting with upper airway disorders in the emergency situation in adults. This module gives some indication of the breadth and depth of required. Knowledge and surgical skills. The list should not be considered to be fully inclusive or exhaustive.
Knowledge	Demonstrate a detailed knowledge of the anatomy & physiology of the larynx, trachea, pharynx and oral cavity Understand the microbiology and pathology of disorders of the upper aerodigestive tract.
	Understand the classification of diseases that may present with airway obstruction. Understand the principles of patient management of patients presenting with airway obstruction. Know the different methods of securing an airway safely (surgical & non-surgical) in an emergency setting Understand the indications & techniques for surgical debulking of upper airway malignancies Understand the principles of the use of cricothyroidotomy and tracheostomy during a Can't Intubate, Can't

	Oxygenate Event.
Clinical Skills	Be able to elicit an appropriate clinical history and correctly interpret physical signs. Be aware of the role of appropriate investigation in the management of airway obstruction Demonstrate the ability to work effectively with anaesthetists and those involved in critical care who manage the 'shared airway'. Demonstrate expertise in the safe assessment of patients with critical airways.
Technical Skills and Procedures	Be competent at performing the following diagnostic procedures; fiberoptic nasopharyngoscopy, direct laryngoscopy, microlaryngoscopy, bronchoscopy, pharyngo oesophagoscopy Be competent at performing endotracheal intubation Be proficient at performing a surgical tracheostomy in the elective & emergency setting both under general and local anaesthesia Percutaneous tracheostomy Be competent at foreign body removal from the airway in adults Debulking procedures (laser/microdebrider) Tracheostomy change Emergency Front of Neck Airway procedures including cricothyroidotomy and tracheostomy

Topic	Aetiology and management of craniocervical trauma in adults
Category	Head and Neck
Sub-category:	None
Objective	To understand the aetiology, presenting signs, symptoms and management of a patient with craniocervical trauma. This module gives some indication of the breadth and depth of required knowledge and surgical skills. The list should not be considered to be fully inclusive or exhaustive.
Knowledge	Understand the anatomy of the head and neck Understand the pathophysiological effects of blunt, penetrating and high and low velocity projectile trauma to the bones and soft tissues of the head and neck Understand the Le Fort classification of facial fractures and their effects.

	Understand the classification of fractures of the mandible and their effects Understand the classification of fractures of the temporal bone and their effects. Understand the consequences and potential complications of injury to structures in the neck, in the 3 horizontal entry zones of the neck. Understand the principles underpinning the appropriate investigation of a patient with a penetrating injury of the neck Understand the principles of the Glasgow Coma Scale and the management of the patient with an altered level of consciousness. Understand the principles of management of traumatic injury to the head and neck, including the indications for urgent surgical exploration and the priorities underpinning the planning of investigation and management. Understand the need for a multidisciplinary approach to management of craniocervical trauma Understand the pathophysiology of chemical and thermal burn injury to the upper aerodigestive tract & principles of management
Clinical Skills	Be able to elicit an appropriate clinical history from a patient with craniocervical trauma (or from a third party witness). Be able to demonstrate the relevant clinical signs from a patient with craniocervical trauma. Be able to appropriately order and interpret the results of investigations in a patient with craniocervical trauma. Be able to coordinate the assembly of an appropriate multidisciplinary team to manage a patient with craniocervical trauma.
Technical Skills and Procedures	Tracheostomy Endotracheal intubation Be able to explore the traumatized neck and secure bleeding vessels. Be able to manage penetrating injury to the viscera of the upper aerodigestive tract Be able to undertake microsurgical re-anastomosis of divided nerves where appropriate

Topic	Disorders of swallowing
Category	Head and Neck
Sub-category:	None
Objective	To understand the aetiology, presenting signs, symptoms and management of common disorders of swallowing, including dysphagia, globus pharyngeus ,neurological swallowing disorders, reflux disease, odynophagia and aspiration. This module gives some indication of the breadth and depth of required knowledge and surgical skills. The list should not be considered to be fully inclusive or exhaustive

Knowledge	Know the anatomy of the pharynx, and physiology of swallowing. Know the causes of odynophagia. Know the various hypotheses relating to the aetiology of dysphagia. Understand the investigation and imaging of a patient with dysphagia. Understand the principles of medical and surgical management of dysphagia Understand the pathophysiology of aspiration, its complications and the principles of management Understand the aetiology and management of globus pharyngeus Understand the aetiology and management of laryngopharyngeal reflux Understand the aetiology and management of Eosinophilic oesophagitis
Clinical Skills	Elicit an appropriate clinical history and clinical signs. Be able to examine the pharynx and oesophagus with endoscopes in outpatients Be able to work in cooperation with Speech & language therapists in the management of dysphagia Be aware of 'red flag' symptoms in the differential diagnosis of dysphagia Interpretation of video fluoroscopic swallowing studies
Technical Skills and Procedures	Flexible fibreoptic nasopharyngolaryngoscopy Fibreoptic endoscopic evaluation of swallowing studies Endoscopic examination of pharynx, larynx and oesophagus under general anaesthesia Removal of foreign bodies from the pharynx, larynx and oesophagus under general anaesthesia Endoscopic pharyngeal pouch surgery Open pharyngeal pouch surgery

Topic	Aetiology and management of cervical sepsis
Category	Head and Neck
Sub-category:	None
Objective	To understand the aetiology, presenting signs, symptoms and management of a patient with cervical sepsis. This module gives some indication of the breadth and depth of required knowledge and surgical skills. The list should not be considered to be fully inclusive or exhaustive.

Knowledge	Know the anatomy of the fascial compartments of the neck. Understand the pathogenesis (including congenital abnormalities) and clinical presentation of deep neck space infections. Know the microbiology of deep neck space infections. Understand the principles of medical and surgical management of deep neck space infection, including image guided drainage procedures. Understand the complications of deep neck space infections and their management.
Clinical Skills	Be able to elicit an appropriate history from a patient with deep cervical sepsis. Be able to demonstrate the relevant clinical signs from a patient with deep cervical sepsis. Be able to order and interpret the results of appropriate investigations, including imaging and microbiological cultures, in a patient with deep cervical sepsis. Be able to undertake treatment of a patient with deep cervical sepsis or complications thereof.
Technical Skills and Procedures	Be proficient in rigid endoscopic examination of the upper aerodigestive tract Be proficient in management of the compromised upper airway in deep cervical sepsis, including tracheostomy. Manage the patient in conjunction with anaesthetists/intensivists Be competent in the incision and drainage of a deep cervical abscess, as well as demonstrating awareness of the complications of such procedures.

Topic	Cervical lymphadenopathy in adults
Category	Head and Neck
Sub-category:	None
Objective	To understand the aetiology, presenting symptoms & signs and management of patients presenting with cervical lymphadenopathy. This module gives some indication of the breadth and depth of required knowledge and surgical skills. The list should not be considered to be fully inclusive and exhaustive.

Knowledge	Demonstrate knowledge of the aetiology & pathology of cervical lymphadenopathy including manifestations of systemic disease. Be able to order the appropriate investigations of neck masses Understand the anatomy of the neck, and distribution of cervical lymph nodes. Classify the lymphatic levels of the neck according to the MSK classification. Demonstrate knowledge of the differing histological and microbiological causes of cervical lymphadenopathy. Presentation, aetiology, investigations and pattern of metastatic spread of upper aerodigestive tract, salivary gland, cutaneous and thyroid malignancies. Demonstrate knowledge of the presentation, aetiology, investigations and principles of management of lymphoreticular disease as it applies to the head and neck. Principles of management of patients with cervical lymphadenopathy including specifically the management of the unknown primary malignant neck lump. Demonstrate knowledge of the indications for medical & surgical management and the complications of management.
Clinical Skills	Be able to take a relevant detailed history and interpret clinical signs correctly.
Technical Skills and Procedures	Fine needle aspiration cytology Outpatient and in-patient endoscopy of the UADT. Excision of cervical lymph nodes and deal with the complications Radical neck dissection Selective neck dissection Modified radical neck dissection

Topic	Head and neck malignancies in the upper aerodigestive tract excluding the oral cavity
Category	Head and Neck
Sub-category:	None
Objective	To understand the aetiology of head and neck malignancies in the upper aerodigestive tract, presenting signs, symptoms and management of patients presenting with HNC. This module gives some indication of the breadth and depth of required. Knowledge and surgical skills. The list should not be considered to be fully inclusive or exhaustive

Knowledge	Understand the classification of head and neck malignancies in particular squamous carcinoma as it is the commonest type (HNC) and know the principles of TNM staging. Know the pathology of HNC Understand the presenting signs and symptoms of head and neck cancer. Understand the various hypotheses relating to the aetiology of squamous cell cancer including the cellular basis of oncogenesis. Understand the pattern of spread of malignant disease. Understand how HNC is managed in the multidisciplinary setting. Know the indications for imaging in HNC and the use of relevant imaging modalities. Understand the functional consequences of head and neck cancer, and its treatment. Understand the principles involved in and evidence for the various medical and surgical methods of treatment available for head and neck cancer. Understand the role of surgical and medical treatment in palliative management of patients Understand the indications for reconstructive and rehabilitative surgery (including surgical voice restoration) in HNC Know of the various reconstructive options available in HNC Be aware of national and local guidelines for the management of HNC Know the complications of surgical and non-surgical treatment of HNC and the multidisciplinary management of these complications Understand the basic science underpinning chemotherapy & radiotherapy Understand the principles of treatment of chemotherapy and radiotherapy and different techniques and regimes
Clinical Skills	Elicit a relevant clinical history and clinical signs including being able to perform an appropriate examination. Be able to work within the MDT, and recognise the contributions made by all team members. Demonstrate good communication skills with other professionals. Be able to break bad news sensitively and appropriately to patients and their families Demonstrate competence in the management of acute complications of head and neck surgery
Technical Skills and Procedures	Be able to perform the following diagnostic procedures; microlaryngoscopy, pharyngo-oesophagoscopy, tonsillectomy, examination of postnasal space, bronchoscopy, Fine Needle Aspiration Cytology (FNAC) Total laryngectomy Radical neck dissection Selective neck dissection Modified radical neck dissection Open and endoscopic excision of pharyngeal tumours Transoral laser surgery Reconstructive surgery with myocutaneous (pedicled) flaps Reconstructive surgery with free tissue transfer Be able to manage safely acute complications of head and neck surgery Be able to replace a tracheo-oesophageal valve in clinic.

Topic	Investigation and management of the neck lump
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Category	Head and Neck
Sub-category:	None
Objective	To understand the aetiology, presenting symptoms & signs and management of patients presenting with a neck lump. This module gives some indication of the breadth and depth of required knowledge and surgical skills. The list should not be considered to be fully inclusive or exhaustive.
Knowledge	Understand the anatomy of the neck, and distribution of cervical lymph nodes. Classify the lymphatic levels of the neck according to the MSK(Memorial Sloane Kettering) classification. Know the differential diagnosis of a neck lump. Demonstrate knowledge of the aetiology & pathology of cervical lymphadenopathy including manifestations of systemic disease. Understand the presentation, aetiology, investigations and pattern of metastatic spread of upper aerodigestive tract, salivary gland, cutaneous and thyroid malignancies.
	Understand the appropriate investigation of neck masses and specifically the management of the unknown primary malignant lump. Demonstrate knowledge of the presentation, aetiology, investigations and principles of management of lymphoma and leukaemia as it applies to the head and neck. Understand the principles of medical and surgical management of patients with a neck lump Demonstrate knowledge of the potential complications of management.
Clinical Skills	Be able to take a relevant detailed history, perform appropriate examination and interpret clinical signs correctly. Demonstrate a rational approach to investigation of a neck lump
Technical Skills and Procedures	Perform FNAC Outpatient and inpatient endoscopy of the Upper aerodigestive tract Perform excision biopsy of cervical lymph nodes and deal with the complications. Radical neck dissection Selective neck dissection Modified radical neck dissection Branchial cyst excision and management of complications

Topic	Neoplastic salivary gland disease
Category	Head and Neck

Sub-category:	None
Objective	To understand the aetiology, presenting signs, symptoms and management of neoplastic salivary gland disease. This module gives some indication of the breadth and depth of required knowledge and surgical skills. The list should not be considered to be fully inclusive or exhaustive.
Knowledge	Know the anatomy & physiology of the major & minor salivary glands & their relations. Know the anatomy of the neck. Know the anatomy of the oral cavity. Know the pathology of salivary gland tumours. Understand the classification of salivary gland tumours. Know the presenting symptoms & signs of salivary gland tumours. Understand the modalities (cytological & imaging) available for investigating salivary gland tumours Know the differential diagnosis of salivary gland tumours and inflammatory swellings. Understand the principles of management of salivary gland tumours. Understand the potential consequences of salivary gland surgery and the complications of surgery Understand the principles of management (surgical & non surgical) of malignant salivary gland disease Understand the role of reconstructive and palliative surgery in the management of malignant salivary gland disease
Clinical Skills	Be able to elicit an appropriate clinical history and interpret physical signs correctly Demonstrate the ability to detect 'red flag' symptoms & signs of malignant disease. Order the most appropriate imaging modality Manage patients with malignant disease in a multidisciplinary team
Technical Skills and Procedures	FNAC Set up and use facial nerve monitor Be able to perform a submandibular gland excision Biopsy of a minor salivary gland tumour Be able to perform a superficial parotidectomy Total parotidectomy Radical neck dissection Selective neck dissection Modified radical neck dissection Facial nerve grafting Facio-hypoglossal anastomosis

Topic	Non-neoplastic salivary gland disease
Category	Head and Neck

Sub-category:	None
Objective	To understand the aetiology, presenting signs, symptoms and management of benign salivary gland disease. This module gives some indication of the breadth and depth of required knowledge and surgical skills. The list should not be considered to be fully inclusive or exhaustive.
Knowledge	Know the anatomy and physiology of the major and minor salivary glands. Understand the pathological processes, both local & systemic, that can affect the salivary glands. Understand the classification of benign salivary gland disease including infection, inflammatory diseases, drugs and benign tumours Know the various imaging modalities for investigation of benign salivary gland disease. Understand the principles of patient management. Know the medical and surgical management of salivary gland disease, and the complications of surgery
Clinical Skills	Be able to elicit an appropriate clinical history and interpret clinical signs correctly. Be able to order the appropriate special investigations and correctly interpret images including plain radiographs, computerized tomography and Magnetic resonance imaging. Be able to counsel patients on the particular risks of salivary gland surgery.
Technical Skills and Procedures	Be able to excise a submandibular calculus Be able to perform submandibular gland excision Excision of ranula Minor salivary gland biopsy Parotidectomy for inflammatory disease

Topic	Thyroid and parathyroid disease
Category	Head and Neck
Sub-category:	None
Objective	To understand the aetiology, presenting signs, symptoms and management of Thyroid and Parathyroid disorders. This module gives some indication of the breadth and depth of required knowledge and surgical skills. The list should not be considered to be fully inclusive or exhaustive.

Knowledge	Understand the embryology, physiology, biochemistry and anatomy of the thyroid gland Understand the embryology, physiology, biochemistry and anatomy of the parathyroid glands. Understand the pathophysiology of endocrine dysfunction of the thyroid and parathyroid glands. Understand the classification of thyroid neoplasia. Including TNM Understand the principles of investigation of a patient with endocrine dysfunction of the thyroid gland. Understand the principles of investigation of a patient with endocrine dysfunction of the parathyroid glands. Understand the principles of investigation of a patient with a parathyroid or thyroid mass Understand principles of medical and surgical management of endocrine dysfunction of the thyroid and parathyroid glands, including the peri operative management of thyrotoxicosis. Understand principles of medical and surgical management of neoplasia of the thyroid and parathyroid glands, including postoperative complications. Understand the need to work as part of an MDT in management of malignant thyroid disease. Be aware of national and local guidelines for the management of thyroid malignancy. Understand the necessary genetic and endocrine testing required for thyroid malignancies that may be associated with multiple endocrine neoplasia (MEN) syndromes. Be able to elicit an appropriate clinical history from a patient with thyroid or parathyroid gland disease. Be able to demonstrate relevant clinical signs in a patient with thyroid or parathyroid gland disease
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Clinical Skills	Thyroid Investigation protocols for thyroid cancer CT MR and PET scanning in thyroid disease Interpretation of thyroid function tests FNAC Core biopsy of thyroid US of thyroid Interpretation of isotope scans MDT discussion of thyroid cases Management of post thyroidectomy hypocalcaemia Management of post thyroidectomy hoarseness Parathyroid Investigation protocols for parathyroid disease CT MR and PET scanning in parathyroid disease Interpretation of Ca PTH and Vitamin D levels FNAC Core biopsy US of the neck Interpretation of Isotope scans MDT discussion of parathyroid cases Management of post thyroidectomy hypocalcaemia Management of hoarseness post parathyroidectomy including management of vocal cord palsy
Technical Skills and Procedures	Thyroid lobectomy Total Thyroidectomy Surgical treatment of retrosternal thyroid enlargement Revision thyroid surgery Extended operations in the neck for advanced thyroid cancer including operations on the trachea, oesophagus and larynx Exploration of the neck for post thyroidectomy bleeding Level 1-5 ND Level VI ND Re-exploration of the thyroid bed for residual or recurrent cancer Be able to obtain appropriate samples for fine needle cytology or core biopsy from a patient with a thyroid or parathyroid mass Parathyroid Parathyroidectomy Parathyroid surgery: reoperation Re exploration of the neck for post operative haemorrhage Transcervical thymectomy

Topic	Oral pathology
Category	Head and Neck

Sub-category:	None
Objective	To understand the aetiology, presenting signs, symptoms and management of patients presenting with disorders of the oral cavity. This module gives some indication of the breadth and depth of required knowledge and surgical skills. The list should not be considered to be fully inclusive or exhaustive.
Knowledge	Understand the anatomy of the oral cavity Know the normal flora of the oral cavity and how oral disease can alter oral flora Understand the physiology of the oral phases of swallowing Know the physiology of salivary function Understand the consequences of oral disease on swallowing Understand the consequences of salivary gland dysfunction on oral health Know the causes of drooling and the principles of management thereof. Understand the aetiology, pathophysiology, presenting symptoms and signs of dental caries Know the pathophysiology, presenting symptoms & signs and management of mucosal oral disease including infection, inflammation, soft tissue and bony conditions Understand the aetiology of oral cancer Know the presenting symptoms and signs of oral cancer Understand the principles of management of oral cancer Understand the long and short term effects of chemotherapy and radiotherapy on oral health Understand the appropriate modalities for imaging oral disease
Clinical Skills	Be able to elicit an appropriate clinical history and interpret physical signs correctly Demonstrate the ability to detect 'red flag' symptoms & signs of malignant disease. Order the most appropriate imaging modality Be able to interpret plain images of the oral cavity and associated bony structures Manage patients with malignant disease in a multidisciplinary team Be able to diagnose dental related sepsis presenting in the neck or paranasal sinuses
Technical Skills and Procedures	Perform a biopsy of an oral lesion Remove and treat benign oral lesions Partial glossectomy Submandibular duct transposition for drooling Dental extractions Closure of oroantral fistulae Mandibulotomy and excision of floor of mouth lesion

Topic	Sleep related breathing disorders
Category	Head and Neck
Sub-category:	None
Objective	To understand the aetiology, presenting signs, symptoms and management of sleep related breathing disorders . This module gives some indication of the breadth and depth of required knowledge and surgical skills. The list should not be considered to be fully inclusive or exhaustive.
Knowledge	Know the aetiology, presenting signs and symptoms of sleep related breathing disorders, including snoring, obstructive sleep apnoea / hypopnoea and central sleep apnoea in adults. Know of the pathophysiological sequelae of sleep related breathing disorders including snoring, obstructive sleep apnoea / hypopnoea and central sleep apnoea Understand the principles of assessment and investigation of sleep related breathing disorders, including sleep nasendoscopy and sleep studies / polysomnography. Understand the principles of management of sleep related breathing disorders including CPAP, mandibular advancement prostheses, nasal and pharyngeal surgery, tracheostomy and drug therapy. Understand the principles of midface and mandibular advancement surgery.
Clinical Skills	Be able to elicit an appropriate clinical history and identify relevant clinical signs in a patient with a sleep related breathing disorder. Be able to make a correct diagnosis from the results of assessment and investigation of a patient with a sleep related breathing disorder, and synthesise an appropriate plan for their clinical management.
	Be able to perform palatal surgery for snoring/OSAS
Technical Skills and Procedures	Be able to perform surgery to correct nasal airway obstruction.
	Be able to perform sleep nasendoscopy or out patient flexible fiberoptic nasendoscopy
	Tracheostomy

LARYNGOPHARYNGOLOGY

Topic	Laryngology and Voice Disorders
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Category	Head and Neck
Sub-category:	Laryngology. Airway surgery
Objective	To understand the aetiology, presenting signs, symptoms and management of common voice and chronic airway disorders. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive
	Understand the physics of sound
	Understand the embryology of the larynx and congenital malformation of larynx
	Understand the maturational / developmental changes of the larynx
	Understand the anatomy, neuroanatomy and movements of the larynx
	Understand the physiology of phonation and articulation
	Understand the classification of dysphonias and the various hypotheses relating to the aetiology of dysphonias.
	Understand the classification of disorders of articulation
	Understand principles of videostroboscopic examination of the larynx, laryngography and analysis of pitch and periodicity of speech (including photodocumentation)
	Understand the principles of the medical and surgical management of patients with dysphonia (including instrumentation).
	Know the principles of Speech and Language Therapy
	Know the classification & aetiology of inflammatory and neoplastic laryngeal disorders
	Laser Physics
	Laser safety
	Understand the principles of anaesthesia in Laser surgery
	Understand the principles of laryngotracheal reconstruction in adults
	Understand the aetiology, pathophysiology and treatment of Vocal cord palsy
	Understand the aetiology, pathophysiology and treatment of Age related vocal cord atrophy
	Understand the material science in vocal cord injection materials
	Laryngeal reinnervation
	Laryngeal transplantation
Clinical Skills	Elicit an appropriate clinical history from and demonstrate clinical signs in a dysphonic patient Communication skills with Speech & Language therapists and ability to work in a multidisciplinary team. Transnasal oesophagoscopy EMG in clinical decision making Imaging studies of the larynx, trachea and oesophagus Vocal function testing Laryngeal examination with mirrors and flexible fiberoptic endoscope in an outpatient setting Suspension Microlaryngoscopy Videostroboscopic laryngoscopy in an outpatient setting

	Microscopic / endoscopic laryngeal surgery and intralaryngeal injection techniques Isshiki type 1-4 thyroplasty
Technical Skills and Procedures	Arytenoid adduction and reduction. Type 2 thyroplasty for spasmodic dysphonia Vocal cord injection Laryngeal electromyography Laryngofissure Laser Thyroarytenoid myoneurectomy Laser supraglottoplasty Laser microflap and mini microflap surgery Office laser phonosurgery Transnasal KTP laser under local anaesthetic Laryngeal reinnervation procedures

Topic	Tracheostomy Care Module (Adult)
Category	Head & Neck
Sub-category:	Airway management
Objective	<i>To be able to manage patients with short and long term tracheostomies in an emergency, elective & community setting and provide an expert resource to other health professionals in the management of tracheostomies</i>
Knowledge	Anatomy of larynx, trachea and neck Physiology of respiration Indications for tracheostomy In depth knowledge of different types of tracheostomy tubes and relative indications for use Role of health professionals in the multidisciplinary management of patients with tracheostomy Local and national guidelines for tracheostomy management Indications for surgical & percutaneous tracheostomy Principles of weaning
Clinical Skills	Tracheostomy care; suction, inner tube care, humidification Appropriate selection of correct tube to suit patient Supervision of weaning and extubation Troubleshooting in a variety of situations Management of persistent trachea cutaneous fistula Management of patients with failed extubation Multi-disciplinary management of patients with long term

	tracheostomy tubes
Technical Skills and Procedures	Flexible nasendoscopy Management of blocked & displaced tube Tracheostomy change Repair of persistent tracheo cutaneous fistula

PAEDIATRIC OTOLARYNGOLOGY

Topic	Foreign bodies in the ear canal and UADT
Category	Paediatric Otolaryngology
Sub-category:	Foreign bodies in the ear nose and throat
Objective	Safe definitive management of children with suspected and actual foreign bodies in the ear nose and pharynx; primary management of inhaled foreign bodies to facilitate safe transfer for tracheobronchoscopy if required. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive
Knowledge	Anatomy and physiology of the paediatric airway Recognition of anatomical differences between the adult and paediatric airway. Recognition of the clinical features of foreign bodies in the ear, nose, and throat Knowledge of the natural history and the complications associated with foreign bodies. Concept of the shared airway and differing anaesthetic techniques

Clinical Skills	HISTORY AND EXAMINATION Ability to take a thorough history from the child/carer Otoscopy Anterior rhinoscopy Flexible pharyngolaryngoscopy DATA INTERPRETATION Assessment of plain radiography (e.g. chest x-ray and soft tissue neck x-ray). PATIENT MANAGEMENT Recognition of the clinical signs of respiratory distress in children <u>Emergency airway care in conjunction with anaesthetists and paediatricians.</u>
Technical Skills and Procedures	Otomicroscopy and removal of foreign body Removal of nasal foreign body and examination with paediatric and rigid scopes Pharyngo-oesophagoscopy and foreign body removal Rigid bronchoscopy and foreign body removal from larynx and trachea

Topic	Trauma to the ear, upper aero digestive tract and neck
Category	Paediatric Otolaryngology
Sub-category:	Trauma to the head and neck
Objective	To be competent in the recognition of paediatric head and neck trauma and its management. To recognise when to refer complicated cases for further assessment and treatment. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive
Knowledge	Anatomy of the head and neck in children Recognition of anatomical differences between the adult and paediatric airway Mechanisms of trauma to the facial skeleton and soft tissues Know the causes and presentation of nasal septal haematoma Know the causes and presentation of ear trauma (external, middle and inner) Know the causes and presentation of trauma to the neck, pharynx and larynx Knowledge of common aetiologies and awareness of the possible presentations of non-accidental injury to the ENT department. Understand how child abuse is classified, how it may present to otolaryngologists and the mechanism of onward referral and management

Clinical Skills	HISTORY AND EXAMINATION Ability to take a thorough history from child/parent Assessment of the external nose and nasal airway Clinical examination of the ear Assessment of the neck including the airway Otoscopy DATA INTERPRETATION Age appropriate hearing test, tympanometry PATIENT MANAGEMENT Recognition of the signs of respiratory distress in a child Resuscitation of a child in hypovolaemic shock secondary to bleeding Aware of the local protocol for the reporting of suspected non- accidental injury
Technical Skills and Procedures	Nasal fracture manipulation Laryngoscopy, Pharyngoscopy Drainage of septal haematoma Drainage of haematoma of pinna Exploration of neck Paediatric Tracheostomy

Topic	Epistaxis in a child
Category	Paediatric Otolaryngology
Sub-category:	Epistaxis
Objective	Optimum recognition and management of children with epistaxis; This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive
Knowledge	Nasal anatomy & physiology Pathophysiology, epidemiology, & natural history of paediatric epistaxis Current approach to treatment of epistaxis to include awareness of the evidence base for current treatment regimens. Understand the aetiologies of paediatric epistaxis (local including nasopharyngeal angiofibroma, and systemic including coagulopathies) Know the relevant investigation and treatments of paediatric epistaxis

Clinical Skills	HISTORY AND EXAMINATION Ability to take a thorough history from the child/carer Anterior Rhinoscopy Flexible Nasendoscopy DATA INTERPRETATION Interpretation of full blood count & other haematological investigations; awareness of significance of coagulation tests PATIENT MANAGEMENT Medical and surgical management of epistaxis
Technical Skills and Procedures	Nasal cautery EUA nose Appropriate nasal packing in a child Paediatric SPA ligation Open and closed procedures for treatment of angiofibroma

Topic	Rhinosinusitis; orbital and intracranial complications of rhinosinusitis
Category	Paediatric Otolaryngology
Sub-category :	Nose and Sinus infections
Objective	Optimum recognition and management of children with rhinosinusitis; particularly complicated sinus disease e.g. subperiosteal abscess, intracranial sepsis. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive
Knowledge	Nasal anatomy & pathophysiology Epidemiology, natural history & presenting symptoms of rhinosinusitis in children Current approach to treatment of infective rhinosinusitis to include awareness of the evidence base for current treatment regimens. Recognition and competence in the emergency management of the complications of rhinosinusitis.

Clinical Skills	HISTORY AND EXAMINATION Ability to take a thorough history from the child/carer Anterior Rhinoscopy Flexible NasendoscopyOtoscopy
	DATA INTERPRETATION Awareness of imaging techniques Assessment of abnormalities on CT scanning of the paranasalsinuses and MR brain.
	PATIENT MANAGEMENT Medical and surgical management of rhinosinusitis and itscomplications.
	EUA Nose
Technical Skills and Procedures	Endoscopic Nasal Polypectomy External drainage of subperiosteal abscess External drainage of the frontal sinus Endoscopic drainage of periorbital abscess
	External drainage of frontal sinus

Topic	Airway pathology in childhood
Category	Paediatric Otolaryngology
Sub-category:	Airway Disorders
Objective	Safe recognition of the main patterns of presentations and likely aetiologies of children with airway obstruction at birth, in infancy and in later childhood. Includes primary management toenable definitive treatment of main conditions. This module gives some idea of the breadth and depth of required knowledgeand surgical skills. This list should not be considered to be fully inclusive or exhaustive

Knowledge	Anatomy of the paediatric airway, and differences between the adult and child. Physiology of airway obstruction (Poiseuille's law, Reynolds number) Clinical features of airway obstruction Clinical measures to determine severity of obstruction Know the causes, presenting symptoms of airway pathology in children, Know the treatment options and natural history of main conditions causing airway pathology in children at different ages e.g. laryngomalacia, vocal cord palsy, subglottic cysts, haemangioma, RRP, Laryngeal cleft, tracheobronchomalacia, acute epiglottitis and laryngotracheobronchitis (croup). Understand the genetic disorders associated with airway pathology in children Understand the role of laryngopharyngeal reflux in airway pathology in children
	HISTORY AND EXAMINATION Ability to take a thorough history from the child/carer. Assessment of the airway in a child Flexible pharyngolaryngoscopy.
Clinical Skills	DATA INTERPRETATION Assessment of pulse oximetry findings, assessment of radiography at a basic level e.g. recognition of gross abnormalities on chest radiograph and CT
	PATIENT MANAGEMENT Medical management in the acute and elective situation e.g. steroids, adrenaline, reflux. Emergency airway care in conjunction with anaesthetist and paediatrician. Paediatric flexible pharyngolaryngoscopy in the outpatients
Technical Skills and Procedures	Paediatric tracheostomy emergency and elective Paediatric tracheostomy care including tube change Diagnostic rigid airway endoscopy Therapeutic rigid airway endoscopy.
	Laryngotracheal reconstruction Balloon dilatation for subglottic stenosis Management of subglottic cysts

Topic	The Drooling Child
Category	Paediatric Otolaryngology

Sub-category:	
Objective	To be competent at assessing a child who presents with the symptom of drooling, and to understand the principles behind management of these patients. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive
Knowledge	Anatomy of the major and minor salivary glands Anatomy of the oral cavity Physiology of salivation Know the causes and predisposing factors (including syndromes) for drooling Understand how multidisciplinary input is used in the management of drooling children. Understand the principles of non medical, medical and surgical management of drooling children
Clinical Skills	Undertake a comprehensive history and examination of a child who presents with drooling Be able to communicate an effective management plan to the patient and his or her carer Work with colleagues from other specialties and disciplines to provide effective care for children presenting with drooling.
Technical Skills and Procedures	Tonsillectomy Adenoidectomy Flexible nasendoscopy Submandibular gland excision Transposition of submandibular ducts Neuromuscular blockade Sublingual gland excision Parotid and submandibular duct ligation Botox to parotid and submandibular glands

Topic	Acute tonsillitis, Diseases of the adenoids and their complications
Category	Paediatric Otolaryngology
Sub-category:	Tonsils

Objective	Definitive secondary-care management of adenotonsillar disease excluding OSA in otherwise healthy children. Management in syndromic and special needs children is often in a designated children's hospital. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive
Knowledge	Anatomy of the oral cavity, oropharynx and nasopharynx Microbiology of the oral cavity, oropharynx and nasopharynx Epidemiology, classification, aetiology and natural history of adenotonsillar disease. Thorough understanding of the evidence base that underpins current treatment approaches. Awareness of controversies. Understanding of specific management requirements in the very young, special needs and syndromic children
Clinical Skills	HISTORY AND EXAMINATION Ability to take a through history from child/parent. Otoscopy Examination of the oral cavity and oropharynx Ability to recognise the child with possible OSA. DATA INTERPRETATION Clinical assessment of the nasal airway PATIENT MANAGEMENT Medical and surgical treatment. Management of complications both of the disease (e.g. peritonsillar abscess) and of treatment
Technical Skills and Procedures	Tonsillectomy Adenoidectomy Arrest of adenotonsillar bleeding as an emergency Suction adenoidectomy Tonsillotomy Experience with CPAP and other non invasive options

Topic	ENT-related syndromes and cleft palate
Category	Paediatric Otolaryngology
Sub-category:	Congenital deformities affecting the head and neck

Objective	Appropriate primary management of children with ENT related syndromes and cleft palate, awareness of the principles and challenges that underpin long-term care. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive
Knowledge	Embryology of the head and neck, including palate. Anatomy of the head and neck in children Recognition of the common ENT related syndromes and associations (e.g. Down's, Treacher Collins, Pierre Robin, Goldenhar, BOR, CHARGE, craniosynostosis). Knowledge of the ENT manifestations of the conditions listed above Knowledge of the general clinical problems encountered in these conditions with particular reference to safety of anaesthesia. Basic understanding of the underlying genetics of these conditions.
Clinical Skills	HISTORY AND EXAMINATION Ability to take a thorough history from the patient or carer. Targeted examination of the child based on knowledge of the ENT manifestations of the condition. DATA INTERPRETATION Interpretation of age-appropriate assessment of hearing and overnight pulse oximetry Recognition of abnormalities on imaging PATIENT MANAGEMENT Able to participate in the multidisciplinary approach to children with complex needs. Management of airway obstruction in children with craniofacial abnormalities in conjunction with anaesthetists . Management of OME in children with cleft palate or Downs syndrome
Technical Skills and Procedures	Myringotomy & ventilation tube insertion Flexible pharyngolaryngoscopy Rigid airway endoscopy Paediatric tracheostomy

Topic	Congenital and acquired neck masses
Category	Paediatric Otolaryngology
Sub-category:	Neck Masses

Objective	Safe recognition of main patterns of presentations of children with neck swellings at birth, in infancy and in later childhood. Includes primary management to enable definitive treatment of common conditions. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive
Knowledge	Anatomy of the head and neck and upper mediastinum. Applied embryology of thyroid gland with relation to thyroglossal cysts Applied embryology of the branchial arches. Anatomy of the neck spaces and understanding of the presentation, clinical features and primary management of abscesses and collections in these spaces Classification of vascular malformations and awareness of treatment options Knowledge of the clinical presentation and management of the commoner congenital abnormalities (e.g. cystic hygroma, teratoma, branchial abnormalities, thyroglossal cysts, lingual thyroid) Awareness of the infective causes of neck lumps in children. (e.g. TB, HIV, other viral) Management of persistent cervical lymphadenopathy and the appropriate use of investigations and surgical intervention. Knowledge of the possible airway complications of neck masses and their management.
Clinical Skills	HISTORY AND EXAMINATION Ability to take a thorough history from a patient or carer Systematic examination of the child with particular reference to the neck Be able to identify the signs of airway obstruction in a child DATA INTERPRETATION Be able to identify the most appropriate imaging options available e.g. sonography, CT, MR scanning. Interpretation of virology and microbiology investigations. Interpretation of head and neck images. PATIENT MANAGEMENT Be able to identify the most appropriate imaging options available e.g. sonography, CT, MR scanning. Surgical and non-surgical treatment options for the management of neck masses.

	Be able to work in a multidisciplinary team.
Technical Skills and Procedures	Flexible pharyngolaryngoscopy Incision & drainage neck abscess Biopsy neck node Excision thyroglossal cyst Diagnostic rigid airway endoscopy Paediatric tracheostomy

Topic	Language delay and dysphonia in childhood
Category	Paediatric Otolaryngology
Sub-category:	Speech and language development
Objective	Awareness of the aetiology of language delay. Awareness of congenital and acquired laryngeal disorders affecting speech. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive
Knowledge	Anatomy of the larynx in children and the physiology of voice production. The normal developmental milestones with an emphasis on speech and language acquisition. Common causes of delayed speech Understanding of how hearing loss impacts on language acquisition Management of laryngeal pathologies. Understanding of age appropriate hearing tests. Understanding of the controversies in the management of tongue tie.
Clinical Skills	HISTORY AND EXAMINATION Ability to take a thorough history from child/carer Otoscopy Flexible pharyngolaryngoscopy DATA INTERPRETATION Age appropriate hearing test Tympanometry

	PATIENT MANAGEMENT Multidisciplinary approach in the management of children with speech and other developmental problems
Technical Skills and Procedures	Flexible nasendoscopy and pharyngolaryngoscopy Division of tongue tie Ventilation tube insertion

Topic	Head and neck malignancy in childhood
Category	Paediatric Otolaryngology
Sub-category:	Oncology
Objective	Awareness of the epidemiology, presentation and principles of management of malignant disease in the head and neck. <i>This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive</i>
Knowledge	Knowledge of the common malignancies of the head and neck in childhood Knowledge of presentation, investigations and management options in childhood cancers. Understanding of issues relating to the management of the child and family with cancer including palliative care e.g. management of epistaxis and hearing loss. Understanding of the need for a multidisciplinary approach to childhood cancer and the need for early referral to a regional Oncology centre when malignancy is suspected.
Clinical Skills	HISTORY AND EXAMINATION Ability to take a thorough history from child/carer Examination of the head and neck Examination of the cranial nerves Otoscopy Flexible pharyngolaryngoscopy PATIENT MANAGEMENT Multidisciplinary approach to the management of childhood cancer Know the range of diagnostic tests available particularly imaging

Technical Skills and Procedures	Flexible pharyngolaryngoscopy Neck node biopsy after liaison with regional oncology services Biopsy of tumours after liaison with regional oncology services Paediatric thyroid surgery Paediatric neck dissection Paediatric salivary gland surgery
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Topic	Congenital abnormalities of the ear
Category	Paediatric Otolaryngology
Sub-category:	Disorders of the external ear in children
Objective	Recognition and classification of the principle congenital anomalies of the ear. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive
Knowledge	Understanding of the anatomy & embryology of the ear and related structures Physiology of hearing Knowledge of the clinical problems associated with dysplasia of the ear Knowledge of common grading systems for microtia and atresia. Knowledge of bone anchored auricular prosthesis and autologous pinna reconstruction.
Clinical Skills	HISTORY AND EXAMINATION Ability to take a thorough history from the child/carer Inspection of the external ear and recognition of main anomalies; Otoscopy Clinical assessment of hearing DATA INTERPRETATION Age-appropriate assessment of hearing; Tympanometry; PATIENT MANAGEMENT Demonstrate the ability to present the options for the rehabilitation of hearing loss in microtia; Appropriate referral for ear reconstruction/prostheses. Counselling of child and carers with microtia and other major anomalies of the external ear.

Technical Skills and Procedures	Otomicroscopy Excision of preauricular sinus Excision of simple lesions in and around the external ear Surgery for prominent ears Bone anchored hearing aid Surgical management of 1st branchial arch anomalies Implant placement for prosthetic ear in microtia Other implants for hearing loss including ME implants
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Topic	Congenital deafness
Category	Paediatric Otolaryngology
Sub-category:	Deafness excluding otitis media and its complications
Objective	Awareness of the epidemiology and presentation of deafness, knowledge of range of causes, awareness of diagnostic and investigative strategies and knowledge of the principles that underpin rehabilitation including amplification and cochlear implantation. <i>This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list shouldnot be considered to be fully inclusive or exhaustive</i>
Knowledge	Embryology of the ear including congenital deformities of the ear and their relationship to deafness Physiology of hearing Knowledge of the molecular basis of genetic, syndromic and non-syndromic deafness Knowledge of acquired causes including congenital infections (e.g. CMV, rubella) Fundamental understanding of age appropriate audiological testing including universal neonatal screening (OAE, ABR). Appropriate investigations for the congenitally deaf child (bilateral or unilateral) e.g. TORCH screen, dipstick for haematuria, MRI, genetic review Multidisciplinary approach to the rehabilitation of the deaf child (bilateral and unilateral). Knowledge of rehabilitative options including hearing aids Knowledge of candidacy criteria for cochlear implantation and nature of surgery involved. Awareness of the range of investigative options available including imaging (sonography, CT, MR scanning)

Clinical Skills	HISTORY AND EXAMINATION Ability to take a thorough history from child/parent. Otoscopy Clinical assessment of hearing DATA INTERPRETATION Age appropriate hearing test
	Tympanometry PATIENT MANAGEMENT Appropriate referral for hearing aids
Technical Skills and Procedures	Microscopic examination of the ear Myringotomy & ventilation tube Cochlear implant

Topic	The Dizzy Child
Category	Paediatric Otolaryngology
Sub-category:	Dizziness
Objective	To be competent in the assessment, investigation and management of a child presenting with dizziness
Knowledge	Anatomy of the ear and vestibular system Physiology of balance Knowledge of the causes of balance disorders in children Knowledge of the genetic causes of hearing loss associated with vestibular symptoms e.g. Ushers, NF2, Jervell-Lange-Nielson Knowledge of appropriate investigations and subsequent management of vestibular disorders

Clinical Skills	HISTORY AND EXAMINATION Ability to take a thorough history from the child/carer Otoscopy Clinical assessment of vestibular function e.g. Dix Hallpike Neurological examination including cranial nerves DATA INTERPRETATION Age appropriate hearing test Tympanogram Identification of significant abnormalities from diagnostic imaging e.g. MRI, CT PATIENT MANAGEMENT Explanation of diagnosis to child and family Commencement of conservative, medical or surgical management of underlying vestibular pathology Appropriate referral to allied health professionals or other specialties
Technical Skills and Procedures	Myringotomy and ventilation tube insertion Cholesteatoma surgery

Topic	Otitis media (acute, chronic and with effusion) and complications and conditions of the external auditory canal
Category	Pediatric Otolaryngology
Sub-category:	Otitis media and its complications
Objective	Definitive secondary-care management of middle and external ear disease and its complications. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive
Knowledge	Anatomy of the external and middle ear cleft and surrounding structures Physiology of hearing Epidemiology, classification, aetiology and natural history of each variant of otitis media. Know the indications for imaging Know the evidence base which underpins current treatment approaches. Demonstrate an understanding of the surgical management of cholesteatoma and the complications of otitis media Knowledge of the indications for, and surgical principles of, bone anchored hearing aids and middle ear implants.

Clinical Skills	HISTORY AND EXAMINATION Ability to take a thorough history from child/parent Otoscopy Neurological examination including cranial nerves Clinical assessment of hearing. DATA INTERPRETATION Age-appropriate hearing tests (including ABR, OAE, VRA, play audiometry) Tympanometry Identification of significant abnormalities from diagnostic imaging e.g. CT scan, MRI Laboratory investigations e.g. blood tests, bacteriology results PATIENT MANAGEMENT Medical, conservative and surgical management Appropriate referrals and team working for children with complications of acute otitis media
Technical Skills and Procedures	Otomicroscopy and aural toilet Ventilation tube insertion Myringoplasty Ossiculoplasty Cortical Mastoidectomy Cholesteatoma surgery Bone anchored hearing aid

Topic	Facial palsy in childhood
Category	Pediatric Otolaryngology
Sub-category:	Facial Palsy
Objective	Safe primary management of children with facial palsy, recognition of clinical pathologies that present with facial palsy. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive

Knowledge	Anatomy of the facial nerve, and related structures knowledge of the aetiologies (congenital and acquired) of facial palsy. Knowledge of the initial investigations and management of a child with facial palsy Knowledge of the natural history of childhood facial palsy. Know when to refer to tertiary center. Awareness of the range of diagnostic tests and the principles that govern their use e.g. electroneuronography, imaging of the facial nerve
Clinical Skills	HISTORY AND EXAMINATION Ability to take a history from child/parent Otoscopy Examination of the head and neck Assessment of the cranial nerves in children and grading of facial palsy Clinical assessment of hearing DATA INTERPRETATION Interpretation of specific investigations e.g. electroneuronography PATIENT MANAGEMENT Pharmacological management (e.g. steroids, anti-viral agents) Eye protection
Technical Skills and Procedures	Myringotomy and ventilation tube insertion Cortical mastoidectomy & Drainage of mastoid abscess Cholesteatoma surgery

Topic	Rhinitis
Category	Pediatric Otolaryngology
Sub-category:	Inflammatory nasal disease (including allergic rhinitis)
Objective	Optimum recognition and management of children with rhinitis. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive

Knowledge	Anatomy and embryology of the nose and sinuses. Nasal physiology Knowledge of the pathophysiology, epidemiology, symptomatology and natural history of rhinitis Know the basic science of allergy Knowledge of the scientific principles of common investigations e.g skin prick tests, RAST Knowledge of the evidence base for current treatment of allergic rhinitis Knowledge of imaging techniques; assessment of abnormalities on CT scanning of the paranasal sinuses Understanding of scientific basis and methodology behind desensitization in allergy
Clinical Skills	HISTORY AND EXAMINATION Ability to take a thorough history from the child/carer Anterior Rhinoscopy Flexible Nasendoscopy Otoscopy DATA INTERPRETATION Skin prick tests for allergies; Blood tests for allergies; immunological tests, ciliary function tests. PATIENT MANAGEMENT Conservative, medical and surgical management of rhinitis
Technical Skills and Procedures	Turbinate surgery EUA Nose & PNS Nasal biopsy Advanced FESS in paediatric patient

Topic	Nasal Obstruction
Category	Pediatric Otolaryngology
Sub-category:	Nasal Polyps in Children
Objective	To be competent at the diagnosis of inflammatory nasal disease, the differential diagnosis and management of inflammatory nasal disease. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive

Knowledge	Anatomy and embryology of the nose and sinuses Nasal physiology Knowledge of the aetiology, clinical features and management of nasal polyps in children including their association with cystic fibrosis Knowledge of the aetiologies of nasal obstruction at birth, in infancy and in later childhood e.g. choanal atresia, rhinitis, encephalocele, glioma, angiofibroma. Knowledge of the investigations (including imaging) and treatment of the above conditions. Knowledge of related systemic conditions involving the nose e.g. Wegener's granulomatosis
Clinical Skills	HISTORY AND EXAMINATION Ability to take a thorough history from the child or carer Anterior Rhinoscopy Flexible Nasendoscopy Otoscopy DATA INTERPRETATION Assessment of abnormalities on CT scanning of the paranasal sinuses Immunological tests, ciliary function tests PATIENT MANAGEMENT Medical and surgical management of nasal polyposis Investigation of nasal masses
Technical Skills and Procedures	Endoscopic Nasal Polypectomy Endoscopic sinonasal surgery Nasal biopsy Examination nose and PNS Choanal atresia surgery Surgery to congenital pyriform aperture stenosis Open and closed procedures for angiofibroma Nasal stenting

Topic	Obstructive sleep apnoea
Category	Paediatric Otolaryngology
Sub-category:	Airway obstruction in childhood

Objective	Optimum recognition and management of children with possible obstructive sleep apnoea. This module gives some idea of the breadth and depth of required knowledge and surgical skills. This list should not be considered to be fully inclusive or exhaustive
Knowledge	Anatomy of the upper airway Physiology of sleep Knowledge of multi-level obstruction Knowledge of the concept of sleep disordered breathing Knowledge of the complications of upper airway obstruction Knowledge of appropriate investigations and treatment. Knowledge of the relevance of co-morbidities Assessment of low versus high risk patients and appropriate referral
Clinical Skills	HISTORY AND EXAMINATION Ability to take a thorough history from the child/carer Examination of the oral cavity, oropharynx and chest wall Anterior Rhinoscopy Flexible Nasendoscopy DATA INTERPRETATION Interpretation of sleep studies ECG/CXR/echo manifestations PATIENT MANAGEMENT Conservative, medical and surgical management of OSA
Technical Skills and Procedures	EUA PNS and adenoidectomy Tonsillectomy Paediatric tracheostomy

General Surgery Rotation [R1]

General Objectives

- 1) Gain familiarity with the management of surgery patients in the perioperative period.
- 2) Gain a general understanding of surgical oncology.
- 3) Gain general surgical technical skills with improved understanding of handling various tissues.

Specific Objectives

- 1) Demonstrate understanding of the principles of fluid management, including preoperative fluid shifts, urine output status, and fluid management during states of shock.
- 2) Manage electrolyte imbalance in the preoperative patient.
- 3) Discuss the benefits and drawbacks of both enteral and parenteral nutrition and describe scenarios in which each is appropriate.
- 4) Describe contributing factors and treatment of wound infections.
- 5) Discuss indications for transfusion and the administration of blood products in preoperative patients, including those with common pre-existing blood disorders.
- 6) Describe the evaluation and management of thyroid diseases.
- 7) In surgical oncology, describe the evaluation, management, and staging of tumors of the head and neck, including carcinomas, melanomas, and sarcomas.
- 8) Describe surgical anatomy, particularly of the head, neck, torso, and abdominal wall.
- 9) Assess and manage multiple trauma patients.
- 10) Interpret abdominal and chest x-rays in the acute surgical patient.
- 11) Interpret electrocardiograms (ECGs) in the acute surgical patient.

- 12) Manage acute fluid imbalance and electrolyte abnormalities in the preoperative setting.
- 13) Recognize acute surgical emergencies that require intensive-care consultation and management.
- 14) Recognize acute injuries and initiate investigation and management.
- 15) Define and recognize sepsis and septic shock and institute appropriate management.
- 16) Discuss the contributing factors, prevention, and treatment of thromboembolic disease.
- 17) Demonstrate the ability to perform different methods of suturing and describe the appropriate scenarios in which each should be used.
- 18) Describe the characteristics of different suture materials and recognize the appropriate situation in which each should be used.
- 19) Optimize retraction and lighting in order to facilitate the performance of surgical procedures.
- 20) Demonstrate the proper techniques for handling instruments (for example, needle drivers, cautery tools, and forceps).
- 21) Recognize appropriate surgical scenarios for blunt and sharp dissection and demonstrate the proper techniques for both.
- 22) Demonstrate different techniques for intraoperative hemostasis.

Health advocate

Residents will show the ability to recognize socioeconomic, environmental, and psychological factors involved in the health and well-being of surgical patients. They will demonstrate and develop knowledge and proper utilization of available resources and strive to act as advocates for patient health when appropriate.

Communicator

Residents will learn throughout their training to communicate effectively with patients and their families in a general surgery setting. They will also demonstrate progress in communicating clearly and effectively in both verbal and written

forms with other physicians and health care professionals.

Collaborator

Residents will demonstrate a growing understanding of the roles of other physicians from various disciplines as well as other health care professionals in the care of patients with surgical problems. They will develop and improve the ability to collaborate with patients, their families, and other caregivers in order to provide adequate patient care.

Manager

Residents will develop and improve knowledge in operating health care facilities in both hospital and private office settings. They will continue to develop managerial skills, including dealing with employees and other coworkers in various health care settings. They will demonstrate and improve on leadership skills, including the ability to work effectively within the patient care team. Residents will demonstrate appropriate resource utilization. They will continuously strive to maintain balance between patient care and academic needs and other personal activities.

Scholar

Residents will demonstrate progress in research skills in various areas including basic science and clinical research, as well as quality assurance in general surgery as it relates to the practice of otolaryngology - head and neck surgery. They will also develop and improve teaching and supervisory skills throughout their training. This includes patient teaching as well as involvement in student and peer teaching. They will demonstrate and improve independent learning abilities in order to maintain and advance professional development. They will develop and improve critical appraisal skills and show the ability to interpret and assess the validity of scientific data.

Health Professional

Residents will demonstrate the highest standards of clinical care and ethical conduct. They will show an understanding of and adherence to ethical and legal codes of clinical practice in such areas as confidentiality and informed consent. They will demonstrate integrity, honesty, and a good work ethic. They will show and improve awareness and sensitivity

regarding gender, racial, and cultural issues.

Neurosurgery Rotation [R2]

General Objectives

- 1) Gain a general familiarization with the principles of neurosurgery, including anatomy, physiology, oncology, and surgical management.
- 2) Gain general knowledge of neurosurgical care, including recognition and treatment of neurosurgical emergencies.

Specific Objectives

- 1) Develop an understanding of neuroanatomy and neuropathology.
- 2) Understand the assessment and management of head injuries.
- 3) Evaluate patients for possible cervical spine injuries and manage such injuries.
- 4) Manage neurosurgical emergencies including intracranial bleeding, raised intracranial pressure, and depressed skull fractures.
- 5) Perform neurosurgical procedures including cranial nerve surgery, surgical management of acoustic neuroma and other cerebellopontineangle (CPA) lesions, pituitary surgery, and so forth.
- 6) Gain exposure to the combined approach for skull base surgery.
- 7) Gain exposure to surgical ancillary technology, such as stereotactic and image-guided technology, as well as the use of the operative microscope in neurosurgery.
- 8) Understand spinal cord pathology, including cervical root entrapment.

- 9) Gain technical skills related to the specialty, including placement of burr holes, application of halos, and placement of intraventricular drains.
- 10) Understand the management of neurosurgical ICU problems

Health advocate

Residents will show the ability to recognize socioeconomic, environmental, and psychological factors involved in the health and well-being of neurosurgery patients. They will demonstrate and develop knowledge and proper utilization of available resources and strive to act as advocates for patient health when appropriate.

Communicator

Residents will learn throughout their training to communicate effectively with patients and their families. They will also demonstrate progress in communicating clearly and effectively in both verbal and written forms with other physicians and health care professionals.

Collaborator

Residents will demonstrate a growing understanding of the roles of other physicians from various disciplines as well as other health care professionals in patient care. They will develop and improve the ability to collaborate with patients, their families, and other caregivers in order to provide adequate patient care.

Manager

Residents will develop and improve knowledge in operating neurosurgical health care facilities. They will continue to develop managerial skills, including dealing with employees and other coworkers in this setting. They will demonstrate and improve on leadership skills, including the ability to work effectively within the patient care team. Residents will demonstrate appropriate resource utilization. They will continuously strive to maintain balance between patient care and academic needs and other personal activities.

Scholar

Residents will demonstrate progress in research skills in various areas including basic science and clinical research as well as quality assurance in neurosurgery as it relates to the practice of otolaryngology - head and neck surgery. They will also develop and improve teaching and supervisory skills throughout their training. This includes patient teaching as

well as involvement in student and peer teaching. Residents will demonstrate and improve independent learning abilities in order to maintain and advance professional development. They will develop and improve critical appraisal skills and show the ability to interpret and assess the validity of scientific data.

Health Professional

Residents will demonstrate the highest standards of clinical care and ethical conduct. They will show an understanding and adherence to ethical and legal codes of clinical practice in such areas as confidentiality and informed consent. They will demonstrate integrity, honesty, and a good work ethic. Residents will show and improve awareness and sensitivity regarding gender, racial, and cultural issues

Plastic Surgery Rotation [R3]

General Objectives:

- 1) Gain a general knowledge of the plastic surgery service.

The Plastic Surgery PGY1 resident should gain an overall knowledge of the field of plastic surgery, especially as it pertains to otolaryngology - head and neck surgery.

Specific Objectives

- 1) Perform basic assessment of emergency patients, including those with facial trauma, burns, and multiple traumas.
- 2) Perform general ward work, including perioperative inpatient management.
- 3) Understand wound management, including dressing choice, debridement, etc.
- 4) Manage outpatients in the clinic.
- 5) Gain general knowledge of the field of plastic surgery, including the management of maxillofacial injuries, facial trauma, soft tissue coverage techniques, skin cancer, wound healing, pediatric plastic surgery including cleft lip and palate surgery, burn surgery, and cosmetic surgery.
- 6) Develop technical skills related to the specialty, including minor procedures such as abscess drainage, debridement,

and excision of soft tissue lesions and biopsies; the use of local anesthetics; suture choice; suturing skills; incision planning; and flap techniques.

Health advocate

Residents will show the ability to recognize socioeconomic, environmental, and psychological factors involved in the health and well-being of patients on the plastic surgery service. They will demonstrate and develop knowledge and proper utilization of available resources and strive to act as advocates for patient health when appropriate.

Communicator

Residents will learn throughout their training to communicate effectively with patients and their families. They will also demonstrate progress in communicating clearly and effectively in both verbal and written forms with other physicians and health care professionals.

Collaborator

Residents will demonstrate a growing understanding of the roles of other physicians from various disciplines as well as other health care professionals in patient care. They will develop and improve the ability to collaborate with patients, their families, and other caregivers in order to provide adequate patient care.

Manager

Residents will develop and improve knowledge in operating plastic surgery facilities in both hospital and private-practice settings. They will continue to develop managerial skills, including dealing with employees and other coworkers in various health care settings. They will demonstrate and improve on leadership skills, including the ability to work

effectively within the patient care team. Residents will demonstrate appropriate resource utilization. They will continuously strive to maintain balance between patient care and academic needs and other personal activities.

Scholar

Residents will demonstrate progress in research skills in various areas including basic science and clinical research, as well as quality assurance in plastic surgery as it relates to the practice of otolaryngology - head and neck surgery. They will also develop and improve teaching and supervisory skills throughout their training. This includes patient teaching as well as involvement in student and peer teaching. They will demonstrate and improve independent learning abilities in order to maintain and advance professional development. They will develop and improve critical appraisal skills and show the ability to interpret and assess the validity of scientific data.

Health Professional

Residents will demonstrate the highest standards of clinical care and ethical conduct. They will show an understanding and adherence to ethical and legal codes of clinical practice in such areas as confidentiality and informed consent. They will demonstrate integrity, honesty and a good work ethic. They will show and improve awareness and sensitivity regarding gender, racial, and cultural issues.

Maxillofacial Rotation [R4]

General Objectives:

Foundational Knowledge:

Gain a thorough understanding of maxillofacial anatomy, pathology, and the principles of maxillofacial trauma, including the structure, function, and common disorders affecting the maxillofacial region.

Diagnostic Proficiency:

Develop skills in history-taking, clinical examination, and interpretation of diagnostic imaging relevant to maxillofacial conditions.

Surgical Competency:

Understand the surgical approaches and principles of treatment for maxillofacial trauma and deformities, including both acute and reconstructive interventions.

Interdisciplinary Collaboration:

Learn to work effectively in a multidisciplinary setting with other specialists, such as maxillofacial surgeons, plastic surgeons, and radiologists, for the comprehensive management of complex maxillofacial cases.

Patient Safety and Ethics:

Recognize the importance of patient safety, ethical considerations, and consent in the management of maxillofacial injuries and conditions, emphasizing quality care and patient-centered decision-making ●

Specific Objectives:

Anatomy and Physiology:

- 1) Identify and describe the anatomical structures of the maxillofacial region, including bones, muscles, nerves, and vasculature.
- 2) Understand the functional implications of maxillofacial anatomy, particularly in relation to speech, chewing, facial aesthetics, and respiratory function.

Maxillofacial Trauma:

- 1) Classify and manage different types of maxillofacial fractures (e.g., zygomaticomaxillary complex fractures, orbital fractures, mandible fractures).
- 2) Recognize signs and symptoms of maxillofacial trauma, including airway compromise, cranial nerve deficits, and facial deformities.
- 3) Perform emergency interventions, such as securing the airway and initial stabilization of fractures.

Infectious and Inflammatory Disorders:

- 4) Diagnose and treat common infections and inflammatory conditions affecting the maxillofacial area, such as odontogenic infections, abscesses, and cellulitis.
- 5) Understand the complications of maxillofacial infections, including deep neck space infections and their potential spread.

Maxillofacial Oncology:

- 1) Identify common benign and malignant tumors in the maxillofacial region.

- 2) Understand principles of oncologic surgery, including margins, reconstruction, and preservation of function.
- 3) Recognize the role of radiotherapy, chemotherapy, and immunotherapy in managing maxillofacial cancers.

Congenital and Developmental Disorders:

- 1) Assess and manage congenital anomalies such as cleft lip and palate, craniofacial syndromes, and other developmental deformities.
- 2) Gain exposure to preoperative and postoperative care of patients undergoing corrective surgeries for congenital deformities.

Aesthetic and Reconstructive Procedures:

- 1) Understand the principles of aesthetic facial surgery, including rhinoplasty, genioplasty, and facial implants.
- 2) Learn reconstructive techniques using local and regional flaps, skin grafts, and, if possible, free tissue transfer for maxillofacial defect reconstruction.

Imaging and Diagnostic Modalities:

- 1) Interpret CT, MRI, and other imaging modalities for the diagnosis and treatment planning of maxillofacial conditions.
- 2) Identify imaging landmarks, fractures, and pathology on diagnostic scans relevant to maxillofacial surgery.

Postoperative Care and Rehabilitation:

- 1) Monitor postoperative patients for complications, including infection, bleeding, and nerve injuries.
- 2) Collaborate with physical and occupational therapists for the rehabilitation of facial function following maxillofacial surgery.

Case Management and Follow-up:

- 1) Develop comprehensive treatment plans tailored to each patient's needs, taking into consideration functional, aesthetic, and psychosocial aspects.
- 2) Conduct follow-up assessments, manage complications, and evaluate outcomes to improve future case management.

These objectives aim to build a strong foundation in maxillofacial concepts while enabling ENT trainees to develop practical skills that are essential in real-world patient care.

2.4 EXPECTED LEARNING OUTCOMES OF RESIDENT YEARWISE.

The following outlines the expected learning outcomes for residents in each year of a four-year program

YEAR	LEARNING OUTCOMES	MODE OF TEACHING	ASSESSMENT
FIRST YEAR MS RESIDENT	• Act as primary physician & Surgeon for patients. • Perform detailed history and physical exams. • Contribute to patient plans under supervision. • Understand pathophysiology of disease processes. • Present patient cases during rounds. • Perform procedures under supervision. • Attend outpatient clinics under supervision of senior resident.	Bedside teachings in emergency, inpatient, and outpatient department. Workshops, seminars and conferences. Formal teaching sessions with the supervisors. Mock courses	Formative assessment Workplace-based assessments. (Mini-CEX, CBDs, DOPS, MCQs and OSCE, 360-degree evaluation Summative assessment First year in training exam

SECOND YEAR MS RESIDENT	• Work alongside first-year resident as a role model. • Have increasing responsibilities on in patient rotations. • Attend outpatient clinics. • Attend Operating rooms • Demonstrate understanding of pathophysiology and lab/radiology findings. Come up with a reasonable differential diagnosis and management plan.	Bedside teachings in emergency, inpatient and outpatient department. Operating rooms, Workshops, seminars and conferences. Formal teaching sessions with supervisors' Mock courses	Formative assessment workplace-based assessments (Mini-CEX. CBDs, DOPS, MCQs and OSCE, 360-degree evaluation Summative assessment MTA
THIRD YEAR MS RESIDENT	• Take on leadership and supervisory roles for first and second-year residents. • Demonstrate interpersonal and communication skills. • Understand literature on diagnosis, prognosis, and management of disease processes. • Teach junior residents. Articulate findings and plan systematically. • Conduct procedures with minimal supervision	Bedside teachings in emergency, inpatient and outpatient department. Operating Rooms Workshops, seminars and conferences. Formal teaching sessions with the supervisors Mock courses	Formative assessment workplace-based assessments (Mini-CEX. CBDs, DOPS, MCQs and OSCE, 360-degree evaluation Summative assessment Third year in training exam

FOURTH YEAR MS RESIDENT	• Build on leadership, mentor, and supervisory role. • Be actively involved in teaching junior residents. • Have a solid knowledge base of disease processes and management. • Be actively involved in outpatient clinic. • Carry out most procedures independently and supervise junior residents. • Analyze articles skillfully and present thesis.	Bedside teachings in emergency, inpatient and outpatient department. Operating rooms Workshops, seminars and conferences. Formal teaching sessions with the supervisors Mock courses	Formative assessment workplace-based assessments (Mini-CEX, CBDs, DOPS, MCQs and OSCE, 360-degree evaluation Summative assessment FTA exam
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Our program is competency-based and outcome-driven, with a focus on providing a supportive learning environment for residents to develop their skills and knowledge and achieve their career goals.

SECTION III

Research and Thesis Writing

RESEARCH & THESIS WRITING

A 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 4th year of training, or it can be stretched over four 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 medical 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

1. **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
2. **Research involving animals**

Each resident participating in research involving animals is required to:

1. Become familiar with the pertinent Rules and Regulations of the Rawalpindi Medical University 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

3. **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.



Fig 2: Research Planner

EXPECTED LEARNING OUTCOMES OF RESEARCH AND THESIS WRITING

The purpose of MS Teaching programme is to provide advanced training to researchers on the concepts and principles of research, ethical conduct of research using human subjects, and the skills necessary for the development of research questions and scientific writing.

TRAINING YEAR	LEARNING OUTCOMES OF RESEARCH AND THESIS WRITING	MODE OF TEACHING	ASSESSMENTS
• YEAR 1-4	• Successfully completing the research workshops and obtaining certification. • Formulating research questions, critically appraising literature, and synthesizing evidence for their research topics. • Describing the key features of different sections of a scientific publication. • Explaining the differences between scientific research methods and approaches.	• Research Workshops • Journal club presentations. • Lectures • Research conferences and symposia. • Participation in Clinical/ward Audit	FORMATIVE ASSESSMENT (one disease statistical report) Synopsis presentation in Departmental review board (DRB), ethical review board (ERB) and BASR. SUMMATIVE ASSESSMENT (thesis defence)

	• Drafting and refining the background/literature review sections of their research proposal. • Developing a thesis/research paper		
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Overall, MS teaching programme aims to equip researchers with the necessary knowledge and skills to conduct ethical and high-quality research, and to effectively communicate their findings through scientific publications.

RMU THESIS GUIDELINES

Thesis Writing Guidelines:

Thesis writing is a fundamental requirement for MD/MS residency programs, documenting the research conducted by postgraduate residents. Its purpose is to guide residents in conducting scientific research, selecting a topic relevant to local clinical practice, and developing essential skills in research planning, data collection, literature review, results analysis, and medical writing.

General Information

After data collection and analysis, thesis writing follows, encompassing 10,000-15,000 words or 80-100 pages, excluding references. The document must be free of typographical and spelling errors, double-spaced, and formatted with specific font sizes for headings, subheadings, and text. Pages should be sequentially numbered and contain standard margins.

Thesis Structure:

The thesis includes the following sections, each starting on a new page:

1. **Title Page:** Includes RMU monogram, thesis topic, author name, department, supervisor details, and submission date.
2. **Approval, Declaration, Dedication, and Acknowledgment Pages:** Optional pages for certification and acknowledgments.
3. **Abstract:** Provides a concise summary under specific headings (e.g., objectives, methods, results, and conclusions) to facilitate quick understanding.
4. **Introduction:** Outlines the research objectives, context, significance, and scope.
5. **Literature Review:** Critically evaluates relevant studies, identifies knowledge gaps, and sets the research question.
6. **Methodology:** Describes the research design, study population, data collection tools, and analytical techniques.
7. **Results:** Summarizes findings in an objective format, using tables and figures as necessary.
8. **Discussion:** Interprets results, addresses study limitations, and compares findings with existing literature.
9. **Conclusion and Recommendations:** Summarizes findings, implications, limitations, and suggestions for future research.
10. **References:** Cites sources in Vancouver style, with at least 50% from the last five years.
11. **Annexures:** Includes relevant approvals, ethical reviews, and necessary certifications including Approved copy of synopsis, Certificate of Approval of Board of Advanced Studies and Research, ethical review board approval (IRF/ERB), supervisory certificate, study Performa and Similarity index less than 20% PDF report.

Submission: Submit five hard copies of the thesis, bound and formatted, along with a digital copy. Following approval, the thesis may be submitted to a medical journal for publication with the resident as the primary author.

SECTION IV

Research Curriculum

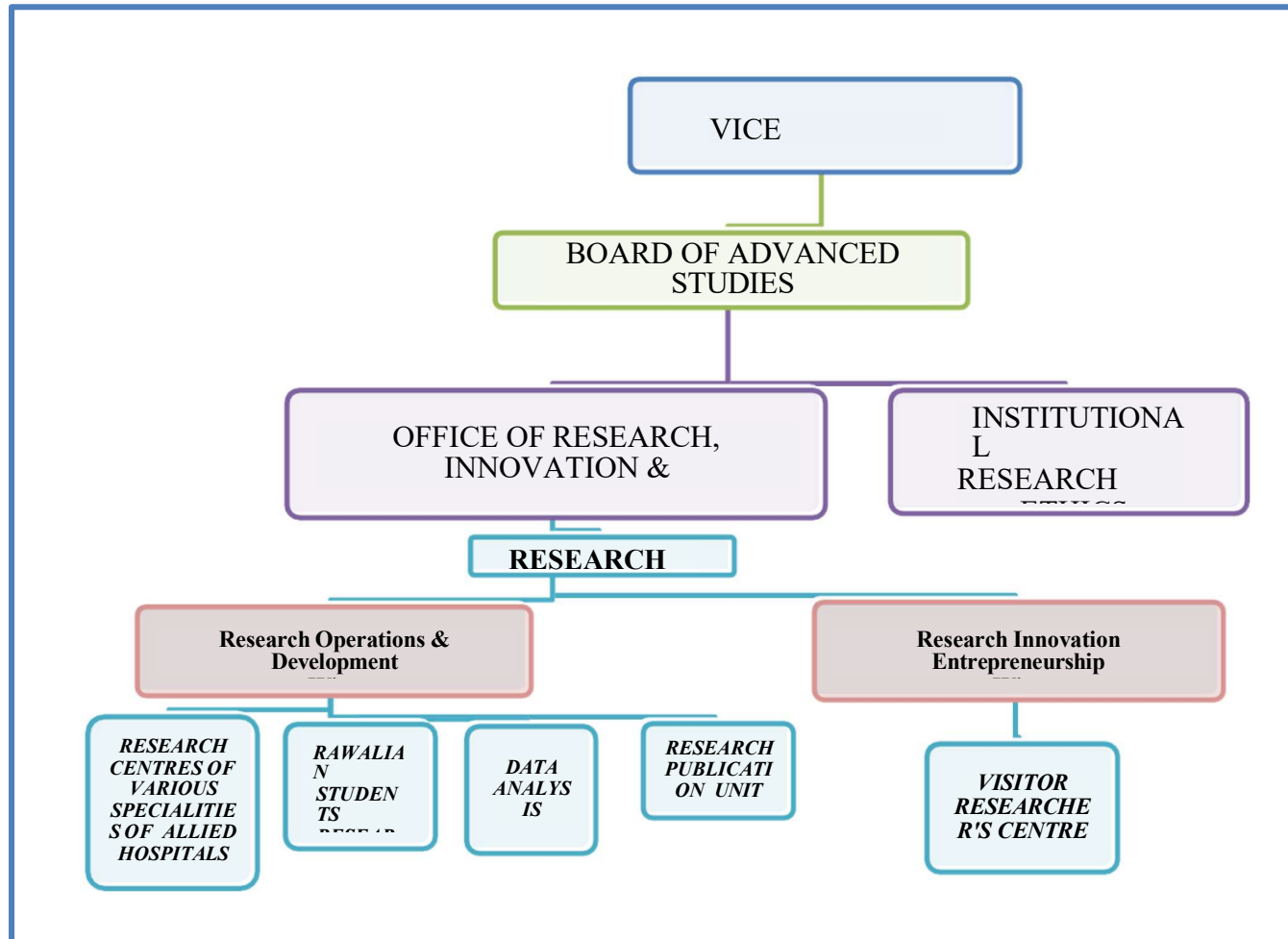
INTRODUCTION

With advent of Evidence Based Practice over last two to three decades in medical science, merging the best research **evidence** with good clinical expertise and patient values is inevitable in decision making process for patient care. Therefore, apart from receiving per excellence knowledge of the essential principles of medicine and necessary skills of clinical procedures, the trainees should also be well versed and skillful in research methodologies. So, the training in research being imperative is integrated longitudinally in all four year's training tenure of the trainees. The purpose of the research training is to provide optimal knowledge and skills regarding research methods and critical appraisal. The expected outcome of this training is to make trainees dexterous and proficient to practically conduct quality research through amalgamation of their knowledge, skills and practice in research methodologies.

ORIENTATION SESSION FOR POST GRADUATE TRAINEES:

- A. At the beginning of the research course, an orientation session or an introductory session of one hour duration will be held, organized by Director, Deputy Directors of ORIC (Office of Research Commercialization and Innovation) of RMU to make trainees acquainted to the research courses during four years post graduate training, the schedule of all scholarly and academic activities related to research and the assessment procedures.
- B. Trainees will also be introduced to all the facilitators of the course, organizational structure of ORIC (Annexure 1) and the terms of references of corresponding authorities (Annexure 2) for any further information and facilitation.
- C. All the curriculum details and materials for assistance and guidance will be provided to trainees during the orientation session.
- D. The research model of RMU as given in Figure 2 and will be introduced to the newly inducted trainees of RMU.

Figure 3. MODEL OF RESEARCH AT RAWALPINDI MEDICAL UNIVERSITY



The research training component for Post Graduate Trainees comprises of four years and the Distribution and curriculum for each year is mentioned as follows:

RESEARCH COURSE OF FIRST POST GRAUDATION TRAINING YEAR R-Y1

PURPOSE OF R-Y1 RESEARCH COURSE:

The RESEARCH YEAR 1 or R-Y1 research course of the post graduate trainees intends to provide ample knowledge to trainees regarding the importance of research, its necessity and types. This course will provide them clarity of concepts that what are the priority problems that require research, how to sort them out and select topics for research. It will also teach them the best techniques for exploring existent and previous evidences in research through well organized literature search and also how to critically appraise them. The course will not only provide them comprehensive knowledge but will also impart optimum skills on how to practically and logically plan and design a research project by educating and coaching them about various research methodologies. The trainees will get familiarized to research ethics, concepts of protection of human study subjects, practice-based learning, evidence based practice in addition to the standard ethical and institutional appraisal procedures of Rawalpindi medical University by Board of Advanced Studies and Research and Institutional and Ethics Research Forum of RMU.

LEARNING OUTCOMES OF R-Y1 RESEARCH COURSE

After completion of R-Y1 course the trainees should be efficiently able to:

1. Discuss the value of research in health service in helping to solve priority problems in a local context.
2. Identify, analyse and describe a research problem
3. Review relevant literature and other available information
4. Formulate research question, aim, purpose and objectives
5. Identify study variables and types
6. Develop an appropriate research methodology
7. Identify appropriate setting and site for a study
8. Calculate minimally required sample size for a study.
9. Identify sampling technique, inclusion and exclusion criteria
10. Formulate appropriate data collection tools according to techniques
11. Formulate data collection procedure according to techniques

12. Pre-test data collection tools
13. Identify appropriate plan for data analysis
14. Prepare of a project plan for the study through work plans and Gantt charts
15. Identify resources required for research and means of resources
16. Prepare a realistic study budget in accordance with the work plan.
17. Critically appraise a research paper of any national or international journal.
18. Present research papers published in various national and international journals at journal club.
19. Prepare a research proposal independently.
20. Develop a strategy for dissemination and utilisation of research results.
21. Familiarization with application Performa for submission of a research proposal to BASR or IREF.
22. Familiarization with format of presentations and procedure of presentation and defense of a research proposal to BASR or IREF.
23. Familiarization with the supervisor, nominated by the Dean and to develop a harmonious rapport with supervisor.

RESEARCH COURSE OF FIRST TRAINING YEAR

Following academic and scholarly activities will be carried out during year 1 ie R-Y1 of Research course catering the post graduate trainees

A. TEACHING SESSIONS:

Research will be taught to the trainees through following methods in various sessions. Each session will comprise of all or either one or two or all five of the following techniques;

1. Didactic lectures through power-point presentations.
2. On spot individual exercises.
3. On spot group exercises.
4. Take home individual assignment
5. Take home group assignment.

The facilitators of these sessions will be staff members (that are director, deputy directors (managers), research associates, statistician and publication in charge) of Office of Research Innovation and commercialization (ORIC) of RMC. While visitor lecturers including renowned national and international public health consultants, researchers, epidemiologists and biostatisticians will also be invited, according to their availability, for some modules of these course

Format of teaching sessions:

- i. During year 1 i.e. R-Y1, 23 teaching sessions in total will be taken, with an average of three sessions per month. Each session will comprise of a didactic lecture delivered initially, to attain the mentioned learning outcomes.
- ii. Each didactic lecture will be of 30 minutes' duration using the power-point medium that will be followed by a 30 minutes on spot individual or group exercises of trainees during the same session.
- iii. By the end of each session, a take home individual task/assignment will be given to trainees, either individually or in groups, that will be duly evaluated and marked each month.

Course content of teaching sessions:

- i. The course materials will be based on an updated modified version of course titled as “Designing Health Services Research (Basic)” that was developed in collaboration of Rawalpindi Medical College & Nuffield Institute for Health, University of Leeds, UK based

adapted from “Designing and Conducting Health Systems Research Projects” by CM. Varkevisser KIT Publishers, Amsterdam (International Development Research Centre) in association with WHO Regional Office for Africa.

- ii. The trainees will be provided hard copies as well as soft copies of the course content in a folder at the initiation of the course.
- iii. In addition to it they will be provided various soft copies and links of updated and good resource materials regarding research by the course facilitators.

Curriculum of teaching sessions:

The details of the 22 teaching sessions of the trainees during year one R-Y1 along with the tentative time frame work, teaching strategies, content of curriculum and objectives/Learning outcomes of each session are displayed in table 1

TABLE 1. TEACHING SESSIONS OF RESEARCH CURRICULUM OF YEAR 1 OF TRAINEES OF POST GRADUATE TRAINEES/MD SCHOLARS OF RMU

<i>SESSION S & TIMING S</i>	<i>TEACHING STRATEGY</i>	<i>TOPIC OF SESSION</i>	<i>SESSION OBJECTIVES i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;</i>
SESSION 1 WEEK 1 Month 1	Lecture through power point presentation followed by both individual exercise & Group exercise	A. Introduction to health systems research B. Identifying and Prioritizing Research Problems	• Describe the purpose, scope and characteristics of health systems research • Identify criteria for selecting health-related problems to be given priority in research

SESSION 2 WEEK 2 Month 1	Lecture through power point presentation followed by Individual exercise	Analysis and statement of problem & Introduction to Literature review	• Analyze a selected problem and the factors influencing it and understand how to prepare the statement of the problem for research. • Describe the reasons for reviewing available literature and other information for preparation of a research. • Identify the resources that are available for carrying out such a review.
SESSION 3 WEEK 3 Month 1	Lecture through power point presentation followed by Individual exercise & Take home assignment	Literature review Referencing systems; Vancouver & Harvard referencing systems	• Describe the methods for reviewing available literature and other information for preparation of a research. • Should be familiar with referencing systems and its importance. • Use Vancouver and Harvard referencing systems and should be able to differentiate between them.
SESSIONS & TIMINGS	TEACHING STRATEGY	TOPIC OF SESSION	SESSION OBJECTIVES i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;

SESSION 4 WEEK 1 Month 2	Lecture through power point presentation followed by Individual exercise & Take home assignment	Literature review Referencing managing systems	• Describe the methods for reviewing available literature and other information for preparation of a research. • Should be familiar with use and importance of reference managing systems; Endnote & Mendeley. • Use the literature review and other information pertaining to a research topic that will adequately describe the context of study and strengthen the statement of the problem.
SESSION 5 WEEK 2 Month 2	Lecture through power point presentation followed by Individual exercise & take home assignment	Plagiarism	• Describe the significance and necessity of plagiarism detection • Use online plagiarism detection tools and turn-it-in for detecting plagiarism through assessment of originality scores/similarity index for plagiarism
SESSION 6 WEEK 3 Month 2	Lecture through power point presentation followed by Individual exercise	Formulation of research objectives	• State the reasons for writing objectives for a research project. • Define and describe the difference between general and specific objectives. • Define the characteristics of research objectives. • Prepare research objectives in an appropriate format. • Develop further research questions, and research hypotheses, if appropriate for study.

SESSIONS & TIMINGS	TEACHING STRATEGY	TOPIC OF SESSION	SESSION OBJECTIVES i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;
SESSION 7 WEEK 4 Month 2	Lecture through power point presentation followed by Individual Assignment	Formulation of Hypothesis for a research	• State the reasons and scenario for formulating research hypothesis. • Define and describe the types difference between one sided and two sided hypothesis. • Formulate Null hypothesis and Alternate hypothesis in an appropriate format. • Identify importance of hypothesis testing and to identify type I & type II errors.
SESSION 8 WEEK 1 Month 3	Lecture through power point presentation followed by a group exercise.	Research methodology; Variables and Indicators	• Define what study variables are and describe why their selection is important in research. • State the difference between numerical and categorical variables and define the types of scales of measurement. • Discuss the difference between dependent and independent variables and how they are used in research designs. • Identify the variables that will be measured in a research project and development of operational definitions with indicators for those variables that cannot be measured directly.
SESSIONS & TIMINGS	TEACHING STRATEGY	TOPIC OF SESSION	SESSION OBJECTIVES i.e. BY THE END OF SESSION THE

			TRAINEES SHOULD BE ABLE TO;
SESSION 9 WEEK 2 Month 3	Lecture through power point presentation followed by a group exercise.	Research methodology; Study types	• Describe the study types mostly used in HSR. • Define the uses and limitations of each study type. • Describe how the study design can influence the validity and reliability of the study results. • Identify the most appropriate study design for a study.
SESSION 10 WEEK 1 Month 4	Lecture through power point presentation	Data collection techniques	• Describe various data collection techniques and state their uses and limitations. • Advantageously use a combination of different data collection techniques. • Identify various sources of bias in data collection and ways of preventing bias. • Identify ethical issues involved in the implementation of research and ways of ensuring that informants or subjects are not harmed. • Identify appropriate data-collection techniques.
SESSION 11 WEEK 2 Month 4	Lecture through power point presentation	Data collection tools	• Prepare data-collection tools that cover all important variables.
SESSIONS & TIMINGS	TEACHING STRATEGY	TOPIC OF SESSION	SESSION OBJECTIVES i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;
SESSION 12 WEEK 1 Month 5	Lecture through power point presentation	Sampling	• Identify and define the population(s) to be studied • Describe common methods of sampling.

			• Decide on the sampling method(s) most appropriate for a research design.
SESSION 13 WEEK 2 Month 5	Lecture through power point presentation Group exercises	Sampling	• List the issues to consider when deciding on sample size. • Calculate minimally required sample size according to study designs • Use WHO's (World Health Organization's) sample size calculator. • Decide on the sample size(s) most appropriate for a research design.
SESSION 14 WEEK 3 Month 5	Lecture through power point presentation	Plan for Data Entry, storage and Statistical Analysis	• Identify and discuss the most important points to be considered when starting to plan for data collection. • Determine what resources are available and needed to carry out data collection for study. • Have knowledge of resources, available for data recording, storage and to carry out data analysis of a study? • Describe typical problems that may arise during data collection and how they may be solved. • Identify important issues related to sorting, quality control, and processing of data.
SESSIONS & TIMINGS	TEACHING STRATEGY	TOPIC OF SESSION	SESSION OBJECTIVES i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;

			• Describe how data can best be analyzed and interpreted based on the objectives and variables of the study • Prepare a plan for the processing and analysis of data (including data master sheets and dummy tables) for the research proposal being developed.
SESSION 15 WEEK 1 Month 6	Lecture through power point presentation and individual exercises	Introduction to Statistical Package of Social Sciences (SPSS)	• Introduction to Statistical Package of Social Sciences. • Entry of various types of variables in SPSS.
SESSION 16 WEEK 2 Month 6	Lecture through power point presentation and individual exercises	Pilot and project planning	• Describe the components of a pre-test or pilot study that will allow to test and, if necessary, revise a proposed research methodology before starting the actual data collection. • Plan and carry out pre-tests of research components for the proposal being developed. • Describe the characteristics and purposes of various project planning and scheduling techniques such as work scheduling & GANTT charting. • Determine the various tasks and the staff needed for a research project and justify any additional staff (research assistants, supervisors) apart from the research team, their recruitment procedure, training and
SESSIONS & TIMINGS	TEACHING STRATEGY	TOPIC OF SESSION	SESSION OBJECTIVES i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;

			• Prepare a work schedule, GANTT chart and staffing plan for the project proposal.
SESSION 17 WEEK 3 Month 6	Lecture through power point presentation and individual exercises	Budgeting for a study	• Identify major categories for a budget. • Make reasonable estimates of the expenses in various budget categories. • List various ways a budget can be reduced, if necessary, without substantially damaging a project. • Prepare a realistic and appropriate budget for the project proposal
SESSION 18 WEEK 1 Month 7	Lecture through power point presentation.	• Project administration • Plan for dissemination • Research ethics & concepts of protection of human study subjects	• List the responsibilities of the team leader and project administrator related to the administration and monitoring of a research project. • Prepare a brief plan for administration and monitoring of a project. • Identify the ethical considerations mandatory during execution of a research project and their importance. • Prepare a plan for actively disseminating and fostering the utilization of results for a research the project proposal.
SESSION 19 WEEK 2 Month 7	Lecture through power point presentation	Differences between original articles, short communications, case reports, systematic reviews and	• Differentiate between original articles, short communications, case reports, systematic reviews and meta-analysis

		meta-analysis	
SESSIONS & TIMINGS	TEACHING STRATEGY	TOPIC OF SESSION	SESSION OBJECTIVES i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;
SESSION 20 WEEK 3 Month 7	Lecture through power point presentation and group exercises	Writing a Case report	• Identify important components of a good case report. • Formulate a quality case report of any rare case presented in the clinical unit during the training period
SESSION 21 WEEK 1 Month 8	Lecture through power point presentation and group exercises	Undertaking a clinical audit.	• Identify Clinical audit as an essential and integral part of clinical governance. • Differentiate between research and clinical audit. • Identify types of Clinical Audit • Understand steps of process of Clinical Audit
SESSION 22 WEEK 2 Month 8	Lecture through power point presentation and group project	Critical Appraisal of a research paper	• Identify the importance and purpose of critical appraisal of research papers or articles. • Have ample knowledge of important steps of critical appraisal • Can effectively critically appraise a research paper published in any national or international journal.

SESSION 23 WEEK 3 Month 8	Lecture through power point presentation and individual exercises	• Making effective power- point presentations • Making effective poster presentations • Presenting a research paper	• Determine various tips for making effective power-point presentations. • Determine various tips for making effective poster and its presentations. • Identify important components of research paper that essentially should be communicated in a presentation. • Can effectively and confidently make a power-point presentation of a research paper published in any national or international journal • Can formulate a poster of a research paper published in any national or international journal.
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Minimal Attendance of teaching sessions:

The attendance of the trainees in the Research training sessions must be 80% or above during year 1, and it will be duly recorded in each session and will be monitored all the year round.

Assessment of Trainees for teaching sessions:

- i. *For didactic lectures*, the learning and knowledge of the trainees will be assessed during the end of year examination or Annual Research Paper.
- ii. One examination paper of Research of R-Y1 will be taken that will comprise of 75 marks in total and will consist of two sections. Section one will be of 50 marks in total and will comprise of 25 MCQ's (multiple choice questions) while section two will comprise of 5 SAQ's (Short answer questions) and Problems/Conceptual questions.
- iii. Total duration of the paper will be 90 minutes.

- iv. The papers will be checked by the research associates and Deputy Directors of ORIC.

Assessment of individual and group exercises:

- i. The quality, correctness and completeness of the individual as well as group exercises will be assessed during the teaching sessions, when they will be presented by the end of each session by trainees either individually or in groups respectively.
- ii. The mode of presentations will be oral using media of charts, flip charts & white boards.
- iii. There will be no scores or marks specified for the individual or group exercises but the feedback of evaluation by the facilitators will be on spot by end of presentations.

Assessment of individual or group; take home tasks/assignments:

- i. The correctness, quality and completeness of the individual or group exercises will be determined once these will be submitted after completion to the facilitators after period specified for each task. Assignments should be submitted in electronic version and no manually written assignment will be accepted.
- ii. Each assignment will be checked for plagiarism through turn-it-in software. Any assignment that will have originality score less than 90% or similarity index more than 10% will be returned back to trainees for rephrasing and resubmission.
- iii. Assignments will be assessed and checked during the sessions and will be scored by the facilitators who had taken the session.

A total of 50 marks in total will be assigned for evaluation of all of these take home tasks/assignments.

B. PARTICIPATION IN JOURNAL CLUB SESSIONS

- i. The journal club of every department will comprise of an academic meeting of the head of department, faculty members, trainees and internees at departmental level.
- ii. The purpose of journal club will be to collectively attempt to seek new knowledge through awareness of current and recent research findings and also to explore best current clinical research and means of its implementation and utilization.
- iii. Apart from the teaching sessions of the trainees should attend the journal club sessions of the departments and should attempt to actively participate in them too.
- iv. One journal club meeting must be organized in the department in every two months of the year and its attendance by the trainees will be mandatory.

- v. The journal club meeting will be chaired by the Dean of specialty.
- vi. The purpose of participation of the trainees in journal club will be to enhance their scientific literacy and to have optimal insight of the relationship between clinical practice and evidenced-based medicine to continually improve patient care.

Format of Journal Club Meetings:

- i. In a journal club meeting, one or two research paper/s published in an indexed national or international journal, selected by the Dean of the department will be presented by year 2 trainees; R-Y2 trainees.
- ii. The research paper will be presented through power-point and the critical appraisal of the paper will follow it.
- iii. The topic will also be discussed in comparison to other evidences available according to the latest research.
- iv. The year one trainee i.e. R-Y1 trainee will only participate in the journal club and will not present during first year of training. He/she will be informed regarding the selected paper one and a half month prior to the meeting and should do extensive literature search on the topic and also of the research paper that will be presented in meeting.
- v. The trainees should actively participate in question & answer session of the journal club meeting that will be carried out following the presentation of the critical appraisal of the research paper. It will be compulsion for each R1 trainee to ask at least one question or make at least one comment relevant to the topic and/or the research paper, during the journal club meeting.

Minimal Attendance of Journal Club meetings by R-Y1 trainee:

The R-Y1 trainees should attend at least 5 out of 6 journal club meetings during their first year of training.

Assessment of Trainees for Journal Club sessions:

There will be no formal quantitative or qualitative assessment of the trainee during year one for their participation in the journal club.

vi.

C. OBSERVATION OF MONTHLY MEETING OF INSTITUTIONAL RESEARCH ETHICS COMMITTEE (IREF) OF RMU

- i. In order to provide exposure to R-Y1 trainees regarding standard operational procedures and protocols of the research activities of Rawalpindi Medical University, each R-Y1 trainee should attend at least two monthly meetings of the Institutional Research Ethics Committee of RMU and should observe the proceedings of the meeting.
- ii. He/she will be informed by the research associates of ORIC about the standard procedures of application to IREF step wise including guidance regarding how an applicant should access the RMU website and download the application Performa and then how to electronically fill it in for final submission. They will also be provided format of presentation for their future presentations at IREF

meetings.

Minimal Attendance of IREF meetings by R-Y1 trainee:

The R-Y1 trainees should attend at least two (out of 12) monthly meetings of IREF during their first year of training.

Assessment of Trainees for participation in the IREF meetings:

There will be no formal quantitative or qualitative assessment of the trainee during year one for their participation in the IREF meetings.

D. NOMINATION OF THE SUPERVISOR OF THE TRAINEE FOR THE DISSERTATION PROJECT

- i. During the first year of training, the supervisor of each trainee must be nominated within first six months. The Dean of the specialty will decide the nomination of the supervisor for the post graduate trainee as well as MS scholars.
- ii. A meeting will be held in the middle of the year, in June preferably, that will be attended by all heads of the departments and the Dean. The list of all the first-year trainees and the available supervisors in each department will be presented by respective heads of each department in meeting. All of the eligible trainees and supervisors will also be around for brief interviews during the meeting.
- iii. The head of departments, prior to interviews of the trainees and supervisors, will inform the Dean in the meeting, their own personal observation of the level of performance, talent personality and temperament of both the trainees and the supervisors. Based on their consideration of the compatibility of both eligible trainees and the supervisors, Head of departments (HOD's) will recommend or propose most suitable supervisors for each trainee after eloquent discussions and justifications.
- iv. The Dean will then call each trainee individually to inform him/her the suggested Supervisor for him/her and will also give right and time for objection or reservation in nomination, if any. The Dean will seek the trainee's final consent and then after asking the trainee to leave the meeting room, will call the supervisor for final consent.
- v. If the supervisor will also be willing to happily supervise the trainee, then the Dean will finally approve the nomination.
- vi. A tentative list will be issued by the office of the Dean, within three days of the meeting, copied to the HOD's and the trainees and supervisors.
- vii. Both the trainees and the supervisors will be given two weeks to challenge the nominations, in case either of the two have any qualms or objections regarding the nominations. They will also be given right to personally approach the Dean for any request for change. In case of any objection, the Dean will make changes in consultation with the HOD's, after final consent and satisfaction of both

trainee and supervisor

- viii. The final revised list of nominations will be then issued by the office of Dean and will be sent to the Board of Advanced studies and Research of RMU (BASR).
- ix. The Board of Advanced studies and Research of RMU will issue final approval of the list and the Vice chancellor will endorse the nominations as final authority.
- x. During the last few months of the first year of training, the trainees and supervisors will be advised by the Dean, to get familiar with each other and try to identify their abilities to efficiently and successfully work together as a team, especially during the project of Clinical Audit, mentioned in next section.
- xi. In case of any issues, either of both will have right to request any change in nomination to the Dean, till last week of first year of training. The Dean will then consider the case and will seek modification in nomination from the BASR.
- xii. After completion of first year of training, no substitution in nomination will be allowed. In case of any serious incompatibility between the trainee and the supervisor, the issue will be brought to the Vice chancellor directly by the Dean as a special case, who will make the final decision accordingly, as the final authority.
- xiii. As regards the MD scholars, the external supervisors will also be nominated and those nominations will be made by Vice chancellor of RMU in consultation with the Dean of specialty. The consent of the trainees and supervisors will follow the same protocol as specified above and the final list of nominations will then be submitted to BASR for final approval.
- xiv. After finalization of nominations a letter of agreement of supervision will be submitted by the trainee to the office of Dean, including consent and endorsement of both trainee and the internal and/or external supervisor, with copies to HOD, ORIC and BASR.
- xv. The supervisor and the trainee will be bound to meet on weekly basis exclusively for research activity with documented record of the activity done during the meeting in the log book.

E. UNDERTAKING A CLINICAL AUDIT PROJECT

- i. During ninth month of training year 1; R-Y1 the head of department will form groups of trainees, either two or three trainees in one group (along with each supervisor of each trainee), depending on the total number of trainees available in that respective first year.
- ii. These groups will undertake clinical audits on various aspects of the department as a project assignment, on one topic assigned to each

group by the Dean and Heads of Departments.

- iii. If the group will comprise of two trainees and their supervisors' then there will be four group members in that group and if three trainees in one group, then there will be six members of that group after inclusion of their supervisors.
- iv. The trainees during session 21 conducted in first week of eighth month of training R-Y1, will already have been taught how to undertake a clinical audit and this task of undertaking a clinical audit will be assigned to them as its group project. This project will also provide the trainees and the supervisors an opportunity to work closely and will help them understand and foresee their group dynamics for future dissertations.
- v. The clinical audits completed in groups will be published as Annual Audit Reports of the departments by the Dean and HOD's and each member of the group will be acknowledged as author in the Annual Audit reports or if also published in any research journal.
- vi. The clinical audit will also be presented in weekly Clinico-pathological conferences (CPC) of the University, if approved by the Dean. The presentation will be supervised by HOD.
- vii. The contribution of the post graduate trainees'/ MS trainees in audits will be qualitatively assessed by the supervisors and the head of departments.

F. MONITORING OF RESEARCH COURSE OF YEAR 1

- i. All the concerned faculty members, at department, research units of specialties (including supervisors, senior faculty members and Head of Department) and the Deputy Directors and Director at the Office of Research Innovation & Commercialization of RMU will keep vigilant and continuous monitoring of all the academic activities of each trainee.
- ii. There will be a separate section of research in Structured Log books of trainees and also section of Research in portfolio record of the trainees specific to research component of the training that will be regularly observed, monitored and endorsed by all the concerned faculty members, supervisor and facilitators. The Log and portfolio for the research curriculum of each training year will be entered separately.
- iii. The Structured Research section in Log books specific to research curriculum of training year 1 will include the record of attendance of all the teaching sessions of the trainee that will be monthly updated and endorsed by the Department of Medical Education (DME) of RMU.

- iv. There will also be submission record and scores attained for the individual and group assignments of the trainees, endorsed by the facilitators of ORIC including Deputy Directors and Research Associates.
- v. The log books will also include the attendance of the trainees in the Journal club sessions of the department and with qualitative assessment of the trainee regarding any active participation of the trainee during the journal club. It will specifically mention whether any question or comment was raised by the trainee during each journal club session. This information will be endorsed by the supervisor of the trainee and the Head of Department.
- vi. The attendance record of the trainees in the monthly meetings of the Institutional Research Ethics Forum (IREF) of RMU will also be part of the Log Book that will be endorsed by the convener of the IREF by the end of each attended meeting.
- vii. The HOD will monitor the weekly meetings through observation of the documented record of meetings in log books by the end of every month.
- viii. The result of the annual research paper of R-Y1 will be entered in the Log books and will be endorsed by Deputy Directors and Research Associates of ORIC.
- ix. The research portfolio of the trainee R-Y1 will be qualitative and quantitative self-assessment of the trainee in narrative form. It will also include the individual assessment of the objectives and aims defined by the trainee during the year and elaboration of the extent of attainment of these. The trainee will be able to specify his/her achievements or knowledge gained in any aspect of research that was not even formally part of the research curriculum. It will include reporting of any research courses, online or physically attended by the trainee, contribution in any research paper or publication, any participation and/or presentation in any research conference, competition etc during year R-Y1.
- x. The research portfolio will assist the trainees to reinforce the importance of strategic thinking as a way to understand their context and look to the future. By having a recorded insight of the individual achievements, weaknesses and strengths, the trainee will be able to maximize his/her talent and potential of all the activities and projects of research with an aim of further progression in career development.

G. OVERALL ASSESSMENT OF PERFORMANCE OF TRAINEES FOR YEAR 1

- i. Quantitative assessment of the performance and accomplishment of trainees will be done in an unbiased, impartial and equitable

manner by the supervisor, ORIC department and the senior faculty members at the department.

- ii. The assessment of trainees will not only serve as an effective tool for evaluation of the extent and quality of knowledge gained and skills learnt by trainees but it will also effectively provide evidence of the level of standards of teaching and training by the facilitators, supervisor and the faculty members.
- iii. For annual assessment of every trainee 75 marks of Annual Research Paper of R-Y1 will be included, while 25 marks will be included from the home tasks assignments. The 50 marks of the home task assignments will be converted to 25 marks, to get an aggregate of 100 total marks. Out of these 100 total marks, 40% will be passing marks of this Research course and in case of failure in it, second attempt will be allowed to the trainees and if any one fails in second attempt too then he/she should appear next year with next batch's first attempt.

H. EVALUATION/FEEDBACK OF RESEARCH COURSE OF YEAR 1

Success of any academic or training activities greatly rely on the honest and constructive evaluation that opens pavements of improved and more effective performances and programs. The research course of the trainees will not only be evaluated by the trainees themselves but also by the deputy directors of ORIC, supervisors and HOD's through end of sessions forms and then collectively through end of course feedback forms.

- i. ***The feedback of trainees*** will include structured evaluation of each teaching session through structured and anonymous feedback forms/questionnaire that will be regularly distributed amongst the trainees. Anonymity will ensure an honest and unbiased response. They will be requested to provide their feedback regarding various aspects of teaching sessions eg content, medium used, facilitators performance and knowledge, extent of objectives attained etc through Likert scale. They will mark, through their personal choice without any pressure or peer consultation, one particular category amongst five scales specified ranging from 1- 5, 1 representing the poorest quality while 5 representing excellence. Apart from this structured assessment, open ended questions will also include an in-depth perspective and insight. Similarly, an overall feedback questionnaire will also be rotated amongst trainees.
- ii. ***The feedback of trainers*** will include structured evaluation of each teaching session by the facilitators, supervisors and senior faculty members involved in the Research training course. They will provide their feedback through structured and anonymous feedback forms/questionnaire, including closed and partially closed questions that will be regularly provided by them. They will provide their

inputs and opinions regarding effectiveness of the course contents, curriculum, teaching methodologies, teaching aids and technologies, content and usefulness of the exercises and assessments etc.

- iii. ***Three focus group discussions;*** one of the R-Y1 trainees, second of the facilitators and third of the supervisors will also be organized by the ORIC to evaluate the research course, its benefits and weaknesses and scope for improvement.
- iv. ***The research portfolio*** will be checked and endorsed by the supervisor and the Director of ORIC.
- v. ***A final evaluation report of the Research Course R-Y1*** will be formulated and compiled by the ORIC of RMU. The report will be presented all concerned stake holders, since the course evaluations will play a significant role in curriculum modification and planning.

I. QUALITY ASSURANCE OF RESEARCH COURSE OF YEAR 1

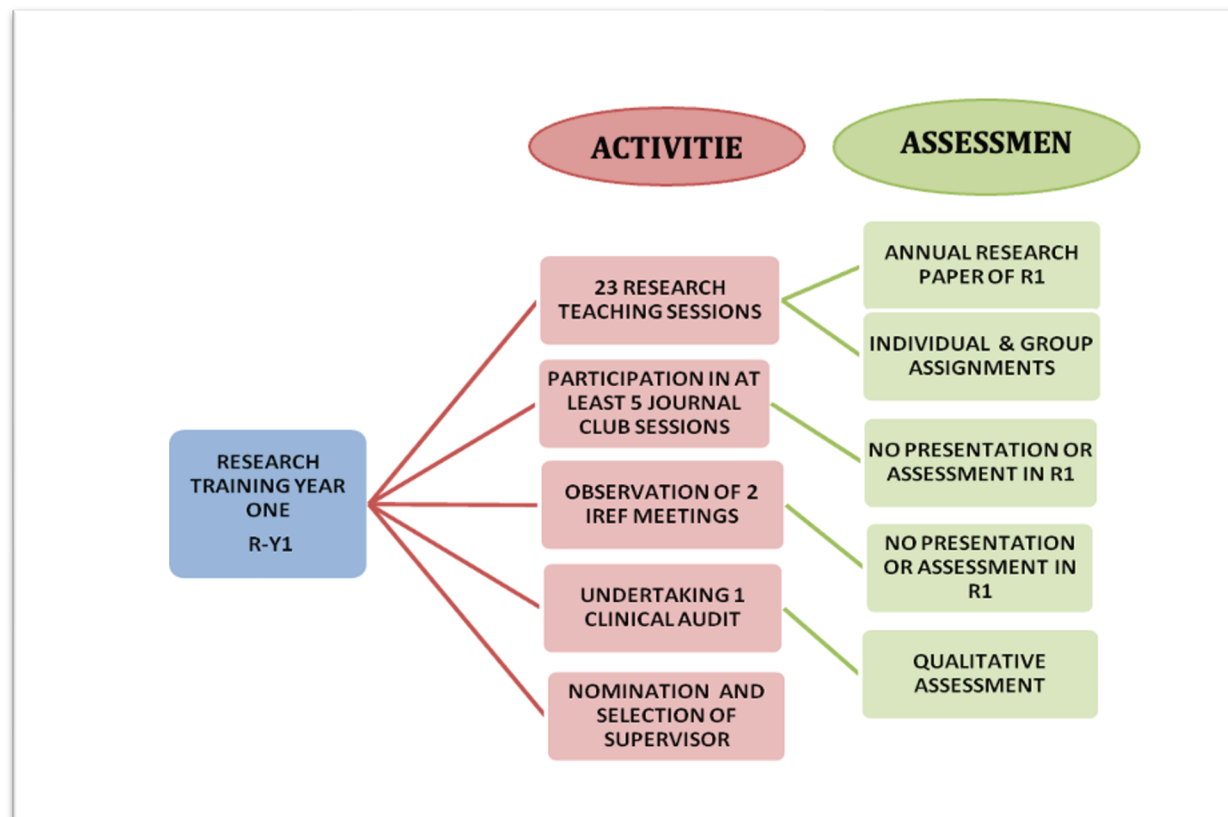
- i. The final quality evaluation report along with all the feedback material, randomly selected log books, research portfolios, submitted individual & groups assessments and randomly selected annual research course examination papers will be observed by an evaluation team of Research course. The quality evaluation team of research course will include the Head of departments, Deans, selected representatives of BASR, IREF, Director DME (Department of Medical Education), Director of ORIC, Director of Quality enhancement cell (QEC) and Vice chancellor of RMU, individually. The selection of representatives of the concerned departments will be made by the Vice chancellor of RMU.
- ii. All the materials will be observed and evaluated by the above mentioned once during the course and finally by the end of course year.
- iii. The evaluation during the year will be done at any random occasion by members of evaluation teams individually or in teams and will be done without any prior information to the trainees and trainers.
- iv. The evaluation will include not only physical observation of the materials but the evaluators may also make a visit to observe any proceedings or activities of the research course e.g. a lecture, a group exercise, a journal club session and/or an IREF meeting.
- v. ORIC will be responsible for submission of the evaluation content to all including a copy to the Quality Enhancement Cell (QEC) of RMU for internal evaluation.
- vi. The QEC will organize an external evaluation too through involvement of a third party that may include members of Quality assurance department of Higher Education Department based on their availability.
- vii. An annual meeting of the quality assessment and enhancement will also be organized by the Quality Enhancement Cell of RMU,

including representatives of supervisors, Head of Departments, Dean, representative members of BASR, ORIC, DME, QEC & IREF and will be chaired by Vice chancellor. During the meeting all participants will review and discuss all the evaluation material. The quality evaluation team will also share their experiences of their evaluation visits and observations to validate the existing materials.

- viii. In perspective of the quality assessment, the Vice Chancellor and the Board of Advanced study and Research will finalize any modifications or enhancement in the next Research course.

The activities related to research training of post graduate trainees is also displayed in figure 2. Successful completion of above-mentioned requirements of research course is one component of the all clinical and scholarly requirements for mandatory advancement to the next Post Graduate Year level i.e. year 2 training year or R-Y2.

Fig 4: A FLOW CHART OF RESEARCH ACTIVITIES O GRADUATE/MD TRAINEE OF RMU AND THEIR ASSESSMENT



RESEARCH COURSE OF SECOND POST GRADUATION TRAINING YEAR R-Y2

PURPOSE OF R-Y2 RESEARCH COURSE:

The YEAR 2-R2 research course of the post graduate trainees will provide optimum skills to trainees to actually formulate their individual research proposal of the research project/dissertation, prerequisite to their degrees, in perspective of the knowledge acquired during year one of the training i.e. R-Y1. This course will provide them clarity of basic epidemiological and biostatistics concepts that they essentially require to transform their data into substantial evidences, to answer their research questions for their individual research project/dissertation. The course will also make them proficient to follow the standard ethical and institutional appraisal procedures of Rawalpindi medical University by Board of Advanced Studies and Research and Institutional and Ethics Research Forum of RMU. It will also impart them expertise to explore evidences in research through well organized literature search and also how to critically appraise them.

LEARNING OUTCOMES OF R-Y2 RESEARCH COURSE

After completion of R-Y2 course the trainees should be efficiently able to:

1. Identify and define the basic concepts of Epidemiological measures and biostatistics.
2. Formulate and pretest to finalize all the data collection tools for the research projects
3. Identify and execute proficiently all procedures required for data analysis and interpretation.
4. Analyze and interpret the data collected for a research project and draw conclusions related to the objectives of study.
5. Write a clear and concise research report (paper for a peer reviewed journal/dissertation) and a summary of the major findings and recommendations for each of the different parties interested in the results.
6. Present the major findings and the recommendations of a study to policy-makers managers and other stakeholders to finalize the recommendations.
7. Prepare a plan of action for the dissemination, communication and utilization of the findings and (if required) make recommendations for additional future research.
8. Critically appraise a research paper of any national or international journal.

9. Present research papers published in various national and international journals at journal club.
10. Prepare final draft of the research proposal of the Dissertation project, requisite to the post graduation degree of trainee, under the guidance of the nominated supervisor.
11. Fill in an application Performa for submission of Dissertation's research proposal to BASR or IREF.
12. Present and defend a research proposal to BASR or IREF.

RESEARCH COURSE OF SECOND TRAINING YEAR

Following academic and scholarly activities will be carried out during year 2 i.e. R-Y2 of Research course catering the post graduate trainees

A. TEACHING SESSIONS:

1. Basic and advanced Biostatistics and Epidemiological concepts will be taught to the trainees through following methods in various sessions. Each session will comprise of all or either one or two or all four of the following techniques;
2. Didactic lectures through power-point presentations.
3. On spot individual exercises.
4. Take home individual assignment
5. Take home group assignment.

The facilitators of these sessions will be staff members of Office of Research Innovation and commercialization (ORIC) of RMC including Director, Deputy Directors, Research Associates, Statistician and Publication In charge. While visitor lecturers including renowned national and international public health consultants, researchers, epidemiologists and biostatisticians will also be invited, according to their availability, for some modules of these courses.

Format of teaching sessions:

- i. During year 2 i.e. R-Y2, 16 teaching sessions in total will be conducted, with an average of three sessions per month.
- ii. Each session will comprise of a didactic lecture delivered initially, to attain the mentioned learning outcomes. Each didactic lecture will be of 30 minutes duration using the power-point medium that will be followed by 30 minutes on spot individual exercises of trainees during the same session.

- iii. Since most of the curriculum will comprise of quantitative calculations so trainees will be encouraged to work individually on exercises assigned both manually as well on Statistical Package of Social Sciences, instead of group exercises. These exercises will require calculations and numerical solving too.
- iv. By the end of each session, a take home individual task/assignment will be given to trainees, that too preferably individually rather than in groups, that will be duly evaluated and marked each month.

Course content of teaching sessions:

- i. The course materials will be based on an updated modified version of course titled as “Designing Health Services Research (Advanced)” that was developed in collaboration of Rawalpindi Medical College & Nuffield Institute for Health, University of Leeds, UK based adapted from “Designing and Conducting Health Systems Research Projects” by CM. Varkevisser KIT Publishers, Amsterdam (International Development Research Centre) in association with WHO Regional Office for Africa.
- ii. The trainees will be provided hard copies as well as soft copies of the course content in a folder at the initiation of the course.
- iii. In addition to it they will be provided various soft copies of various data sets for practicing data analysis in addition to links of updated and good resource materials regarding research by the course facilitators.

Curriculum of teaching sessions:

The details of the 16 teaching sessions of the trainees during year two R-Y2 along with the tentative time frame work, teaching strategies, content of curriculum and objectives/Learning outcomes of each session are displayed in table 2

TABLE 2. TEACHING SESSIONS OF RESEARCH CURRICULUM OF YEAR 2 OF TRAINEES OF POST GRADUATE TRAINEES/MD SCHOLARS OF RMU

<i>SESSION S & TIMING</i>	<i>TEACHING STRATEGY</i>	<i>TOPIC OF SESSION</i>	<i>SESSION OBJECTIVES i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;</i>
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<i>S</i>			
SESSION 1 WEEK 1 Month 1	Lecture through power point presentation followed by individual exercises and Take home individual assignments	• Introduction to Biostatistics • Description of Variables • Numerical methods of Data summarization (Manual as well as through Statistical Package of Social Sciences)	• Describe the purpose, scope and importance of Biostatics in Health systems research • Identify basic four steps of Biostatistics. • Describe data in terms of frequency distributions, percentages, and proportions. • Explain the difference between mean, median and mode. • Calculate the frequencies, percentages, proportions, ratios, rates, means, medians, and modes for the major variables of a study manually as well as through Statistical Package of Social Sciences (SPSS).
SESSION 2 WEEK 2 Month 1	Lecture through power point presentation followed by	Graphical presentation of data	• Identify various types of graphs • Identify the graphical presentations appropriate for each type of variables • Describe data in terms of figures

	individual exercises & Take home individual assignments.		• Use of Microsoft Excel and SPSS in formulation of graphs.
<i>SESSIONS & TIMINGS</i>	<i>TEACHING STRATEGY</i>	<i>TOPIC OF SESSION</i>	<i>SESSION OBJECTIVES</i> • <i>i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;</i>
SESSION 3 WEEK 3 Month 1	Lecture through power point presentation followed by Individual exercise & Take home assignment	Cross-tabulation of quantitative data	• Describe the difference between descriptive and analytical cross-tabulations. • Construct all important cross-tabulations which will help meet the research objectives manually as well as through SPSS. • Interpret the cross-tabulations in relation to study objectives and study questions.

SESSION 4 WEEK 1 Month 2	Lecture through power point presentation followed by Individual exercise & Take home assignment	Measures of Association based on risk	• Define incidence, risk, relative risk and odds ratio. • Calculate relative risk for appropriate study designs (cross-sectional comparative studies, cohort studies, case-control studies and experimental studies) • Calculate measures of association manually and also through SPSS and med-calculator.
SESSION 5 WEEK 2 Month 2	Lecture through power point presentation followed by Individual exercise & Take home assignment	Confounding and methods to control confounding	• Identify what is confounding and what are confounder variables • Explain different ways of dealing with confounding at the design and analysis stage of a study. • Evaluate whether an association between two variables may be influenced by another confounding variable/risk factor. • Calculate association in a way that takes into consideration the effect of potential confounding by another variable/risk factor.

SESSION 6 WEEK 3 Month 2	Lecture through power point presentation followed by Individual exercise & Take home individual assignments	Basic statistical concepts; Measure of dispersion and confidence Intervals	• Explain what is meant by a range, a percentile, a standard deviation, a normal distribution, a standard error and a 95% confidence interval. • Calculate ranges, standard deviations, standard errors and 95% confidence intervals for data, manually as well as through SPSS.
SESSION 7 WEEK 1 Month 3	Lecture through power point presentation	Hypothesis testing for a research	• State the concept of hypothesis testing. • Define and describe the types difference between one sided and two sided hypothesis. • Formulate Null hypothesis and Alternate hypothesis in an appropriate format. • Identify importance of hypothesis testing and to identify type I & type II errors.
SESSION 8 WEEK 2 Month 3	Lecture through power point presentation	Tests of Significance	• Explain what a significance test is and what its purpose is. • Explain what is probability value or p-

	followed by a Take home individual assignment.		Value - Identifying various tests of significances - Identifying appropriate test of significance for a specific research design.
<i>SESSION S & TIMING S</i>	<i>TEACHING STRATEGY</i>	<i>TOPIC OF SESSION</i>	<i>SESSION OBJECTIVES i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;</i>
SESSION 9 WEEK 1 Month 4	Lecture through power point presentation followed by an individual exercise & a Take home individual assignment.	Determining difference between two groups- categorical data Paired & unpaired observations	- Decide when to apply the chi-square test. - Calculate chi-square values. - Use the chi-square tables to assess whether calculated chi-square values are significant. - Decide when to apply the McNemars test and calculate its values. - Make a decision concerning whether these tests can be used on give data and, if so, what test should be used on which data. - Perform these tests on data manually as well as through SPSS.
SESSION 10	Lecture through	Determining	Decide when to apply the independent and

WEEK 2 Month 4	power point presentation followed by an individual exercise & Take home individual assignment.	difference between two groups- numerical data Paired & unpaired observations	dependent t-test. • Calculate paired and unpaired t- values. • Use the t tables to assess whether calculated t values are significant. Decide when to apply the independent and dependent t test and calculate its values. • Make a decision concerning whether these tests can be used on give data and, if so, what test should be used on which data. • Perform these tests on data manually as well as through SPSS.
SESSION 11 WEEK 1 Month 5	Lecture through power point presentation followed by an individual exercise & Take home individual assignment.	Determining difference between more than two groups- numerical data ANOVA (Analysis of Variance)	• Decide when to apply the ANOVA test. • Calculate F- values. • Use the F tables to assess whether calculated t values are significant. • Make a decision concerning whether this tests can be used on give data and, if so, what test should be used on which data. • Perform ANOVA tests on data through SPSS.
SESSION 12 WEEK 2 Month 5	Lecture through power point presentation followed by an	Determining Correlation between variables	• Decide when to apply the Pearson's and Spearman's correlation tests. • Calculate Pearson's correlation coefficient and Spearman's Pearson's correlation

	individual exercise		coefficient. • Use the p-values to assess whether calculated coefficients are significant. • Perform correlation tests on data through SPSS.
SESSION 13 WEEK 3 Month 5	Lecture through power point presentation followed by an individual exercise	Regression Analysis	• Explain what is a regression analysis • Differentiate between simple linear and multiple logistic regression analysis. • Decide when to apply the regression analysis and how to interpret. • Make a decision concerning whether these tests can be used on give data and, if so, what test should be used on which data. • Perform these tests on data through SPSS.
<i>SESSION S & TIMING S</i>	<i>TEACHING STRATEGY</i>	<i>TOPIC OF SESSION</i>	<i>SESSION OBJECTIVES i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;</i>

SESSION 14 WEEK 1 Month 6	Lecture through power point presentation and individual exercises	Diagnostic Accuracy of a test	• Identify what is a diagnostic accuracy of a test compared to gold standard tests. • Identify what are true positives, true negatives, false positive and false negatives in a diagnostic testing. • Calculate Sensitivity, specificity, Positive and negative predictive values of a diagnostic test using standard formulae.
SESSION 15 WEEK 2 Month 6	Lecture through power point presentation and individual exercises	Writing a research paper	• List the main components of a research paper. • Make an outline of a research paper. • Write drafts of report in stages. • Check the final draft for completeness, possible overlaps for clarity and smoothness of style. • Draft recommendations for action based on research findings.

SESSION 16 WEEK 3 Month 6	Lecture and individual exercises	Writing a dissertation	• List the main components of a dissertation • Explain how a research paper differs from a dissertation • Make an outline of a dissertation.
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Minimal Attendance of teaching sessions:

The attendance of the trainees in the Research training sessions must be 80% or above during year 2 and it will be duly recorded in each session and will be monitored all the year round.

Assessment of Trainees for teaching sessions:

- i. For didactic lectures, the learning and knowledge of the trainees will be assessed during the end of year examination.
- ii. One examination paper of Research of R-Y2 will be taken that will comprise of 75 marks in total and will consist of two sections. Section one will be of 50 marks in total and will comprise of 25 MCQ's (multiple choice questions) while section two will comprise of 5 Numerical Problems/Conceptual questions.
- iii. Total duration of the paper will be 120 minutes.
- iv. The papers will be checked by the research associates and Bio-statisticians of ORIC.

Assessment of individual exercises:

- i. The quality, correctness and completeness of the individual exercises will be evaluated during the teaching sessions, when they will be presented by the end of each session by trainees.
- ii. The mode of presentations will be oral, electronic or written accordingly and if needed using media of charts, flip charts & white boards.
- iii. Most of the individual exercises will be observed and evaluated by the facilitators directly on computers since it mostly will involve skills of data analysis through Statistical Package of Social Sciences.
- iv. There will be no scores or marks specified for the individual exercises but the feedback of evaluation by the facilitators will be on spot.

Assessment of individual; take home tasks/assignments:

- i. The take home assignments of the trainees will be checked once these will be submitted after completion to the facilitators after period specified for each task.
- ii. Most of the take home assignments will be related to numerical problem solving, calculations or tasks of analysis in SPSS.
- iii. Assignments should be submitted in electronic version and no manually written assignment will be accepted.
- iv. Each assignment will be checked for plagiarism through turn-it-in software. Any assignment that will have originality score less than 90% or similarity index more than 10% will be returned back to trainees for rephrasing and resubmission.
- v. They will be assessed and checked within one week of the session and will be scored by the facilitators.
- vi. A total of 50 marks in total will be assigned for evaluation of all of these take home tasks/assignments

B. PRESENTATION IN JOURNAL CLUB SESSIONS

- i. During year 2 of training, the trainees should actively participate in the journal club sessions of the department regular basis.
- ii. One journal club meeting must be organized in the department within every two months of a year and apart from mandatory more than 80% yearly attendance, the trainees must present two research paper in year 2 of training individually.
- iii. The purpose of presentation of the second-year trainees in journal club is teach them how to form a bridge between research and practice, how to confidently appraise recent research and then how to practically apply best research findings into their clinical setting as their first steps evidenced-based medicine.

Format of Journal Club Meetings:

- i. In a journal club meeting, two research papers, published in an indexed national or international journal, selected by the Dean of the department must be presented by second year trainee during R-Y2 training year, in two different meetings.
- ii. Trainee will be given the selected paper one and a half month prior to the meeting by the Dean of the department.
- iii. After thoroughly going through the research a paper, trainee should do extensive literature search on the topic also and must be familiar with all the recent and current research done on the similar topic by other researchers.
- iv. An approximately 30 minutes long oral presentation will be made by the trainee, in monthly journal club session on the selected research paper. The research paper will be presented through power-point and the critical appraisal of the paper will follow it.
- v. The topic will also be discussed in comparison to other evidences available according to the latest research.

- vi. The other second year trainees should actively participate in question & answer session of the journal club meeting that will be carried out following the presentation of the critical appraisal of the research paper. It will be compulsion for each R-Y2 trainee to ask at least one question or make at least one comment relevant to the topic and/or the research paper, during the journal club meeting.

Minimal Attendance of Journal Club meetings by R-Y2 trainee:

The R-Y2 trainees should attend at least 5 out of 6 journal club meetings during their second year of training. Out of these 6 journal clubs, he/she must make presentation in any two sessions as a compulsion.

Assessment of presentation of the trainee at Journal Club:

- i. During the presentation, the head of department and two other senior faculty members will evaluate, trainee's ability to make effective presentation of the research paper and also his/her skills to critically appraise a research paper.
- ii. The scoring will not be done for the first paper presentation by the trainee, since that will be the first ever presentation by the trainee. During the first presentation the evaluators will generally qualitatively evaluate the skills of presenter without any quantitative assessment. They will inform the presenter by the end of first paper presentation, his/her mistakes, weaknesses and scope for improvement. The strengths and competences, on the other hand, will also be appreciated for encouragement.
- iii. A structured checklist for scoring the skills and abilities of trainee will be used by the above-mentioned senior faculty members. The average of the three total scores will be calculated, out of total attainable score of 25 that will then be used in overall assessment of the trainee.
- iv. The evaluation will include aspects like the presenter's aptitude to identify the strengths and weaknesses of a research article, apart from assessment of the usefulness and validity of research findings. He/she should be able to determine the appropriateness of the study methodology and design for the research question, apart from suitability of the statistical methods used, their appropriate presentation, interpretation and discussion. He/she should also be able to identify and justify relevance of the research to one's own practice.

**C. FORMULATION OF RESEARCH PROPOSAL/S OF DISSERTATION/RESEARCH PAPERS AS REQUISITE
TO POST GRADUATE DEGREE/MS DEGREE**

- i. At the beginning of year 2, the trainee will start sorting out various research questions for his/her research project as dissertation requisite for the post-graduation degree.
- ii. Trainee must submit and seek approval of the research proposal/s from the concerned institutions till end of year 2 i.e. R- Y2.
- iii. Since post graduate trainees seeking Fellowship from the College of Physicians and surgeons of Pakistan (CPSP) have either of the two following options, as per guidelines of CPSP:

OPTION A: Submission of one dissertation in specialty field as requisite to FCPS degree OR

OPTION B: Publication of two original research articles in any CPSP recognized journals, being first author, as requisite to FCPS degree They will have to submit one research proposal for the dissertation till end of second year of training, if following option, A and two research proposals of the original articles, if following option B accordingly.

- iv. The MS scholars will also have to submit one research dissertation, in specialty field, to Rawalpindi Medical University, so they will also submit one research proposal for the dissertation till end of second year of training.
- v. Whatever is the post-graduation academic scenario; the trainee must decide the research question/s under the guidance of the supervisor till third month of R-Y2 and hence decide the final title of the research project/s.
- vi. During these first three months of R-Y2, the trainee under guidance of the supervisor and ORIC will do extensive review of the literature, relevant to topic. He/she will do online as well physical search of printed, Journal articles, reports, books, conference papers, dissertations, Research and program reports- published/ unpublished. He/she will also access the libraries of Rawalpindi medical University, repositories of various institutions.
- vii. The trainee will also consult the research Associates and Deputy Directors at the ORIC for the feasibility of the research question and any modification. The trainees will be encouraged to preferably select research questions that will be better answered through cross sectional comparative, analytic and experimental study designs instead of simple descriptive cross sectional or case series design. Descriptive cross sectional, exploratory or case series design will be allowed only in special cases when the research question will deal with an exceedingly significant and priority issue, not addressed previously even though published work either locally/nationally or internationally.

- viii. Once the research question and topic are finalized with mutual understanding of the supervisor, trainee will submit the selected topic to the Head of Department and Dean of specialty.
- ix. The Dean of the specialty will give approval of the topic after scrutiny and will confirm that there is no duplication of the topic in the department, after consultation with HOD's.
- x. Then the Dean will finalize the list of the topics of research proposals of all trainees during fourth month of R-Y2 and will submit the list to BASR.
- xi. BASR will give the final approval of all topics within same month.
- xii. For the post graduate trainees following aforementioned option B (Publication of two original research articles in any CPSP recognized journals, being first author, as requisite to FCPS degree) must submit their topics (already approved from BASR) to CPSP for its approval. Once the topics are approved by CPSP, they will initiate research proposal development for these research projects that they will publish as original articles.
- xiii. Once the trainee gets the approval of the topic/s from all concerned authorities, the formal write up of proposal/s must be initiated within fifth month of R-Y2 in consultation with supervisor and the research associates of ORIC for guidance in methodology.
- xiv. The research proposal/s will be brief outline of trainees' future research project/s (approx. of 1000-1500 words) and must comprise of the following topics:
 - 1. Title of research project.
 - 2. Introduction and rationale (with Vancouver in text citations)
 - 3. Research aim, purpose and objectives
 - 4. Hypothesis, if required according to the study design.
 - 5. Operational Definitions
 - 6. Research Methodology:
 - a) Setting
 - b) Study Population
 - c) Study Duration
 - d) Study Design
 - e) Sampling: *Sample size with statistical justifications, sampling technique, inclusion criteria & exclusion criteria.*

- f) Data Collection technique/s
- g) Data Collection tool/s
- h) Data Collection procedure
- i) Plan for Data entry & Analysis

7. Ethical Considerations

8. Work plan/Gantt chart

9. Budget with justifications

10. Reference list according to the Vancouver referencing style

11. Annexure (*including data collection tool or Performa, consent form, official letters, scales, scoring systems and/or any other relevant material*)

- xv. The research proposal should be completed in eighth month of R-Y2 and should also be reviewed and finalized by the Supervisor of the trainees.
- xvi. The finalized research proposal will be reviewed by publication in charge of ORIC for plagiarism through turn-it-in soft ware. Any proposal that will have originality score less than 90% or similarity index more than 10% will be returned back to trainees for rephrasing and resubmission. Only when the eligible scores will be reached, then the proposal will be further processed.
- xvii. The statistician at data analysis centre of ORIC will facilitate the trainees in sample size calculation through sample size calculators according their study designs.
- xviii. The trainees should formulate all the data collection tools under guidance of supervisor and research associates of ORIC and should also pretest to finalize all the data collection tools for their research projects.
- xix. These research proposals along with the tools will be submitted to all concerned authorities for appraisal.
- xx. The supervisors and research associates of ORIC will also ensure that the duration of research project should be adequate and realistic so that trainees will be able to complete their project/s during third year of training leaving enough time for its write up during year 4 of training. For the post graduate trainees following option of Publication of two original research articles as requisite to FCPS degree, the study duration will be even briefer.

D. PRESENTATION OF RESEARCH PROPOSAL/S TO INSTITUTIONAL RESEARCH ETHICS COMMITTEE (IREF) OF RMU

- i. The R-Y2 trainees will already be aware of the standard operational procedures and protocols of the Institutional Research Ethics Committee of RMU as they had, as a mandatory activity, participated and observed the proceedings of the meeting during R-Y1. However, he/she will be informed about any modifications or updates regarding the standard procedures of application to IREF if will have occurred during last one year.
- ii. Trainees will be individually provided an updated step wise guidance by the research associates of ORIC, regarding how an applicant should access the RMU website and download the application Performa and then how to electronically fill it in for final submission. They will also be provided updated format of presentation for their Research Proposal presentations at IREF meetings. The trainees must submit ten sets of hard copies of all the documentation including the research proposal with all annexes, plagiarism detection report and application performa to ORIC, at least ten days prior to the monthly meeting. ORIC will provide them date and month of the IREF meeting for presentation and the trainee must present in the meeting along with his/her supervisor.
- iii. The trainee must make a five to ten minutes' presentation through power-point at Institutional Research Ethics Forum during 9-10 months of R-Y2. By the end of presentation, he/she will respond to all the queries of the forum and the supervisor will facilitate in defense of the proposal.
- iv. The IREF will appraise and scrutinize every aspect of the proposal/s and if found acceptable then will provide on spot verbal approval of the project followed by written approval letter within next two weeks to the trainees.
- v. If members of IREF will find any modifications required in the proposal/s they will recommend them to trainee and supervisor. The trainee must incorporate those changes and will resubmit the corrected version of proposal/s within next one week's period.
- vi. The written approval letter of IREF will be issued within next two weeks of meeting, to the trainee.
- vii. In case the trainee will be working on option B of CPSP i.e. publication of two research papers, instead of writing dissertation, then he/she will present both research proposals to IREF for the two topics already approved by CPSP.

E. ASSURANCE OF FEASIBILITY & AVAILABILITY OF RESOURCES FOR RESEARCH PROJECTS

- i. The trainee will ensure that for his/her research project/s ample resources in terms of monetary, human or physical will be available to complete the project. He will also provide documented proof and justification to avoid any unforeseen problems that may lead to incompleteness of research project/s.
- ii. No individual funding will be provided to the trainees for their research projects requisite to their post graduation degrees by Rawalpindi Medical University. The trainee may be bearing all the expenses on individual basis or may be applying to any of national or international funding agencies for research project/s.

- iii. In case the trainee will be applying for any external source of funding from any national or international funding agency, the funding application and approval process must be completed by the end of year 2 of training.
- iv. The trainee may also be pursuing the degree, through any scholarship that also will include the research project expenses.
- v. In either of the above mentioned circumstances, the trainee must provide and submit the budget details and documented evidences of the funding or availability of monetary resources to the supervisor and Dean who will ensure the feasibility of the resources available to the trainees.
- vi. Moreover, if any tools, kits, equipment or physical materials will be required for research project, the trainee will provide documented evidence of its availability.
- vii. If the data collection will require hiring of additional human resources, then the trainee will provide documented evidence like consent of staff members contributing to his/her research or details of training expenses or honorarium details if any to the supervisor.
- viii. The supervisor will also consult the Dean and HOD's in ensuring the feasibility and availability of resources of a trainee during second year of training.

F. SUBMISSION OF RESEARCH PROPOSAL/S TO CPSP/BASR OF RMU

- i. Post graduate trainees applying for their CPSP fellowship using aforementioned option A (Submission of one dissertation in specialty field as requisite to FCPS degree) after receiving appraisal of IREF of RMU, must submit their proposal to CPSP during last quarter of second year of training. The approval process from CPSP takes approximately 3 months on an average but in case any corrections are suggested the resubmission and acceptance procedure may take 6 months on an average. These trainees will initiate data collection as soon as they receive the acceptance by CPSP authorities.
- ii. However, the post graduate trainees who will opt to publish two original research articles in any CPSP recognized journals, as requisite to FCPS degree, will not require any submission of their proposals to CPSP. They will directly initiate the data collection as soon as they will receive the IREF acceptance letter. Hence their data collection phase of both research projects will begin in last quarter of R-Y2.
- iii. The MS scholars of RMU will submit their research proposals to the Board of Advanced Studies and Research (BASR) of RMU for appraisal. BASR will issue an acceptance letter of the research proposal endorsed by the Vice chancellor of RMU copied to the concerned stake holders and authorities including office of Dean and ORIC. If members of BASR will find any modifications required

in the proposal they will recommend them to trainee and supervisor. The trainee must incorporate those changes and will resubmit the corrected version of proposal to BASR within next one-week period. The written approval letter of BASR will then be issued within next two weeks to the trainee. The trainees will thus receive formal permission to initiate data collection phase through this acceptance of BASR.

- iv. All trainees who will require data collection from any RMU or its teaching hospitals that are Benazir Bhutto Hospital, District Headquarters Hospital and Holy Family Hospital, will not require any permission from the administration of these hospitals. The appraisal letters of IREF and BASR will be considered as acceptance by all authorities of the RMU.
- v. If any trainee will need to collect data from any institution other than RMU or its teaching hospital, they must seek that institution's approval too according to their standard protocols parallel to the period when they will have submitted proposals to CPSP/BASR to save their time.
- vi. All the post graduate trainees will follow the guidelines regarding the format and content of the research proposals provided by the authorities to whom they will be presenting their research proposals that are Board of Advanced Studies and Research (BASR) for MD scholars or College of Physicians and surgeons of Pakistan (CPSP).

G. MONITORING OF RESEARCH COURSE OF YEAR 2

- i. An alert and continuous monitoring of all the scholarly activities of each trainee will be carried out by all the concerned faculty i.e. research units of specialties, supervisor, Head of Department and the deputy Directors and research fellows at the Office of Research Innovation & Commercialization of RMU.
- ii. The structured Research component of Log books and Research portfolio of the trainees specific to research component of the training of year 2; R-Y2 will also be regularly observed, monitored and endorsed by all the concerned faculty members, supervisor and facilitators.
- iii. The Log books section R-Y2 specific to research curriculum of training year 2 will include the record of attendance of all the teaching sessions of the trainee that will be monthly updated and endorsed by the department of Medical Education (DME) of RMU.
- iv. It will also comprise of all the submission record and scores attained for the individual and group assignments of the trainees, endorsed by the supervisor and the research associates and Deputy Directors of ORIC.

- v. The log books will also include the attendance and presentation scores of the trainees in the Journal club sessions of the department. It will also include observation notes catering to qualitative evaluation for active participation by the trainee during each journal club session. This information will be endorsed by the supervisor of the trainee and HOD.
- vi. The record of the trainees regarding timely completion and quality of each activity related to completion of research proposals and its presentation in the monthly meeting of the Institutional Research Ethics Forum (IREF) of RMU will also be part of the Log Book that will be endorsed by the supervisor, research associates of ORIC and conveners of the IREF and BASR.
- vii. The result of the annual research paper of R-Y2 will also be entered in the Log books by Research Associates and will be endorsed by the Deputy Directors of ORIC.
- viii. The research portfolio of the trainee R-Y2 will again include qualitative and quantitative self assessment of the trainee in narrative form. It will include the individual assessment of the objectives and aims defined by the trainee during the second year of training and extent of their successful attainment. The trainee will also mention individual achievements or knowledge and skills acquired in any aspect of research that was either formally part of the research curriculum or even not. It will also include reporting of any research courses, online or physically attended by the trainee, contribution in any research paper or publication, any participation and/or presentation in any research conference, competition etc during year R-Y2.

H. OVERALL ASSESSMENT OF PERFORMANCE OF TRAINEES FOR YEAR 2

- i. The overall assessment of performance of trainee for R-Y2 will rely on marks attained out of total 100 obtainable marks. These total 100 marks will include 50 marks for the Annual Research Paper of R2 (where the 75 marks of paper will be converted to 50 marks), while 25 marks will be included from the home tasks assignments (by conversion of 50 marks of the home task assignments into 25 marks) and actual 25 marks of presentation of journal club will be included in assessment (without any conversion), to get an aggregate of 100 total marks.
- ii. Out of the total attainable 100 total marks, 40% will be passing marks of this Research course and in case of failure in it, second attempt will be allowed to the trainees and if any one fails in second attempt too then he/she should appear next year with next batch's

first attempt.

I. EVALUATION/ FEEDBACK OF RESEARCH COURSE OF YEAR 2

Like evaluation of year one of research course R-Y1, the second year of training R-Y2 will also be evaluated not only by the trainees themselves but also by the Deputy Directors, supervisors and senior faculty through end of sessions forms and then collectively through end of course feedback forms.

- i. *The feedback of trainees*** will include structured evaluation of each teaching session of R-Y2 through structured and anonymous feedback forms/questionnaire that will be regularly distributed amongst the trainees. The forms will include questions phrased as Likert scales (1-5 categories) inquiring their responses regarding various aspects of teaching sessions. Category 1 will represent the poorest quality increasing till category 5 representing excellence and the trainees will choose either of 5 based on their honest and unbiased personal choice. The open-ended questions in form will indicate qualitative evaluation of the trainees. There will also an overall feedback questionnaire for entire second year of training course administered to trainees.
- ii. *The feedback of trainers*** will be obtained through structured and anonymous feedback forms/questionnaire, including closed and partially closed questions that will be regularly provided by them. They will provide their inputs and opinions regarding effectiveness of the R-Y2 course contents, curriculum, teaching methodologies, teaching aids and technologies, content and usefulness of the exercises and assessments etc.
- iii. *Three focus group discussions;*** one of the R-Y2 trainees, second of the facilitators and third of the supervisors will also be organized by the ORIC to evaluate the research course, its benefits and weaknesses and scope for improvement.
- iv. *A final evaluation report of the Research Course R-Y2*** will be formulated and compiled by the ORIC of RMU. The report will be presented all concerned stake holders.

J. QUALITY ASSURANCE OF RESEARCH COURSE OF YEAR 2

- i.** The evaluation of research course of R-Y2 will follow exactly the same pattern of R-Y1, but all the feedback material will pertain to R-Y2 course (including feedback forms of R-Y2, randomly selected log books, research portfolios, individual & group assessment

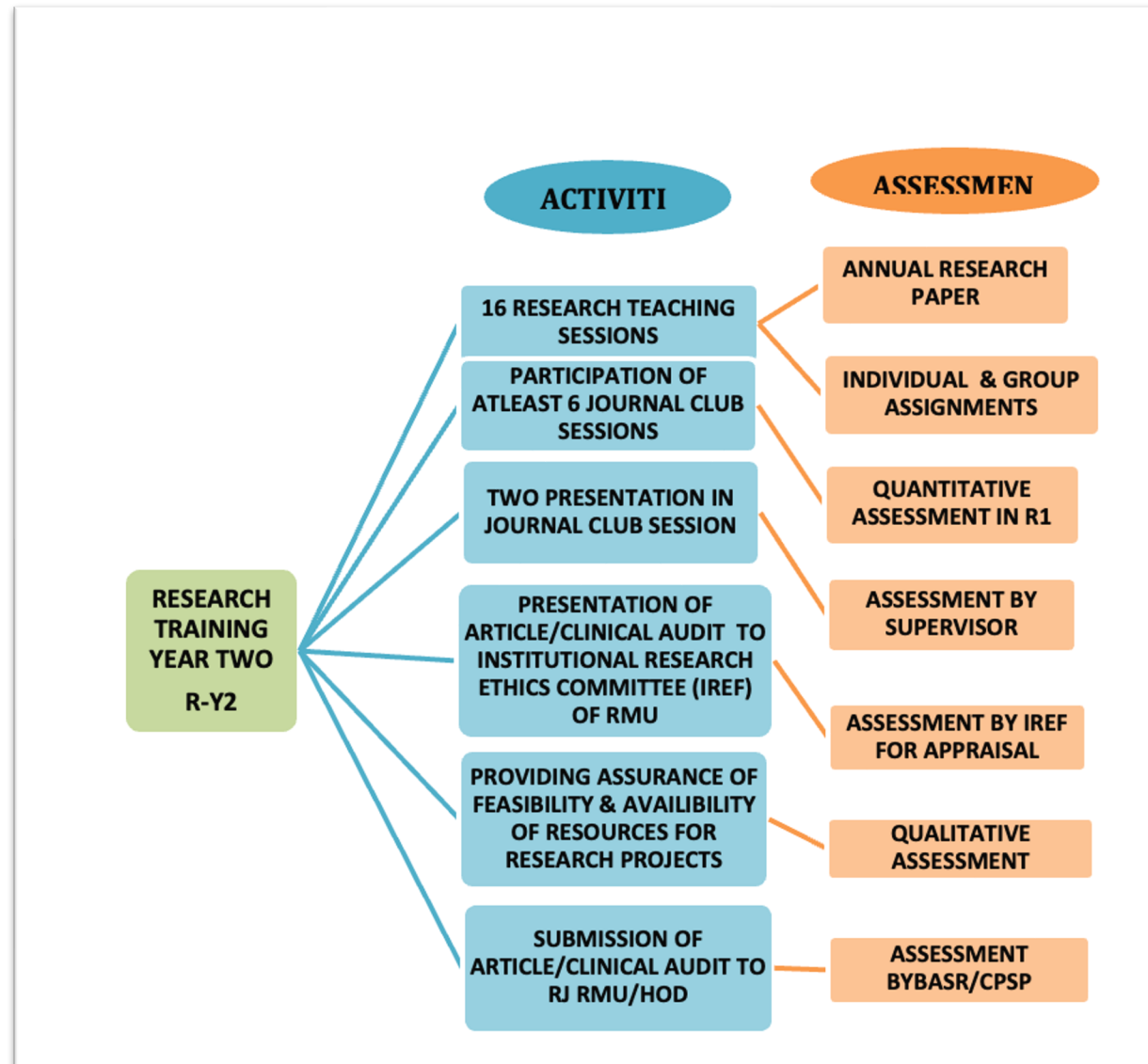
record and randomly selected annual research course examination papers).

- ii. The evaluation team that will observe all these R-Y2 course evidences will be same team that will evaluate R-Y1 course. The team of R-Y2 will include the Head of departments, Deans, selected representatives of BASR, IREF, Director of ORIC, Director DME, Director of Quality enhancement cell (QEC) and Vice chancellor of RMU, individually.
- iii. The random visit for physical observation of the materials and also of all the academic activities through uninformed visits will also follow same protocol as mentioned in quality assurance procedure of R-Y1.
- iv. ORIC will be responsible for submission of the evaluation content of R-Y2 to all including a copy to the Quality Enhancement Cell (QEC) of RMU for internal evaluation.
- v. The QEC will organize an external evaluation too through involvement of a third party that may include members of Quality assurance department of Higher Education Department based on their availability.
- vi. An annual meeting of the quality assessment and enhancement, by end of year 2, will also be organized by the Quality Enhancement Cell of RMU, including representatives of supervisors, Head of Departments, Dean, representative members of BASR, ORIC, DME, QEC & IREF, who will be then collectively, review all the evaluation material of R-Y2. The evaluation team will also share their experiences of their evaluation visits and observations to validate the existing materials.
- vii. The quality of R-Y2 course will be determined with recommendations for further enhancement and modifications

Successful completion of above-mentioned requirements of research course will be mandatory requirement for advancement to the next Post Graduate Year level i.e. year 3 training year or R-Y3.

An over view of activities related to research training in third year, R-Y3 is also displayed in figure 5

Fig 5. A FLOW CHART OF RESEARCH ACTIVITIES OF R-Y2 POST GRADUATE/MD TRAINEE OF RMU AND THEIR ASSESSMENTS



RESEARCH COURSE OF THIRD POST GRAUDATION TRAINING YEAR R-Y3

PURPOSE OF R-Y3 RESEARCH COURSE:

Utilizing all the knowledge and skills in research, accrued during first two years, the post graduate trainees of RMU, will be dexterous enough to actually execute a research project and implement efficiently and proficiently all the activities of the research project that they will have planned during period of R-Y1 to R-Y2. During the third year of training post graduate trainees will collect all the information and data and to explore answer to their research questions formulated for their individual research project/dissertation, prerequisite to their degrees. This course will provide them an opportunity to revitalize and update their concepts, knowledge and skills in research methodologies.

LEARNING OUTCOMES OF R-Y3 RESEARCH COURSE:

After completion of R-Y3 course the trainees should be efficiently able to:

1. Revise and rejuvenate all the basic concepts of Epidemiological measures and biostatistics.
2. Collate the information gathered through an extensive literature review relevant to study topics finalized and formulate an extensive write up of literature for research project.
3. Collect and store high quality information for their research project in an honest and unambiguous way.
4. Utilize skills to enter, analyze and interpret the data collected for a research project
5. Write a clear and concise research report (research paper for a peer reviewed journal/dissertation) and a summary of the major findings and recommendations for each of the different parties interested in the results

RESEARCH COURSE OF THIRD TRAINING YEAR

During the third year of training, revision and refreshing up of previously secured knowledge and concepts related to research will enhance the productivity and efficiency of the post graduate trainees.

A. ELECTIVE REFRESHER SHORT COURSES/WORKSHOPS

The elective refresher short courses of one day to three days duration will be held to rejuvenate concepts Basic and advanced Biostatistics and Epidemiological concepts that will be taught to the trainees during initial first two years of training. The short courses will comprise of one to three days workshops. These workshops will provide the trainees hands on training of all the components of research methodologies, basic and advanced biostatistics and epidemiological calculations. Each workshop will comprise of following teaching methodologies

- Power-point presentations of basic theoretical concepts during workshops.
- On spot individual/group exercises.

These short courses will be conducted by the staff members of Office of Research Innovation and commercialization (ORIC) of RMC including the Statistician, Deputy Directors and Director while they will be facilitated by the Research Associates. Visitor lecturers; including renowned national and international public health consultants, researchers, epidemiologists and biostatisticians will also be invited, according to their availability, for some workshops.

Format of short courses:

- i. A total of 10 short courses will be offered and the post graduate trainee must attend a minimum of 5 of these short courses during R-Y3, according to their needs, choice and preferences.
- ii. Each workshop will comprise of 8-12 modules in total.
- iii. For each module, power-point presentations will be delivered initially, to restore the memories of the trainees regarding the previous knowledge attained by them in R-Y1 and R-Y2. These presentations will be on an average 15-20 minutes of duration for each module and will teach the basic and advanced concepts.
- iv. Following the presentations, on an average 30-60 minutes of individual and group exercises will be supervised by the facilitators to provide the trainees hands on experience. Depending on the type and content of courses, trainees will mostly work through computer soft-wares. These exercises will require calculations and numerical solving too.
- v. By the end of each day of workshop, brief take home individual or group task/assignments will be given to trainees that will be duly evaluated by facilitators within three days of the short course and will provide their feed back to each trainee individually.

Content of short courses:

- 1) The course materials for these workshops will be formulated by the Deputy Directors and Director of ORIC, specific to the needs and requirement of the post graduate trainees, using various national and international resource materials.

- 2) The trainees will be provided hard copies as well as soft copies of the course content in a folder at the initiation of the course. This takes away resource material will also include handouts of presentations of all the modules taught during the workshops.

Following ten short courses will be offered to the post graduate trainees during year three; R-Y3 along with the tentative time frame work and title of workshops in table 3. However, the details of modules, duration and objectives/Learning outcomes of each workshop are not specified right now as these will be formulated based on the needs and requirements of the trainees and also, they will depend on the visitor facilitators choice, that will be decided and confirmed at least one month prior to conducting each workshop.

TABLE 3.TEN ELECTIVE SHORT COURSES TO BE OFFERED DURING TRAINING YEAR 3.

<i>TIME FRAME WORK DURING THIRD YEAR R-Y3</i>	<i>TOPICS OF SHORT REFRESHER COURSES</i>
MONTH 1	End note referencing manager
MONTH 2	Mendeley referencing manager
MONTH 3	Effective write up of Literature review
MONTH 4	Data entry in Statistical Package of Social Sciences
MONTH 5	Graphical presentation of data in Microsoft Excel
MONTH 6	Univariate, Bivariate and Multivariate analysis in Statistical Package of Social Sciences
MONTH7	Effectively writing up of a dissertation.
MONTH 8	Research article write up
MONTH9	Critical appraisal of research
MONTH 10	How to Present Research through power-point or posters

Assessment of Trainees for short courses:

No formal assessment through any examination paper will be carried out during year three since they will be already involved in data collection and entry of their research projects. So they will not be strained with any formal examinations

Assessment of individual and group exercises:

- i. The quality, correctness and completeness of the individual as well as group exercises will be assessed during the workshops by the facilitators.
- ii. The exercises will be presented during each module of workshops by trainees either individually or in groups accordingly.
- iii. The mode of presentations will be oral using media of charts, flip charts & white boards or through power-point presentations depending on the nature of the tasks.
- iv. There will be no scores or marks specified for the individual or group exercises but the feedback of evaluation by the facilitators will be on spot by end of presentations.

Assessment of individual or group; take home tasks/assignments:

- i. The correctness, quality and completeness of the individual or group exercises that will be given during the short courses/workshops will also be determined.
- ii. These will be submitted after completion to the facilitators within three days of the workshop. No Assignments will be acceptable after three days.
- iii. The assignments will be assessed and checked by facilitator within one week of submission along with extensive feedback of these assignments.
- iv. No formal quantitative assessment or scoring of any of these take home tasks/assignments of R-Y3 will be done

B. PRESENTATION IN JOURNAL CLUB

- i. During third year of training, the trainees should continue to actively participate in the journal club sessions of the department on regular basis.

- ii. The R-Y3 trainees must present at least one research paper in journal club. The format of presentation and procedure for year 3 trainee will exactly be same as it will be for R-Y1 and R-Y2 trainees as mentioned before.
- iii. After oral presentation in monthly journal club session on the selected research paper and the critical appraisal of the paper R-Y3 trainee should actively participate in question & answer session of the journal club too. It will be compulsion for each R-Y3 trainee to ask at least one question or make at least one comment relevant to the topic and/or the research paper, during the journal club meeting.

Minimal Attendance of Journal Club meetings for R-Y3 trainee:

The R-Y3 trainees must attend at least 5 out of 6 journal club meetings during their third year of training and should make at least one presentation as a compulsion.

Assessment of presentation of the trainee at Journal Club:

- i. During the presentation of R-Y3 trainee in journal club, even though the head of department and two other senior faculty members will evaluate trainee's ability to make effective presentation of the research paper and also his/her skills to critically appraise a research paper, but no formal scoring will be done
- ii. The assessment will be qualitative rather than a quantitative assessment. Even though not scored in numbers, but by the end of paper presentation, evaluators will inform the strengths, mistakes, weaknesses and scope for improvement to each trainee.
- iii. The evaluators will assess that how far the presenter was successful to identify the strengths and weaknesses of a research article, to determine the appropriateness of the study methodology and design for the research question and to assess suitability of the statistical methods used. The appropriateness of presentation, interpretation and discussion will also be considered.

C. DATA COLLECTION, ENTRY AND ANALYSIS OF RESEARCH PROJECT/S OF DISSERTATION/RESEARCH PAPERS

- i. By the beginning of year 3, the trainees will have received the approval from the IREF, BASR and respective examination authorities for their research proposals of dissertations or research papers. Moreover, till then all the data collection tools for their research projects

will also have been ready after pretesting.

- ii. During first quarter of year 3, it will be mandatory for the trainees to initiate the data collection phase of their project/s. If the trainee will be collecting the data individually for his/her research project, it will be started under continuous guidance of their supervisors and continuous facilitation by the research centers of specialties, the data analysis center and Research Associates of ORIC of RMU.
- iii. In case the data collection will require more human resources, other than trainee himself/herself, either as honorary or hired data collection staff, they should be properly trained for data collection by the trainee. The supervisor will also ensure that the additional data collection staff will be adequate in number within data within the time framework and should also make sure that they will be proficient enough to collect high quality and authentic data.
- iv. The data storage will also be finalized by trainee under the guidance of Supervisor and research center of specialty.
- v. The trainee will initiate data collection phase and will seek assistance of statisticians at Data analysis center of ORIC for compilation of data sheets in SPSS/or any other statistical software for data coding and entry. The trainees will be encouraged by statisticians to collect the data and enter it simultaneously after cleaning into the software to save time.
- vi. By the end of R-Y3, the data collection and entry of data must be completed.
- vii. In case the trainee will be working on option B of CPSP i.e. publication of two research papers, keeping in consideration, the lengthy period required for submission and then acceptance of papers by journals, he/she should be vigilant in data collection and must do it at faster pace as compared to those writing dissertation. So, such trainees should complete data collection of both papers within first half of year 3 of training simultaneously. Otherwise, they can also collect data for first paper within first three months of year 3 of training and then will initiate data collection of second paper from sixth to ninth month of year 3 of training. Whatever is the option followed by the trainee, the data collection phase should not extend beyond ninth month of R-Y3, in order to complete both papers for submission till end of R-Y3.
- viii. The trainees and MD scholars writing dissertation must also complete data collection and analysis till last month of R-Y3.

D. COMPLETION AND SUBMISSION OF TWO RESEARCH PAPERS AS REQUISITE TO CPSP FELLOWSHIP DEGREE

This section D implies only for the trainees who will be following option B of CPSP i.e. publication of two research papers, as requisite to fellowship of CPSP, instead of submitting a dissertation.

- i. The trainees opting for publication of two research papers should complete and submit manuscripts of both research papers by the end of third year of training. Keeping in consideration, the lengthy period required for submission and then acceptance of papers by journals (that varies from journal to journal and may range from 3 months to even one year) he/she should be vigilant in data collection and paper completion at faster pace as compared to those writing dissertation.
- ii. These trainees will be provided the following options and they will choose either of it based on their will and their supervisor's advise:

OPTION 1: The trainees should complete data collection of both papers within first 6 months of year 3 of training simultaneously. Then after analyzing data and completing write up of original article in next 5-6 months must submit both papers during last month of R-Y3 to journals of choice.

OPTION 2: The trainees should complete data collection of first paper within first three months of year 3 of training and then submit first paper after completion of manuscript till sixth month of R-Y3 to journal of choice. Then the trainee will initiate data collection of second paper till ninth month of year 3 of training and then submit second manuscript after completion till last month of R-Y3 to journal of choice.

- i. Whatever is the option followed by the trainee, both of his/her paper should be submitted to journals of choice before initiation of year 4 of trainee, keeping adequate time secured in advance, in case any paper will not be accepted and will have to be sent to another journal accordingly.
- ii. During the data collection and entry phase, trainees will receive continuous assistance from the Research Associates and Data analysis unit of ORIC of RMU.
- iii. When the data entry will be completed in the statistical software, the trainee will be provided full assistance in data analysis, interpretation and write up of results by the statisticians of ORIC.
- iv. The supervisors and publication in charge of ORIC will also guide the trainee to write the section "Discussion" based on the comparison of the findings of their study with the previously available research nationally as well as internationally.
- v. They should also be able to identify strengths and weaknesses of their studies and should make recommendations with statement of final conclusion.

- vi. The trainees will identify the target journals for publication and after formatting their write up according to the specific format required by both journals.
- vii. The research papers will be reviewed by publication in charge of ORIC for plagiarism through turn-it-in soft ware. Any article that will have originality score less than 90% or similarity index more than 10% will be returned back to trainees for rephrasing and resubmission. Only when the eligible scores will be reached, then the trainee will be allowed to proceed further and to submit their research in the form of original articles under continuous assistance of Publication unit of ORIC.
- viii. The trainee should also submit copies of submitted papers to the Dean, Director of ORIC and Chairperson of BASR that will be kept with them as confidential documents.
- ix. In case the research paper/s is/are sent back with recommended corrections or modifications, the supervisor and associated staff at ORIC will assist the trainee on urgent basis to get it rectified and resubmitted within next 10 days' time.

In case any of the paper is refused publication by a journal even then the supervisor and publication unit at ORIC will assist the trainee.

- x. On urgent basis, to get it rectified and resubmitted to another target journal of choice within next 10 days' time and not delaying it all.

Since the trainees who will be submitting dissertation in specialty field as requisite to FCPS degree or as a requisite to their MD degree will not comply with this section D, they will continue with data collection and entry and will also initiate write up of literature review for their dissertations during this last half of R-Y3.

E. MONITORING OF RESEARCH ACTIVITIES OF YEAR 3

- i. Continuous monitoring of all the research activities of each trainee will be carried out by research centers of specialties, supervisors, Head of Departments and the research fellows & Deputy Directors at the Office of Research Innovation & Commercialization of RMU.
- ii. The structured Log books specific to research component of the training of year 3; R-Y3 and Research portfolio of the trainees will also be regularly observed, monitored and endorsed by all the concerned faculty, supervisor and facilitators.
- iii. The section of research training in Structured Log books of R-Y3 will be specific to short refresher courses of research conducted during training year 3. It will also include the record of attendance of all the short course/workshops attended by the trainee endorsed by the facilitators of each course and Office of Research Innovation & Commercialization (ORIC) in addition to the Department of Medical Education of RMU.
- iv. It will also comprise of all the submission record of the individual and group assignments of the trainees, endorsed by the facilitators of ORIC along with their comments.
- v. The log books will also include the attendance and presentation details of the trainees in the Journal club sessions of the department. The observation notes catering to qualitative evaluation for active participation by the trainee during each journal club session will also be inclusive. This information will be endorsed by the supervisor of the trainee and HOD.
- vi. The record of the trainees regarding timely completion and quality of each research activity related to completion of data collection and entry phase will also be part of the Log Book that will be endorsed by the supervisor, research associates and relevant facilitators of ORIC.
- vii. The research portfolio of the trainee R-Y3 will again include qualitative and quantitative self assessment of the trainee in narrative form. It will include the individual assessment of the objectives and aims defined by the trainee during the third year of training and

extent of their successful attainment. The trainee will also mention individual achievements or knowledge and skills acquired in any aspect of research that was either formally part of the research curriculum or even not. It will also include reporting of any research courses, online or physically attended by the trainee, contribution in any research paper or publication, any participation and/or presentation in any research conference, competition etc. during year R-Y3.

F. OVERALL ASSESSMENT OF PERFORMANCE OF TRAINEES DURING R-Y3

- 1) The overall assessment of performance of trainee will be more qualitative in R-Y3, so it will not rely on any scores or marks attained by trainees hence there will not be any examination paper of research or scoring for the home tasks assignments or presentation of journal club.
- 2) The Heads of department and the director of ORIC will observe the log books for assessments of facilitators of short courses, their comments regarding the home tasks/assignments, comments of evaluators of presentation at journal club and the remarks of supervisor regarding his/her opinion regarding the trainee's overall performance during third year of training.
- 3) The Heads of department and the director of ORIC will also observe the research portfolio of the trainees. Based on their observations, they will evaluate the completeness and quality of performance of each trainee.
- 4) In case of any deficiencies or weaknesses they will personally call the trainee and supervisor and will guide them how to correct or improve accordingly.

G. EVALUATION/ FEEDBACK OF RESEARCH COURSE OF YEAR 3

The research course and activities of third year of training will be evaluated by the trainees, facilitators of ORIC and supervisors.

- i. **The feedback of trainees*** will include structured evaluation of short courses/workshops of R-Y3 through structured and anonymous feedback forms/questionnaire that will be administered by the end of each short course/workshop. The forms will include questions

phrased as Likert scales (1-5 categories) inquiring their responses regarding various aspects of workshops. Category 1 will represent the poorest quality while category 5 will represent excellence and the trainees will choose either of 5 based on their honest and unbiased personal choice. The open ended questions in form will indicate qualitative evaluation. There will also an overall feedback questionnaire for entire third year of research training.

- ii. *The feedback of trainers*** will be obtained through structured and anonymous feedback forms/questionnaire to provide their inputs and opinions regarding effectiveness of the R-Y3 short course contents, curriculum, teaching methodologies, teaching aids and technologies, content and usefulness of the exercises and assessments etc.
- iii. *Three focus group discussions***; one of the R-Y3 trainees, second of the facilitators and third of the supervisors will also be organized by the ORIC to evaluate the research course, its benefits and weaknesses and scope for improvement.
- iv. *A final evaluation report of the Research Course R-Y3*** will be formulated and compiled by the ORIC of RMU. The report will be presented to all concerned stake holders.

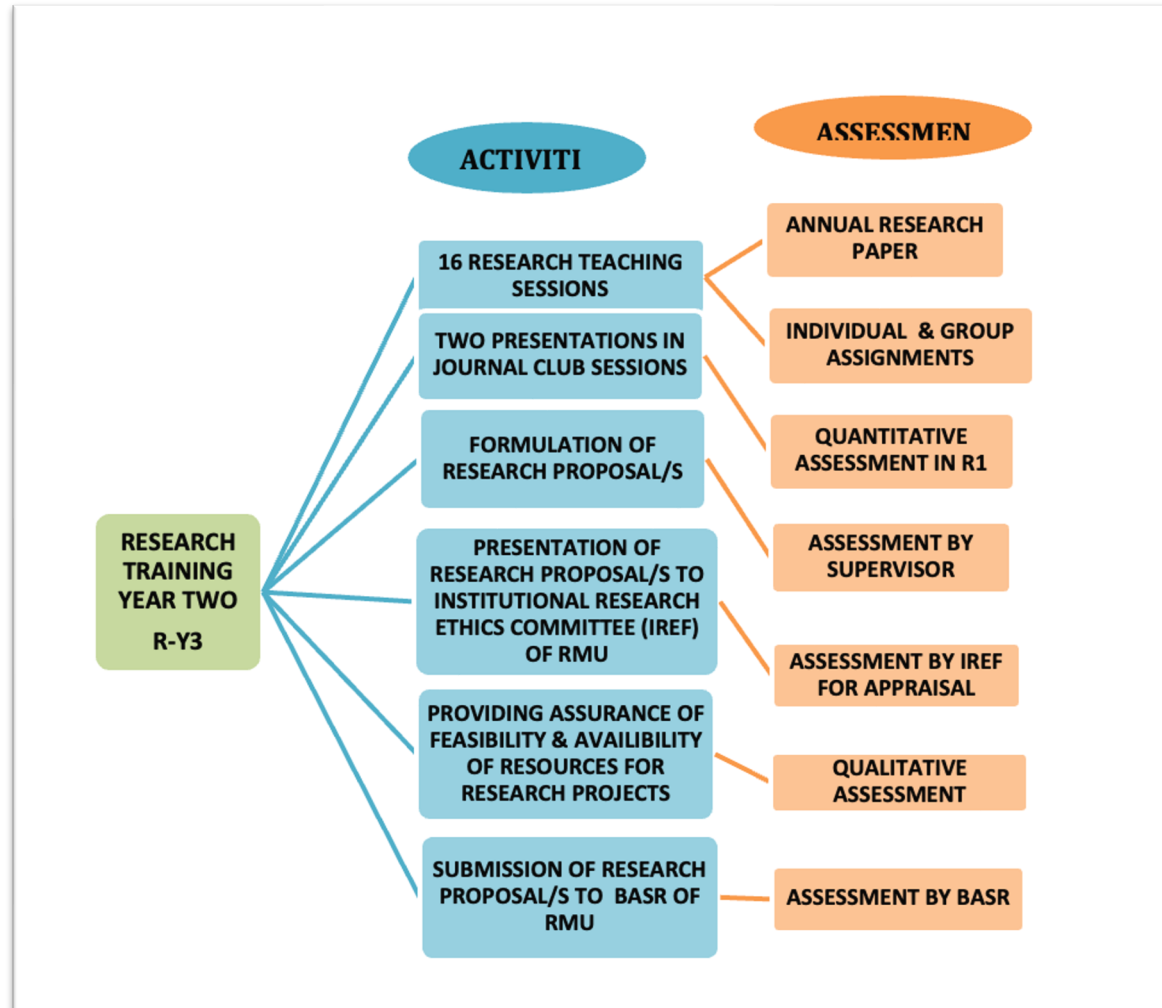
H. QUALITY ASSURANCE OF RESEARCH COURSE OF YEAR 3

- i. The quality assessment of research course of R-Y3 will involve meticulous review of materials of R-Y3 course (including randomly selected data sheets and completed data collection tools, feedback forms of R-Y3 short course/workshops, log books, research portfolios, individual & group assessment records).
- ii. The quality evaluation team of R-Y3 will include the Head of departments, Deans, selected representatives of BASR, IREF, Director of ORIC, Director DME (Department of Medical Education), Director of Quality enhancement cell (QEC) and Vice chancellor of

RMU. The random visits for physical observation of the materials and also of all the short courses proceedings through uninformed visits will also follow same protocol as mentioned in quality assurance procedure of R-Y1 and R-Y2.

- iii. The research papers submitted by post graduate trainees following option of publication of two original articles to CPSP accredited journals will be observed as confidential evidences by Director of ORIC, Dean and chairperson of BASR for quality assessment. No other person will have access to these manuscripts in order to avoid any risk of potential plagiarism.
- iv. ORIC will submit evaluation content of R-Y3 to all stake holders including a copy to the Quality Enhancement Cell (QEC) of RMU for internal evaluation.
- v. The QEC will organize an external evaluation too through involvement of a third party that may include members of Quality assurance department of Higher Education Department based on their availability.
- vi. Since the R-Y3 will primarily comprise of the data collection phase of research projects of trainees, therefore, Quality Enhancement Cell (QEC) in liaison with the research centers of the specialty, will ensure the originality, transparency and unambiguity of data, during entire data collection.
- vii. An annual meeting of Quality assurance, by end of year 3, will be organized by the Quality Enhancement Cell of RMU, including representatives of supervisors, Head of Departments, Dean, representative members of BASR, ORIC, DME, QEC & IREF, who will be then collectively, review all the evaluation material of R-Y3. The meeting will be chaired by the Vice Chancellor of RMU. The evaluation team will also share their experiences of their evaluation visits and observations to validate the existing materials.
- viii. The quality of R-Y3 course will be stringently determined with recommendations for further quality enhancement.

Successful completion of above mentioned requirements of research course, also outlined in Figure 6 (A) and 6(B), will be mandatory requirement for advancement to the next Post Graduate Year level i.e. last, final or fourth year or R-Y4.



**Figure 6 . A FLOW CHART OF RESEARCH ACTIVITIES AND ASSESSMENTS
OF R-Y3 POST GRADUATE/MD TRAINEE OF RMU**

RESEARCH COURSE OF FOURTH POST GRAUDATION TRAINING YEAR R-Y4

PURPOSE OF R-Y4 RESEARCH COURSE:

During the fourth year of training the post graduate trainees will receive extensive practical hands-on experience of conducting individual research project and then transformation of this project's report into a dissertation or original articles, in perspective of the knowledge and skills they will acquire during year initial three years of post graduate training. This course will make them proficient to conduct extensive literature search and using available information delve into existent findings and evidences of research, critically appraise them and then explore how to transform them into clinical practice. The fourth year of training will be purely practical where no formal didactic lectures or sessions will be held.

LEARNING OUTCOMES OF R-Y4 RESEARCH COURSE

After completion of R-Y4 course the trainees should be efficiently able to:

1. Identify and execute proficiently all procedures required for data analysis and interpretation.
2. Analyze and interpret the data collected for a research project and draw conclusions related to the objectives of study.
3. Write a clear and concise research report (paper for a peer reviewed journal/dissertation) and a summary of the major findings and

recommendations for each of the different parties interested in the results.

4. Present the major findings and the recommendations of a study to policy-makers, managers and other stakeholders to finalize the recommendations.
5. Prepare a plan of action for the dissemination, communication and utilization of the findings and (if required) make recommendations for additional future research.
6. Critically appraise a research paper of any national or international journal.
7. Present research papers published in various national and international journals at journal club.
8. Prepare and complete final research Dissertation/ original articles, requisite to the post graduation degree of trainee, under the guidance of the nominated supervisor.
9. Present and defend a research final research Dissertation/ original article project to concerned authorities.

RESEARCH COURSE OF FOURTH TRAINING YEAR

The fourth year of post graduate of training will be purely practical where no lectures, courses or workshops will be held and the trainee will be directly involved under the supervisor's and staff members (of ORIC) guidance in actual implementation of research. The following activities related to research will be carried out by the trainee during the last and final year of research course.

A. COMPLETION OF RESEARCH PROJECT AND ITS WRITE UP AS A

DISSERTATION

This section A implies only for the trainees who will be either MD scholars or those post graduate trainees following option A of CPSP i.e. writing dissertation, as requisite to fellowship of CPSP.

- i. The trainees writing dissertations should have completed their data collection and entry by the end of third year of training and will have also initiated write up literature view for the dissertation.
- ii. As soon as the year four of training commences, these trainees should complete the introduction and literature review sections of their dissertations along with proper referencing during first three months of R-Y4. They will be continuously guided in this task by their supervisors, research associates and the publication in charge at the ORIC.
- iii. The trainees, In the meanwhile, will also seek continuous assistance of statisticians of Data analysis unit of ORIC for data analysis in statistical soft ware. Trainees will be guided how to interpret the results, how to determine the statistical significances and how to write these results in textual, tabulated and graphical forms. They will have to complete their data analysis and write up of results till fourth month of year 4.
- iv. The supervisor and publication in charge at ORIC will also guide the trainee to write the section of “discussion” for their dissertations based on the comparison of the findings of their study with the previously available research nationally as well as internationally.
- v. The trainees will also identify strengths and weaknesses of their study and should make recommendations with statement of final conclusion.
- vi. According to the required referencing systems the reference lists and in text citation will also be completed correctly.
- vii. After writing the abstract and cover pages and annexure of the dissertation, the trainee will submit his/her dissertation’s final draft to publication in charge ORIC for plagiarism detection through turn-it-in soft ware. Any dissertation that will have originality score less than 90% or similarity index more than 10% will be returned back to trainees for rephrasing till the eligible scores will be reached.
- viii. Then the trainee should submit final draft of dissertation to the supervisor and head of department till end of fifth month of year for

final modifications. Since the supervisor will be incessantly involved in every aspect of the project since the beginning and will be persistently guiding the procedure, so he/she should not take more than 10 days to give final review to dissertation of the trainee with written feedback that will be entered in a structured performa with recommendations for improvement or corrections. The Head of Department will also provide his feedback within 10-15 days.

- ix. Based on the feed back of the reviews, the trainee will make final editing and will get the dissertation printed and submitted to the degree awarding authority accordingly (BASR for MD trainees and CPSP for post graduate trainees of fellowship) for review for acceptance before third week of sixth month of year 4.
- x. The trainee will also submit a copy of dissertation to head of department, the Dean, Director of ORIC and Chair person of BASR that will be dealt as a confidential document in order to avoid potential risk of plagiarism.
- xi. While the dissertations will be under review by the degree awarding authority for acceptance, the trainees will be continuously guided by the supervisor and the research associates at ORIC regarding defense of their dissertation. They will be guided how to make effective presentations according to the format provided by the examination authorities and also how to successfully and confidently respond to the queries of examiners.
- xii. In case the dissertation is sent back with recommended corrections or modifications, the supervisor and research associates at ORIC will assist the trainee on urgent basis to get it rectified and resubmitted within at least 10 days' time and not more than it.

B. RESUBMISSION OF RESEARCH PAPER/S IN CASE MODIFICATIONS ADVISED OR REJECTED FOR PUBLICATION BY A JOURNAL

This section B implies only for the post graduate trainees who will be opt for two research paper submission as requisite to fellowship of CPSP and provided one or both of their research paper/s is/are sent back for modifications or rejected publication.

- i. In case the research paper/s is/are sent back with recommended corrections or modifications, the supervisor, publication in charge and concerned facilitators at ORIC will assist the trainee on urgent basis to get it rectified and resubmitted within next 10 days' time.

- ii. In case any of the paper is refused publication by a journal even then the supervisor and publication unit at ORIC will assist the trainee on urgent basis, to get it rectified and resubmitted to another target journal of choice within next 10 days' time without any delay.

C. SUBMISSION OF ACCEPTANCE LETTERS OF APPROVED RESEARCH PAPER/PAERS AND SUBMISSION OF HARD AND SOFT COPIES OF PUBLISHED RESEARCH PAPER/S TO CPSP

This section C implies only for the post graduate trainees who will be opt for two research paper submission as requisite to fellowship of CPSP and provided their research paper/s is/are approved by journals and are published.

- i. In case the research paper/s is/are approved by the target journals, the trainee will submit the letter of acceptance/s to CPSP in addition to copies to supervisor, HOD, Dean and Publication in charge of ORIC.
- ii. When the original article will be published in journal/s, then the trainee will submit hard and soft copies of the original journal with his/her published articles to CPSP in addition to copies to supervisor, HOD, Dean and Publication in charge of ORIC and BASR.

D. PARTICIPATION IN JOURNAL CLUB SESSIONS

- 1) Since the journal club is one of the best sources to provide awareness of best current clinical research, its implementation and utilization so its importance cannot be overlooked. In spite of a demanding and eventful fourth year of training, the participation of trainee in the journal club will still be mandatory.
- 2) The participation of trainees in journal club during R-Y4 will complement their knowledge and skills that will be beneficent in write up as well as defense of dissertation but also enhance their evidence based clinical skills.
- 3) However, to decrease the trainees' workload during final year of training, only participation in journal club will be mandatory and

he/she will be exempted from making a presentation during R-Y4.

- 4) The R-Y4 trainee will still be expected to actively participate in discussion and also in question & answer session of the journal club meeting. It will be compulsion for each R-Y4 trainee to ask at least one question or make at least one comment relevant to the topic and/or the research paper, during the journal club meeting.

Minimal Attendance of Journal Club meetings by R-Y4 trainee:

The R-Y4 trainees should attend at least 5 out of 6 journal club meetings during their last year of training.

Assessment of Trainees for Journal Club sessions:

There will be no formal quantitative or qualitative assessment of the trainee and they will also not make any formal presentation in the journal club during R-Y4.

E. MONITORING OF RESEARCH ACTIVITIES OF YEAR 4

- i. During the last year of training of post graduate trainees, they will be scrutinized for each and every activity of dissertation completion by research centers of specialties, supervisors, Head of Departments and the research associates and Deputy Directors at the Office of Research Innovation & Commercialization of RMU.
- ii. The structured component of research in Log books of fourth training year will pertain to various components of their research projects including timing and completeness of data analysis, result write up, introduction, literature review's write up, methodology, discussion, recommendations, conclusions and cover pages.
- iii. The log books will also include the attendance details of the trainees in the Journal club sessions of the department during R-Y4. This information will be endorsed by the supervisor of the trainee and the HOD.
- iv. The Log Books of the trainees in addition to the Research portfolio during fourth year will be endorsed by the supervisor and Deputy

Directors of ORIC. The research portfolio of the R-Y4 will again include self assessment regarding research activities of the trainee in narrative form. In addition to individual assessment of the objectives and aims formulated for fourth year of training and their successful attainment, it will also include participation in any research course/s, conference/s and/or competition/s etc. during year R-Y4.

F. OVERALL ASSESSMENT OF PERFORMANCE OF TRAINEES DURING R4

- i. The overall assessment of performance of trainee will not rely on any scores or marks attained by trainees since there will not be any examination Paper or scoring for the home tasks assignments or presentation of journal club.
- ii. The Heads of department and the director of ORIC will observe research portfolio of trainees in addition to the log books for attendance record and the remarks of supervisor regarding his/her opinion regarding the trainee's overall performance during fourth year of training. Based on their observations, they will evaluate the completeness and quality of performance of each activity of trainee during fourth year.
- iii. In case of any deficiencies or weaknesses, the trainee and supervisor will be called by the Heads of department and the director of ORIC who will direct them on how to improve accordingly.

G. EVALUATION/ FEEDBACK OF RESEARCH COURSE OF YEAR 4

The research course and activities of third year of training will be evaluated by the trainees, facilitators ORIC and supervisors.

- i. ***The end of year R-Y4 and end of four years' research training feedback of trainees*** will include structured evaluation through feedback questionnaire not only for fourth year but also for entire four year of research training. It will be anonymous and apart from questions phrased in Likert scale, open ended questions will also be included for the opinions of trainees.
- ii. ***The end of year R4 and end of four years' research training feedback of trainers*** will also reflect the anonymous feedback for the opinions of all supervisors and facilitators regarding benefits, drawbacks or weaknesses of R-Y4 course as well as of entire four

year's research training course.

- iii. *Three focus group discussions;*** one of the R-Y4 trainees, second of the concerned facilitators and third of the supervisors will also be organized by the ORIC to evaluate the entire four year's research course, its benefits and weaknesses and scope for improvement.
- iv. *A final evaluation report of the Research Course R-Y4 and entire 4 years' research training Course*** will be formulated and compiled by the ORIC of RMU. The report will be presented to all concerned stake holders.

H. QUALITY ASSURANCE OF RESEARCH COURSE OF YEAR 4

- i. The quality assessment of research course of R-Y4 as well as the entire four years' research course will be carried out through review of materials and observations of proceedings by the evaluation team of RMU.
- ii. The research dissertations submitted by post graduate trainees will be observed as confidential evidences by Director of ORIC, Dean and chairperson of BASR for quality assessment. No other person will have access to these manuscripts in order to avoid any risk of potential plagiarism.
- iii. ORIC will submit evaluation content of R-Y4 to all stake holders including a copy to the Quality Enhancement Cell (QEC) of RMU for internal as well as external evaluation.
- iv. An annual meeting of the trainers by end of year 4, will be organized by the Quality Enhancement Cell of RMU, including representatives of supervisors, Head of Departments, Dean, representative members of BASR, ORIC, QEC, DME & IREF, to review and discuss all the evaluation materials of R-Y4, its quality and any recommendations for quality enhancement, under the chairman ship of Vice chancellor of RMU.

The activities of trainees of RMU are displayed in figure 5(A) and 5 (B), according to their concerned options. Successful completion of above mentioned requirements of research course will be mandatory requirement for completion of Post Graduate training final year as well as for MD scholar's training at RMU

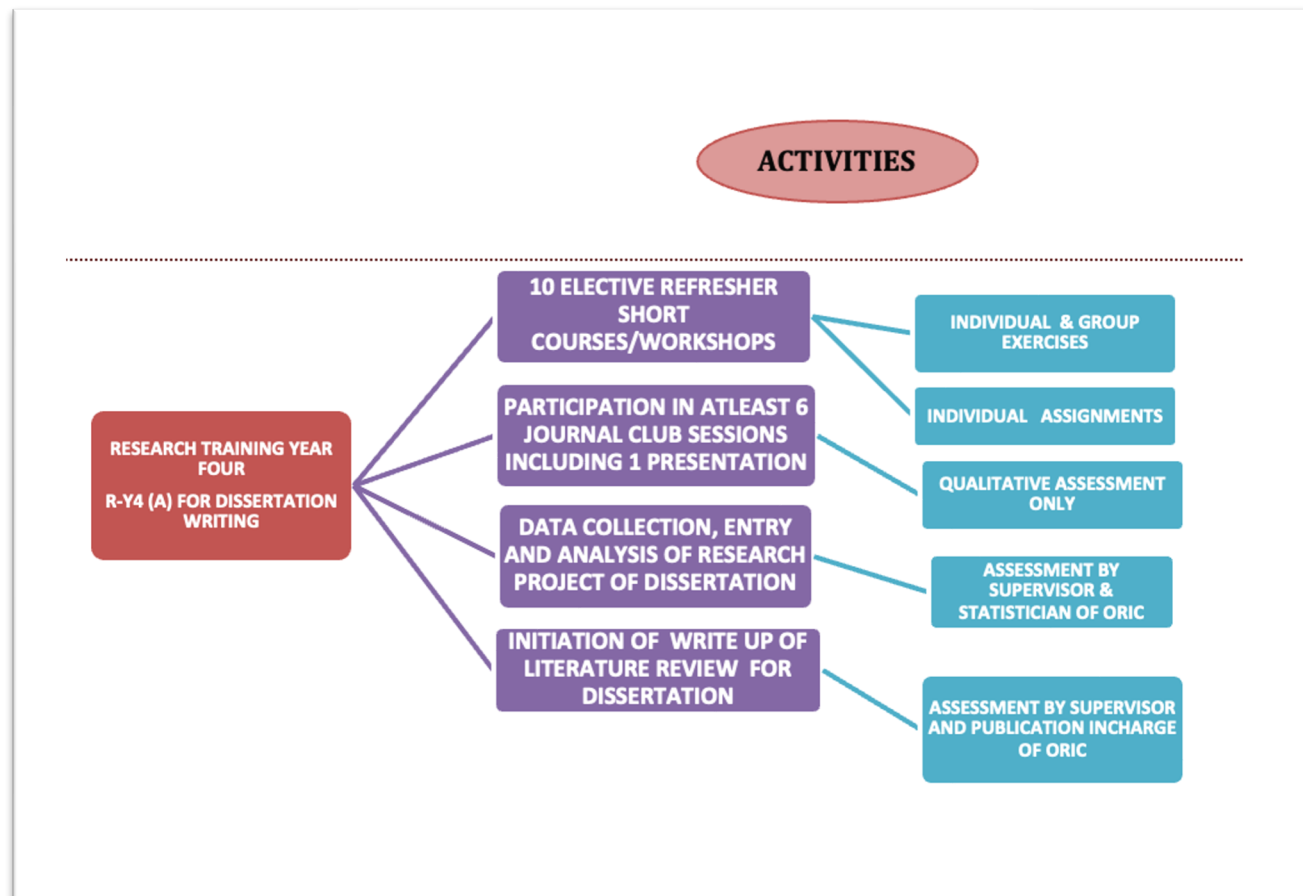


Figure 7 (A) . A FLOW CHART OF RESEARCH ACTIVITIES AND ASSESSMENTS

OF R-Y4 POST GRADUATE/MD TRAINEE OF RMU WHO WILL OPT FOR DISSERTATION WRITING

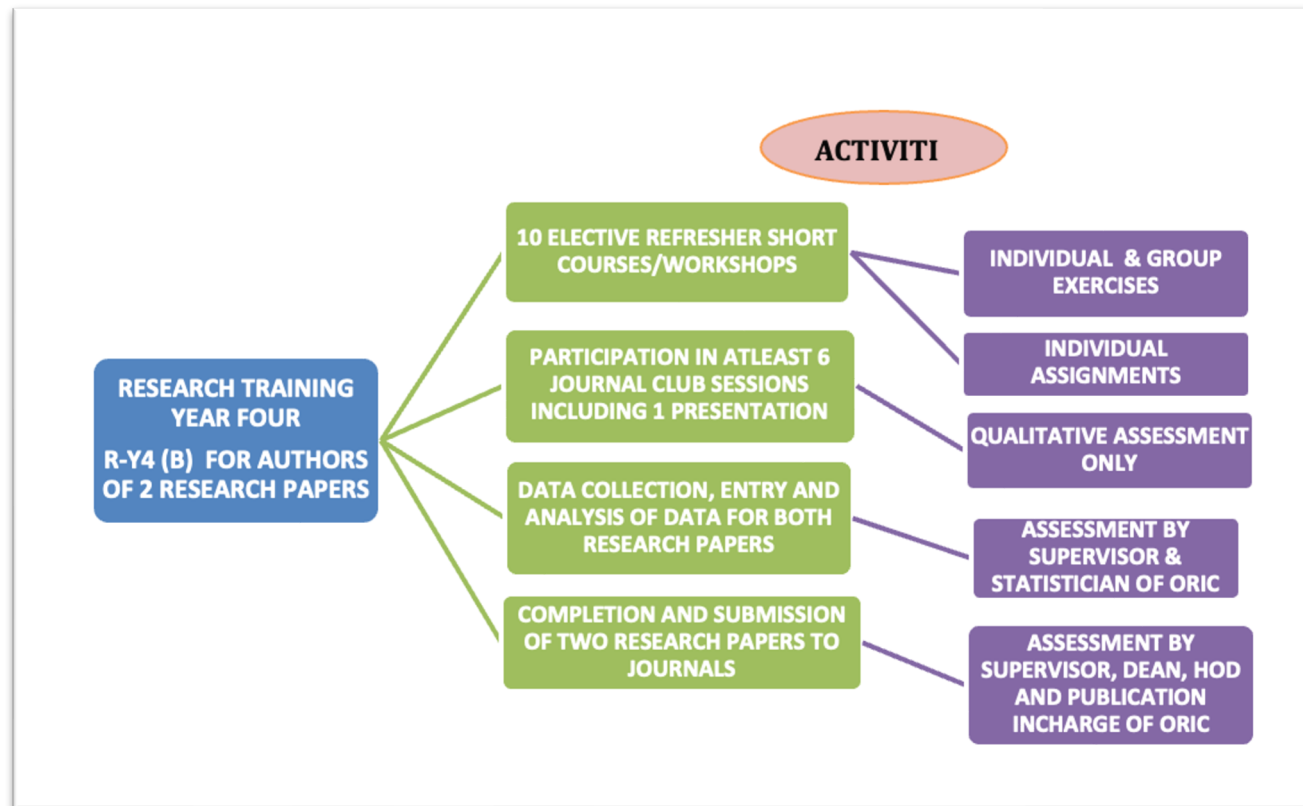
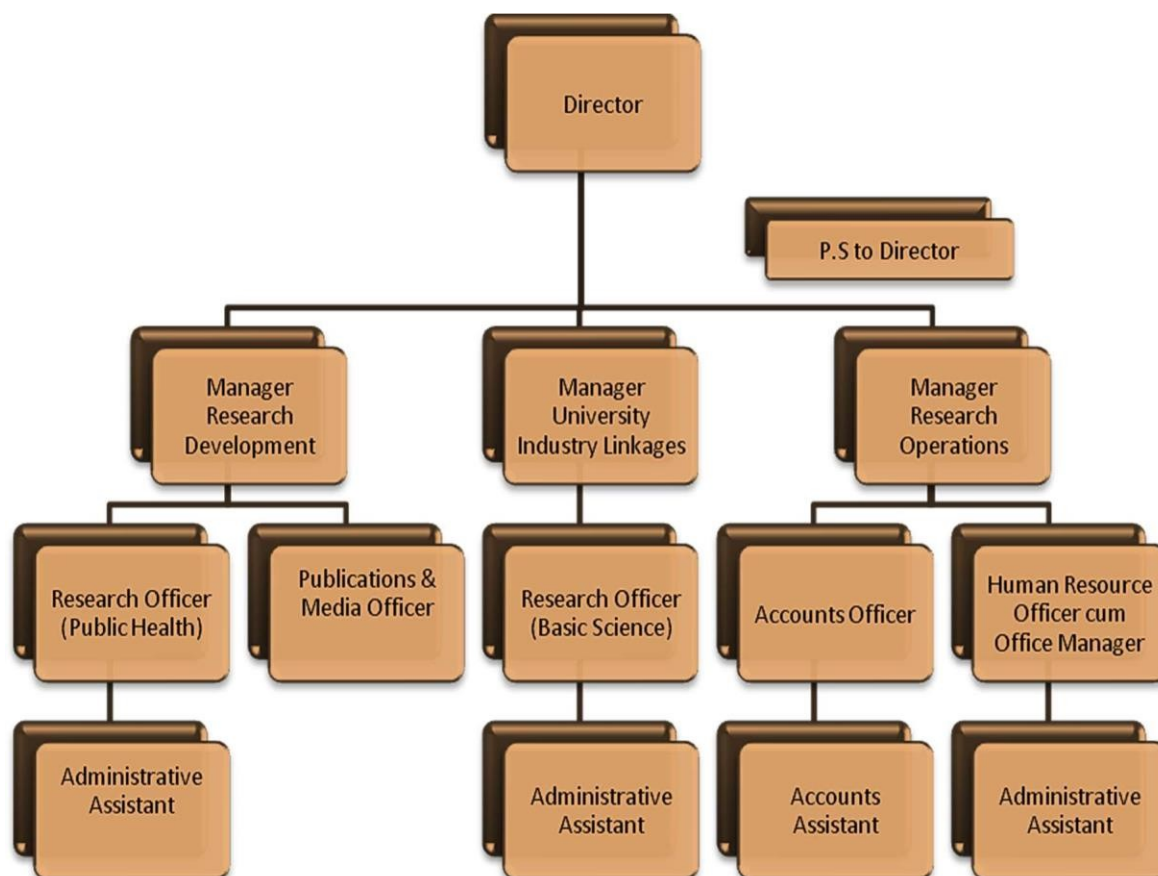


Figure 7 (B). A FLOW CHART OF RESEARCH ACTIVITIES AND ASSESSMENTS

OF R-Y4 POST GRADUATE OF RMU WHO WILL OPT FOR 2 RESEARCH PAPERS AS REQUISITE TO CPSP FELLOWSHIP DEGREE

ANNEXURE 1

THE ORGANIZAITONAL CHART OF ORIC OF RMU



Note: Managers of ORIC are also referred to as Deputy Directors in RMU

ANNEXURE 2

TERMS OF REFERENCES OF STAFF MEMBERS OF RMU WITH REFERENCE TO THE RESEARCH TRAINING PROGRAM OF POST GRADUATE TRAINEES OF RMU

A. THE VICE CHANCELLOR:

1. The vice chancellor of RMU will be final authority to approve nominations of external supervisors of MD scholars, in consultation with the Dean of specialty.
2. Regarding nominations of the internal supervisors of MD trainees and also of Post graduate trainees of fellowship of CPSP, after completion of first year of training, i.e. R-Y1, no substitution in nomination will be allowed. But in case of any serious incompatibility between the trainee and the supervisor, the issue will be brought to the Vice chancellor, directly by the Dean, as a special case. And only the vice chancellor will make the final decision accordingly, as the final authority.
3. The vice chancellor will also be the head of the quality evaluation team of research training courses that will also include the Head of departments, Deans, selected representatives of BASR, IREF, Director of ORIC and Director of Quality enhancement cell (QEC). The selection of above mentioned team members will be made by the Vice chancellor of RMU.
4. The Vice chancellor will have the authority through the research training course, to make surprise visits, evaluations, rounds and checking (without any prior information to the trainees and trainers) at any random occasion, being member of quality evaluation team individually or in team.
5. An annual meeting of the trainers will also be organized by the Quality Enhancement Cell of RMU, including representatives of supervisors, Head of Departments, Dean, representative members of BASR, ORIC, QEC & IREF and this meeting will be chaired by the Vice chancellor.
6. In perspective of the quality assessed through extensive procedure all the year round and also during the Annual meeting of quality assessment

and enhancement, the Vice Chancellor and the Board of Advanced study and Research will finalize any modifications or enhancement in the next Research course.

7. When the MD scholars of RMU will submit their research proposals to the Board of Advanced Studies and Research (BASR) of RMU for appraisal, BASR will issue an acceptance letter of the research proposal that will be endorsed by the Vice chancellor of RMU.

B. MEMBERS OF BOARD OF ADVANCED STUDIES AND RESEARCH:

1. The Board of Advanced studies and Research of RMU will finalize, approve and issue final approval list of the supervisors of the trainees of RMU.
2. The Board of Advanced Studies and Research (BASR) of RMU will receive the submitted research proposals of MS scholars of RMU for appraisal. BASR will issue an acceptance letter of the research proposal endorsed by the Vice chancellor of RMU copied to the concerned stake holders and authorities including office of Dean and ORIC. If members of BASR will find any modifications required in the proposal they will recommend them to trainee and supervisor. The trainee must incorporate those changes and will resubmit the corrected version of proposal to BASR within next one-week period. The written approval letter of BASR will then be issued within next two weeks to the trainee. The trainees will thus receive formal permission to initiate data collection phase through this acceptance of BASR.
3. The quality evaluation team of research training course will include selected representatives of BASR who will be nominated and selected by BASR and Vice chancellor of RMU. The members may pay random visits for physical observation of the proceedings and materials of all the research related activities of the trainees and supervisors for quality assessment and assurance.
4. The copies of research papers or dissertations submitted by post graduate trainees following option of publication of two original articles to CPSP accredited journals will also be submitted to the chairperson of BASR for quality assessment to be observed as confidential evidences
5. Representative members of BASR will attend the annual meeting of Quality assurance, by end of each research training year and will

also share their experiences of their evaluation visits and observations to validate the existing materials.

6. The quality of Research Training course will be stringently determined by BASR in their meetings and the members will provide recommendations for further quality enhancement and will have the authority for policy formulation or modification regarding the research training course.

C. MEMBERS OF INSTITUTIONAL RESEARCH AND ETHICS FORUM OF (IREF) RMU:

1. Institutional Research Ethics Forum will organize monthly meetings for approval of research proposals of the trainees of RMU in which the trainee must present along with his/her supervisor for presentation and defence of proposals of dissertations/research papers.
2. The members will be provided hard copies of the research proposals prior to the meetings that they will review before coming to the meeting.
3. Members will listen and visualize five to ten minutes' presentation through power-point by the trainees and by the end of presentation will make relevant queries to the trainees.
4. The IREF will appraise and scrutinize every aspect of the proposal/s and if found acceptable then will provide on spot verbal approval of the project followed by written approval letter within next two weeks to the trainees.
5. If members of IREF will find any modifications required in the proposal/s they will recommend them to trainee and supervisor. The trainee must incorporate those changes and will resubmit the corrected version of proposal/s within next one week's period.
6. The written approval letter of IREF will be issued within next two weeks of meeting, to the trainee.
7. In case the trainee will be working on option B of CPSP i.e. publication of two research papers, instead of writing dissertation, then he/she will present both research proposals to IREF for the two topics already approved by CPSP.
8. The quality evaluation team of research training course will include selected representatives of IREF who will be nominated and selected by chairperson of IREF and Vice chancellor of RMU. The members may pay random visits for physical observation of the proceedings and materials of all the research related activities of the trainees and supervisors for quality assessment and assurance.

9. Representative members of IREF will attend the annual meeting of Quality assurance, by end of each research training year and will also share their experiences of their evaluation visits and observations to validate the existing materials.

10. The quality of Research Training course will be stringently determined by IREF in their meetings and the members will provide recommendations for further quality enhancement to BASR, if any, regarding research training course

D. THE DEAN OF THE SPECIALITY:

1. The journal club meetings will be chaired by the Dean of specialty.
2. In a journal club meeting, one or two research paper/s published in an indexed national or international journal will be selected by the Dean and will be notified to the departments at least one and a half month prior to the meeting.
3. The Dean of the specialty will decide the nomination of the supervisor for the post graduate trainee as well as the internal supervisors of MD scholars within first six months of the first year of training R-Y1.
4. For the selection of supervisors, the Dean will chair meeting for selection of supervisors that will be held in the middle of the first research training year, preferably in June.
5. The list of all the first year trainees and the available supervisors in each department will be presented to the Dean, by respective heads of each department in meeting.
6. The Dean will consider the recommendations and proposals of most suitable supervisors for each trainee after eloquent discussions and justifications with the Head of Departments.
7. The Dean will then call each trainee individually to inform him/her the suggested Supervisor for him/her and will also give right and time for objection or reservation in nomination, if any. The Dean will seek the trainee's final consent and then after asking the trainee to leave the meeting room, will call the supervisor for final consent.
8. If the supervisor will also be willing to happily supervise the trainee, then the Dean will finally approve the nomination.
9. A tentative list will be issued by the office of the Dean, within three days of the meeting, copied to the HOD's and the trainees and supervisors.
10. Both the trainees and the supervisors will be given two weeks to challenge the nominations and will also be given right to personally approach the Dean for any request for change. In case of any objection, the Dean will make changes in consultation with the HOD's, after final consent and satisfaction of both trainee and supervisor

11. The final revised list of nominations will be then issued by the office of Dean and will be sent to the Board of Advanced studies and Research of RMU (BASR).
12. During the last few months of the first year of training, the trainees and supervisors will be advised by the Dean, to get familiar with each other and try to identify their abilities to efficiently and successfully work together as a team.
13. In case of any issues, either of both will have right to request any change in nomination to the Dean, till last week of first year of training. The Dean will then consider the case and will seek modification in nomination from the BASR.
14. After completion of first year of training, no substitution in nomination will be allowed. In case of any serious incompatibility between the trainee and the supervisor, the Dean will have authority to bring it to the notice of the Vice chancellor as a special case.
15. As regards the MD scholars, the external supervisors will also be nominated and those nominations will be made by Vice chancellor of RMU in consultation with the Dean of specialty. After finalization of nominations a letter of agreement of supervision will be submitted by the trainee to the office of Dean, including consent and endorsement of both trainee and the internal and/or external supervisor.
16. Regarding the project of undertaking clinical audits on various aspects of the department during first year of research training, on one topic assigned to each group by the Dean in consultation with Heads of Departments.
17. The clinical audits completed in groups will be published as Annual Audit Reports of the departments by the Dean
18. The Dean will make the decision regarding the presentation of clinical audit weekly Clinico-pathological conferences (CPC) of the University.
19. Once the research question and topic is finalized with mutual understanding of the supervisor, the Dean will also be handed over the selected topic by the trainee. The Dean of the specialty will give approval of the topic after scrutiny and will confirm after consultation with HODs that there is no duplication of the topic in the department.
20. The Dean will finalize the list of the topics of research proposals of all trainees during fourth month of R-Y2 and then will submit the list to BASR.
21. Dean will also ensure the feasibility and availability of resources during second year of research training of the trainees of RMU, before initiation of the research project.
22. The office of Dean will receive a copy of approval of the acceptance letter of BASR once the MD scholars of RMU will get their research proposals approved by to the Board of Advanced Studies and Research (BASR) of RMU.
23. The Dean will receive the copies of final manuscript by post graduate trainees following option of publication of two original articles to CPSP accredited journals that will be observed as confidential evidences by Dean for quality assessment. It will be kept strictly confidential by the office of the Dean in order to avoid any risk of potential plagiarism

24. The Dean will also receive the copies of final dissertation manuscript by post graduate trainees and MD trainees that will be observed as confidential evidences by Dean for quality assessment. It will be kept strictly confidential by the office of the Dean in order to avoid any risk of potential plagiarism.
25. The office of Dean must also receive the letter of acceptance/s by the trainees, in case the research paper/s is/are approved by the target journals. When the original article will be published in journal/s, then the trainee will submit hard and soft copies of the original journal with his/her published articles to Dean of speciality for evidence.
26. The Dean of specialty will be member of the quality evaluation team of research course and he/she will have right to make any surprise visit during the four years training research course, at any random occasion, either individually or in teams, without any prior information to the trainees and trainers.
27. The Dean will also attend the annual meeting that will be organized by the Quality Enhancement Cell of RMU. During the meeting, the Dean will share his/her experience of evaluation visits and observations to validate the existing materials.

E. THE HEAD OF THE DEPARTMENT:

1. The Head of the Department (HOD) will oversee all the research activities of the trainees, in close consultation with the Dean and the supervisors at the departmental level.
2. The HOD will attend all the journal club sessions of department.
3. During the first six months of research training year 1 i.e. R-Y1, the HOD will be responsible for consideration of the nominations of the internal supervisor of each trainee. The HOD will decide these nominations based on his/her own personal observation of the level of performance, talent personality and temperament of both the trainees and the supervisors. Based on his/her personal observation of the compatibility of both eligible trainees and the supervisors, Head of department will recommend or propose most suitable supervisors for each trainee after eloquent discussions and justifications to the Dean during a nomination meeting that will be especially held for this purpose.
4. The nominations will be finalized in a special meeting by all heads of the departments and the Dean. The list of all the first year trainees and the available supervisors in each department will be presented by respective heads of each department in meeting.
5. In case of any objection to nominations of supervisors, the Dean will make changes after direct consultation with the HOD's, apart from final consent and satisfaction of both trainee and supervisor.

6. After finalization of nominations a copy of letter of agreement of supervision will be received by the office of HOD, submitted by the trainee.
7. The weekly meetings of the supervisor and the trainee will be monitored by the HOD through observation of the documented record of meeting in log books, by the end of every month.
8. During ninth month of training year 1; R-Y1 the head of department will supervise the project of clinical audit of the trainees. In this regard HOD will firstly form groups of trainees, either two or three trainees in one group (along with each supervisor of each trainee), depending on the total number of trainees available in that respective first year.
9. The HOD in consultation with the Dean of specialty will assign topics of audits to each group.
10. The clinical audits completed in groups will be published as Annual Audit Reports of the departments under supervision of HOD's.
11. The presentation of clinical audit in weekly Clinico-pathological conferences (CPC) of the University, will also be supervised by HOD's.
12. The contribution of the trainees in execution and publication of clinical audit will also be qualitatively assessed by the head of departments.
13. Once the trainee finalizes research question and topic in mutual understanding with supervisor, the HOD will also be handed over the selected topic by the trainee who in consultation with the Dean of the specialty will confirm for non duplication of the topic in the department.
14. HOD will also ensure the feasibility and availability of resources during second year of research training of the trainees of RMU, before initiation of the research project.
15. The trainee should submit final draft of dissertation to the head of department till end of fifth month of year for final modifications and the Head of Department will also provide his /her feedback within 10-15 days.
16. The HOD will receive a copy of final dissertation by the trainee during fourth year of research training that will be kept by him/her as a confidential document in order to avoid any potential risk of plagiarism.
17. In case the research paper/s of the trainees is/are approved by the target journals, the office of HOD trainee will also receive a copy of the letter of acceptance/s and when the original article will be published in journal/s, even then the trainee will submit hard and soft copies of the original journal with his/her published articles to HOD.
18. All the Head of Departments along with other staff members of Office of Research Innovation & Commercialization of RMU will keep vigilant and continuous monitoring of all the research activities of each trainee.
19. The HOD will monthly check and endorse the sections of research in Structured Log books of trainees and also section of Research in portfolio

record of the trainees specific to research component of the training.

20. The HOD will also endorse the attendance of the trainees in the Journal club sessions of the department in the log books along with his/her quantitative and/or qualitative assessment of the trainees' active participation and/or presentation during the journal club session. HOD will also endorse the information whether any question or comment was raised by the trainee during each journal club session or not. The Heads of department will observe the log books for assessments of facilitators of short courses during third year of research training and their comments regarding the home tasks/assignments apart from the remarks of supervisor regarding his/her opinion regarding the trainee's overall performance during third year of training.
21. In case of any deficiencies or weaknesses, HOD will personally call the trainee and supervisor and will guide them how to correct or improve accordingly.
22. The research course of the trainees will also be evaluated by the HOD's through end of sessions forms and then collectively through end of course feedback forms.
23. The HODs will also be members of the quality evaluation team of research training course and will vigilantly and equitably observe and evaluate all the documented records and materials during the course and finally by the end of each course year for quality assessment.
24. They will also make surprise visits at any random occasion, without any prior information to the trainees and trainers, individually or in team.
25. HODs will also attend the annual meeting quality assessment and enhancement where they along with other participants will actively review and discuss all the evaluation material. And will also share their experiences of evaluation visits and observations to validate the existing materials.

F. THE DIRECTOR OF OFFICE OF RESEARCH INNOVATION AND COMMERCIALIZATION (ORIC):

1. The Director ORIC (Office of Research Commercialization and Innovation) of RMU will conduct an orientation session or an introductory session of one-hour duration along with Deputy Directors of ORIC at the commencement of first research training year of all post graduate trainees of RMU. During the session, the Director will make trainees acquainted to the complete research course of four years' post graduate training, its schedule of all scholarly and academic activities and the assessment procedures. He/she will also introduce the model of research at RMU, organizational structure of ORIC and all requisites of training along with introduction to the staff members of ORIC who will be involved in their

training.

2. The director ORIC will take few research training sessions of first two training years (R-Y1 & R-Y2) that will comprise of didactic lecture followed by taking exercises and then also be responsible for giving and checking the home task assignments (if any) related to session.
3. During the third year of training the Director ORIC will conduct few of short refresher courses/workshops along with other staff members of Office of Research Innovation and commercialization. For the specific course, Director will have to carry out a 20-25 minutes' power-point presentation to restore the memories of the trainees regarding the previous knowledge attained by them in R-Y1 and R-Y2. The director ORIC will also facilitate the individual or groups exercises of trainees in the training session following the presentation and also check the take home assignments.
4. Director at the Office of Research Innovation & Commercialization of RMU will keep vigilant and continuous monitoring of all the academic activities of each trainee related to Research courses.
5. Director of ORIC will check the research portfolio of the trainee and will endorse it.
6. Based on his/her observations, the completeness and quality of performance of each trainee will be evaluated and in case of any deficiencies or weaknesses he/she will personally call the trainee and supervisor and will guide them how to correct or improve accordingly.
7. Director ORIC will supervise the formulation of evaluation report of the research training course and after its endorsement will send it to all concerned departments and stake holders. The director ORIC will also be responsible for submission of the evaluation content to the Quality Enhancement Cell (QEC) of RMU for internal evaluation and external evaluation.
8. The Director will also be member of the quality evaluation team of research training course and will also evaluate all the documented records and materials during the course and finally by the end of each course year for quality assessment.
9. Like all other members of Quality evaluation team, the director will also have the right to make a surprise visit at random individually or in team. The evaluation will include not only physical observation of the materials but the evaluators may also make a visit to observe any proceedings or activities of the research course e.g. a lecture, a group exercise, a journal club session and/or an IREF meeting.
10. The Director will attend the annual meeting quality assessment and enhancement where he/she will actively review and discuss all available material of training course will also share his/her experience of evaluation visits and observations to validate the existing materials.
11. The trainees who will opt for publication of research papers to journals will submit copy of submitted papers to Director of ORIC who will

check and keep them secured in records as confidential documents.

12. The Director will receive a copy of dissertation of the trainee for record as a confidential document in order to avoid potential risk of plagiarism.

G.THE DEPUTY DIRECTORS OF OFFICE OF RESEARCH INNOVATION AND COMMERCIALIZATION (ORIC):

1. The Deputy Directors ORIC (Office of Research Commercialization and Innovation) of RMU, along with Deputy Director and other staff members of ORIC will conduct an orientation/introductory session of one-hour duration at the initiation of first research training year of all post graduate trainees of RMU. The Deputy Directors will provide introduction to trainees regarding the research course of four years' post graduate training, its schedule of all scholarly and academic activities and the assessment procedures. They will also inform the trainees organizational structure of ORIC and all requisites of training along with introduction to the staff members of ORIC who will be involved in their training.
2. The Deputy directors ORIC will take research training sessions of first two training years (R-Y1 & R-Y2) that will comprise of didactic lecture followed by taking exercises and then also be responsible for giving and checking the home task assignments (if any) related to session.
3. The submitted record and scores of trainees attained for the individual and group assignments during first two training years will be endorsed by the Deputy Directors of ORIC.
4. During the third year of training the Deputy Directors ORIC will conduct a few of short refresher courses/workshops. For the specific course, they will have to carry out a 20-25 minutes' power-point presentation to restore the memories of the trainees regarding the previous knowledge attained by them in R-Y1 and R-Y2. In addition, they will also facilitate the individual or groups exercises of trainees in the training session following the presentation and will also check the take home assignments.
5. The submitted record and scores of trainees attained for the individual and group assignments of the short training courses of third year of training will also be endorsed by the Deputy Directors of ORIC.
6. The Deputy Directors will check and mark the written papers of end of year examination or Annual Research Paper of first two training year R-Y1 & R-Y2. They will also endorse the scores of the Annual papers in the log book of the trainees.

7. The research course will be evaluated by the deputy directors of ORIC too through end of sessions forms and then collectively through end of course feedback forms.
8. During these first three months of R-Y2, the Deputy Directors at the ORIC will provide consultation to the trainees regarding feasibility of their research questions and will be advised if any modification required.
9. The deputy directors will be continuously involved in an alert and continuous monitoring of all the scholarly activities of each trainee.
10. The structured Research component of Log books and Research portfolio of the trainees specific to research component of all the training years R-Y1 to R-Y4 will also be regularly observed, monitored and endorsed by the Deputy Directors of ORIC. Based on his/her observations, the completeness and quality of performance of each trainee will be evaluated and in case of any deficiencies or weaknesses he/she will personally call the trainee and supervisor and will guide them how to correct or improve accordingly.
11. The Deputy Director will also monitor the submission of the evaluation content to all including a copy to the Quality Enhancement Cell (QEC) of RMU for internal evaluation.

H. THE RESEARCH ASSOCIATES OF OFFICE OF RESEARCH INNOVATION AND COMMERCIALIZATION (ORIC):

1. The Research Associates of ORIC (Office of Research Commercialization and Innovation) of RMU, along with Deputy Director and other staff members of ORIC will facilitate the orientation/introductory session of one-hour duration at the initiation of first research training year of all post graduate trainees of RMU.
2. The Research Associates will take few research training sessions of first two training years (R-Y1 & R-Y2) that will comprise of didactic lecture followed by taking exercises and then also be responsible for giving and checking the home task assignments (if any) related to session.
3. The Research Associates will also be will be present and will be actively involved in facilitation of all the training sessions that will be taken by Director, Deputy Directors or guest facilitators. They will actively facilitate the individual and group works of the trainees during the sessions.
4. The Research Associates will be responsible for record keeping of the post graduate trainees regarding the training sessions and the records and scores of trainees for the individual and group assignments during all four training years that will also be endorsed by the Deputy Directors of ORIC. They will not only collate the record at the ORIC in computerized versions as well as in the form of hard copies. The Research Associates will

also fill in the record in research sections of the log books relevant to the training sessions and other relevant activities that will be supervised by them.

5. During the third year of training, the Research Associates will also be present in the short refresher courses/workshops for facilitating the Director, Deputy Directors or guest facilitators. They will actively facilitate the individual and group works of the trainees during the workshops.
6. The Research Associates along with the Deputy Directors will check and mark the written papers of end of year examination or Annual Research Paper of first two training year R-Y1 & R-Y2. They will enter the the scores of the Annual papers in the log book of the trainees and will also keep its record at the ORIC in computerized versions as well as in the form of hard copies.
7. During the first three months of R-Y2, the Research Associates at the ORIC will provide consultation to the trainees regarding feasibility of their research questions and will advise trainees if any modification required.
8. Once the trainee gets the approval of the topic/s from all concerned authorities during R-Y2 and will initiate the formal write up of proposal/s, the research associates of ORIC will guide them regarding the research methodologies.
9. The research associates of ORIC will also ensure that the duration of research project should be adequate and realistic so that trainees will be able to complete their project/s timely during training leaving enough time for its writeup.
10. The research associates of ORIC will also guide the trainees regarding the research formulation of data collection tools, their pre-testing and execution of data collection phase
11. Trainees will be individually provided an updated step wise guidance by the research associates of ORIC, regarding submission of their synopsis to IREF for appraisal. They will be supervised by Research Associates regarding how to access the RMU website, to download the application Performa and then how to electronically fill it in for final submission. They will also be provided updated format of presentation by the Research Associates for their Research Proposal presentations at IREF meetings.
12. The record of the trainees regarding timely completion and quality of each activity related to completion of research proposals and its presentation in the monthly meeting of the Institutional Research Ethics Forum (IREF) of RMU will also be part of the Log Book that will be entered by the research associates of ORIC and conveners of the IREF and BASR.
13. As soon as the year four of training commences, these trainees should complete the introduction and literature review sections of their dissertations

along with proper referencing during first three months of R-Y4 and the Research Associates will also guide them along with the supervisors and the publication in charge at the ORIC.

14. While the dissertations will be under review by the degree awarding authority for acceptance, the trainees will be continuously guided by the supervisor and the research associates at ORIC regarding defense of their dissertation. They will be guided how to make effective presentations according to the format provided by the examination authorities and also how to successfully and confidently respond to the queries of examiners.
15. In case the dissertation is sent back with recommended corrections or modifications, research associates at ORIC will guide the trainee along with supervisor on urgent basis to get it rectified and resubmitted within at least 10 days' time.

I. THE PUBLICATION IN CHARGE OF OFFICE OF RESEARCH INNOVATION AND COMMERCIALIZATION (ORIC):

1. The Publication in charge will be actively involved in the Research training course and for the academic sessions relevant to literature search, review and write up, he/she will take didactic lectures, followed by facilitating individual and group exercises and checking of relevant home tasks and assignments.
2. The post graduate trainees and MD scholars submit a copy of their finalized research proposal/s for the dissertation/research papers to the publication in charge of ORIC who will review for plagiarism through turn-it-in soft ware. Any proposal that will have originality score less than 90% or similarity index more than 10% will be returned back to trainees for rephrasing and resubmission. Only when the eligible scores will be reached, then the publication in charge will approve and the proposal will be further processed.
3. The publication in charge of ORIC will also guide the trainees to write the literature review sections and the section of "Discussion" based on the comparison of the findings of their study with the previously available research nationally as well as internationally.
4. The final research papers/dissertations of trainees will also be reviewed by publication in charge of ORIC for plagiarism through turn-it-in soft ware. Any article that will have originality score less than 90% or similarity index more than 10% will be returned back to trainees for rephrasing and resubmission. Only when the eligible scores will be reached, then the trainee will be allowed to proceed further and

to submit their research in the form of original articles under continuous assistance of Publication unit of ORIC.

5. In case the research paper/s of trainees is/are sent back with recommended corrections or modifications publication in charge along with the supervisor and concerned facilitators at ORIC will assist the trainee on urgent basis to get it rectified and resubmitted within next 10 days' time.
6. In case any of the paper of trainee is refused publication by a journal then the publication unit at ORIC along with the supervisor and concerned facilitators at ORIC will assist the trainee on urgent basis, to get it rectified and resubmitted to another target journal of choice within next 10 days' time and not delaying it all.

J. THE STATISTICIANS AT DATA ANALYSIS UNIT OF OFFICE OF RESEARCH INNOVATION AND COMMERCIALIZATION (ORIC):

1. The statisticians at the Data Analysis Unit of ORIC at data analysis centre of ORIC will also be actively involved in the Research training course specifically those of Basic and advanced Biostatistics and Epidemiological concepts. The statisticians will take didactic lectures, followed by facilitating individual and group exercises and checking of relevant home tasks and assignments.
2. The statisticians will facilitate the trainees in sample size calculation through sample size calculators according their study designs.
3. Trainees will also be assisted by the statisticians in planning the Data analysis for the research projects and also data coding, cleaning and sorting accordingly.
4. The statisticians will facilitate the trainees in formulation of the data entry sheets in SPSS or other data analysis softwares and will be continuously assisted in the process till data entry is completed.
5. The trainees will perform the data analysis of their research projects for research papers or dissertations, under continuous guidance and supervision of the statisticians who will also guide them how to interpret analyzed files and to write up results in textual forms, tabulated versions or figures/graphs.
6. In case the research paper/s or dissertation/s of trainees is/are sent back with recommended corrections or modifications in results section then the statisticians along with the supervisor, publication in charge and concerned facilitators at ORIC will assist the trainee on urgent basis to get it rectified and resubmitted within next 10 days' time.

K. DEPARTMENT OF MEDICAL EDUCATION:

- 1) The quality evaluation team of research training course will include Director of Department of Medical Education who may pay random visits for physical observation of the proceedings and materials of all the research related activities of the trainees and supervisors for quality assessment and assurance.
- 2) The Director DME will also attend the annual meeting of Quality assurance, by end of each research training year and will also share his/her experiences of evaluation visits and observations to validate the existing materials.
- 3) The demonstrator at the DME will keep record of attendances of all the post graduate trainees and MD scholars for all the academic sessions attended by them regarding the research training course along with the record of all assessments, scores, marks of annual papers. They will monitor the log books and research portfolio for the completeness and regularity too. The record will not only be kept and maintained at DME as hard copies as well as computerized version, but they will also regularly share records with ORIC and Quality enhancement cells of RMU.

L. THE SUPERVISOR OF THE TRAINEE FOR THE DISSERTATION PROJECT

1. The supervisor of the trainee must be nominated within first six months of the research training. The Dean of the specialty will decide the nomination of the supervisor for the post graduate trainee as well as MD scholars. In this regards a meeting will be held that will be attended by all heads of the departments and the Dean. The list of all the first year trainees and the available supervisors in each department will be presented by respective heads of each department in meeting. All of the eligible trainees and supervisors will also be around for brief interviews during the meeting. The supervisor for the trainee will be nominated based the the level of performance, talent personality and temperament of both the trainees and the supervisors by the HOD. If the supervisor will also be willing to happily supervise the trainee, then the Dean will finally approve the nomination, apart from other requirements.
2. After finalization of nominations a letter of agreement of supervision will be submitted by the trainee to the office of Dean, including consent and endorsement of both trainee and the internal and/or external supervisor, with copies to HOD, ORIC and BASR.
3. The supervisor will be bound to meet with the trainee, on weekly basis exclusively for research activity and will document the activity

performed during the meeting in the log book along with endorsement.

4. During ninth month of training year 1; R-Y1 the supervisor/s will supervise trainees together in groups and will undertake clinical audit on various aspects of the department as a project assignment, on one topic assigned to each group by the Dean and Heads of Departments. The contribution of the post graduate trainees'/ MD trainees in audits will be qualitatively assessed by the supervisors and the head of departments.
5. The supervisor will keep vigilant and continuous monitoring of all the research related academic activities of each trainee.
6. The supervisors will provide their feedback through structured and anonymous feedback forms/questionnaire, including closed and partially closed questions that will be regularly provided by them. They will provide their inputs and opinions regarding effectiveness of the course contents, curriculum, teaching methodologies, teaching aids and technologies, content and usefulness of the exercises and assessments etc.
7. One Focus group discussion of supervisors will also be organized by the ORIC to evaluate the research course, its benefits and weaknesses and scope for improvement, each year.
8. The supervisor will keep a close and continuous check on the Log books, Research portfolio of the trainee and will endorse it regularly. Based on his/her observations, the supervisor will evaluate the performance of the trainee and will discuss it in monthly meeting with the Head of Department or Dean of the speciality if required.
9. The supervisor will not only guide and facilitate the trainee in preparation of presentation of Journal Club but will also ensure that trainees should actively participate in question & answer session of the journal club meeting and will also ensure the attendance of the trainees in Journal club as per set requirements.
10. During these first three months of R-Y2, supervisor will guide and supervise the trainee to do extensive review of the literature, relevant to topic and finalize the research question/s and research topic/s with mutual understanding and will submit the selected topic to the Head of Department and Dean of specialty.
11. The supervisor will facilitate the trainee at every step, the formal write up of research proposal/s in consultation with the research associates of ORIC for guidance in methodology. The research proposal should be completed in eighth month of R-Y2 and should also be reviewed and finalized by the Supervisor of the trainees.

12. The trainees should formulate all the data collection tools under guidance of supervisor and should also pretest to finalize all the data collection tools for their research projects.
13. The supervisors will also ensure that the duration of research project should be adequate and realistic so that trainees will be able to complete their project/s during third year of training leaving enough time for its write up during year 4 of training. The supervisor will also consult the Dean and HOD's in ensuring the feasibility and availability of resources of a trainee during second year of training.
14. The supervisor will help the trainee to make a five to ten minutes' presentation through power-point at Institutional Research Ethics Forum during 9-10 months of R-Y2. By the end of presentation, the supervisor will facilitate in defence of the proposal.
15. During first quarter of year 3, it will be mandatory for the trainees to initiate the data collection phase of their project/s under continuous guidance of their supervisors. In case the data collection will require more human resources, other than trainee himself/herself, the supervisor will ensure that the additional data collection staff will be adequate in number within data within the time framework and should also make sure that they will be proficient enough to collect high quality and authentic data.
16. The data storage will also be finalized by trainee under the guidance of Supervisor and research centre of specialty.
17. Whether the trainee is opting for dissertation writing or research paper publication, the supervisor will ensure that every step and procedure is being followed effectively and timely meeting all set requirements as per standard operational procedures.
18. The supervisor will actively assist the trainee in write up of dissertation/ research papers.
19. The trainee should submit final draft of dissertation to the supervisor till end of fifth month of year4 for final modifications. Since the supervisor will be incessantly involved in every aspect of the project since the beginning and will be persistently guiding the procedure, so he/she should not take more than 10 days to give final review to dissertation of the trainee with written feedback that will be entered in a structured performa with recommendations for improvement or corrections.
20. In case the dissertation or research paper/s is/are sent back with recommended corrections or modifications, the supervisor will assist the trainee on urgent basis to get it rectified and resubmitted within next 10 days' time. In case any of the paper is refused publication by a journal even then the supervisor will assist the trainee on urgent basis, to get it rectified and resubmitted to another target journal of choice within

next 10 days' time and not delaying it all.

21. In case the research paper/s is/are sent back with recommended corrections or modifications, the supervisor will assist the trainee on urgent basis to get it rectified and resubmitted within next 10 days' time. In case any of the paper is refused publication by a journal even then the supervisor and publication unit at ORIC will assist the trainee on urgent basis, to get it rectified and resubmitted to another target journal of choice within next 10 days' time and not delaying it all.
22. While the dissertations will be under review by the degree awarding authority for acceptance, the trainees will be continuously guided by the supervisor regarding defense of their dissertation. They will be guided how to make effective presentations according to the format provided by the examination authorities and also how to successfully and confidently respond to the queries of examiners.

SECTION 4

WORKSHOPS

INTRODUCTION

The workshops conducted for first- and second-year MS Otolaryngology residents at Rawalpindi Medical University aim to equip residents with essential skills and knowledge to enhance their clinical and academic proficiency. These workshops include:

- **University Residency Program Orientation.**

This workshop introduces residents to the structure, expectations, and resources of the residency program, helping them transition smoothly into their roles.

- **Communication Skills**

This session develops residents' interpersonal skills for effective patient communication and teamwork, essential for fostering therapeutic relationships and collaborative healthcare environments.

- **Cardiac first response**

Residents gain life-saving skills through ACLS training, covering the recognition and management of cardiac emergencies to enhance patient survival in critical situations.

- **Biostatistics and Research Methodology**

Designed to introduce the fundamentals of medical research, this workshop emphasizes data analysis, statistical interpretation, and research planning, preparing residents to conduct and evaluate research.

- **Synopsis Writing**

This workshop provides guidance on structuring and drafting a research synopsis, a key component for scholarly submissions and research projects.

- **Introduction to Computers/ Information Technology and Software**

Residents are introduced to essential IT skills, including medical software and digital tools that streamline clinical documentation, data management, and research activities.

These workshops are structured to develop both clinical and academic competencies, supporting residents in becoming skilled, informed, and confident healthcare professionals.

YEAR OF TRAINING	WORKSHOPS
FIRST YEAR MD Training	University Residency Program Orientation Communication skills Cardiac first response
SECOND YEAR MD Training	Research methodology Synopsis writing IT (Information technology) skills

WORKSHOP DETAILS:

WORKSHOPS (3 hours each for 2-5 days)

S.NO	NAME OF THE WORKSHOP	LEARNING OBJECTIVES	TOPICS TO BE COVERED
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1.	Biostatistics & Research Methodology (2 days)	• To understand the basics of Bio-Statistics • To critique why research is important? • To discuss the importance of Selecting a Field for Research • To prepare oneself for Participation in National and International Research • To prepare oneself for Participation in Pharmaceutical Company Research • To interpret the importance of research ideas & Criteria for a good research topic • To discuss Ethics in Health Research • To learn to write a Scientific Paper • To learn to make a Scientific Presentation • To learn to make a purposeful literature search	1. Introduction to Bio-Statistics 2. Introduction to Bio- Medical Research Why research is important? 3. What research to do? i. Selecting a Field for Research ii. Drivers for Health Research iii. Participation in National and International Research iv. Participation in Pharmaceutical Company Research v. Where do research ideas come from vi. Criteria for a good research topic Ethics in Health Research 4. Writing a Scientific Paper 5. Making a Scientific Presentation & Searching the Literature
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2.	Introduction to computer/Information Technology & Software (3 days)	By the end of this workshop student should be able to: • Appropriately start up and shut down your computer. • Navigate the operating system and start applications. • Perform basic functions of file management. • Perform basic functions in a word processor and spreadsheet. • Manage print settings and print documents. • Receive and send email. • Use a web browser to navigate the Internet. • Work with windows, toolbars, and command menus • Perform basic word processing and graphic tasks • Make a Power Point presentation • Explore Web browsing basics • Back up files save, copy, and organize your work to enter data accurately in software of Statistical Package for Social Sciences	1. Hardware and Software • Understand the main components of a computer, including input and output devices. • Understand the function of communication devices such as smartphones and tablets. • Understand the role of Operating Systems, programs and apps. 2. Windows • Turning on the computer and logging on. • The Windows screen. • Running programs from the Start Menu. • Minimising, maximising, moving, resizing and closing windows. • Logging off and shutting down your computer. 3. Working with Programs • Running multiple programs. • Desktop icons and creating a desktop shortcut. • Managing programs from the taskbar. • Closing programs. 4. File Management • Managing Windows Explorer. • Creating, moving, renaming and deleting folders and files. • Understandings file extensions. • Viewing storage devices and network connections. • Managing USB flash drives. 5. Word Processing • Creating documents in Microsoft Word. • Typing text, numbers and dates into a document. • Easy formatting. • Checking the spelling in your document. • Making and saving changes to your document. •
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			6. Power Point Making Power Point presentation 7. Spreadsheets • Understanding spreadsheet functionality. • Creating spreadsheets in Microsoft Excel. • Typing text numbers and dates into a worksheet. • Easy formulas. • Easy formatting. • Charting your data. • Making and saving changes to your workbook. • Printing a worksheet. 8. Printing • Print preview. • Print settings. • Managing the print queue. 9. Using Email • The Outlook mail screen elements. • Composing and sending an email message. • Managing the Inbox. 10. Accessing the Internet • Going to a specific website and bookmarking. • Understanding how to search/Google effectively. • Copy and paste Internet content into your documents and emails. • Stopping and refreshing pages. • Demystifying the Cloud. • Understanding social media platforms such as Facebook and Twitter. • Computer security best practices. 11. Statistical Package for Social Sciences • general understanding for data entry
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3.	Communication skills (2 days)	• To learn to use Non-medicinal Interventions in Communication Skills of Clinical Practice • To discuss the importance of counseling • To role play as a counselor • To learn to manage a conflict resolution • To learn to break bad news • To discuss the importance of Medical Ethics, Professionalism and Doctor-Patient Relationship Hippocratic Oath • To learn to take an informed consent • To illustrate the importance of confidentiality • To summarize Ethical Dilemmas in a Doctor's Life	1. Use of Non-medicinal Interventions in Clinical Practice Communication Skills 2. Counseling 3. Informational Skills 4. Crisis Intervention/Disaster 5. Management Conflict Resolution 6. Breaking Bad News 7. Medical Ethics, Professionalism and Doctor-Patient Relationship Hippocratic Oath 8. Four Pillars of Medical Ethics (Autonomy, Beneficence, Non-maleficence and Justice) 9. Informed Consent and Confidentiality 10. Ethical Dilemmas in a Doctor's Life
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4.	Clinical Audit (2 days) (Workshop is specific for MS Otolaryngology only)	Road Map for workshop: 1. Step 1: Topic selection 2. Step 2: Setting of criteria and standards 3. Step 3: First data collection 4. Step 4: Evaluation and comparison with criteria and standards 5. Step 5: Implementation of change 6. Step 6: Second data collection – evaluation of change The following are factors that may affect your choice of audit topic: • Strong impact on health • Convincing evidence available about appropriate care • Common condition which can be clearly defined • Good reasons of believing that current performance can be improved • Readily accessible data which can be collected within a reasonable length of time • Consensus on the audit topic among the practice members	1. To understand clinical audit process. To help clinicians decide exactly why they are doing a particular audit and what they want to achieve through carrying out the audit. 2. To determine, how clinical audit relates to other activities related to accountability for the quality and safety of patientcare. 3. To select the right subject for audit. 4. To use evidence of good practice in designing clinical audits. 5. To help clinicians formulate measures of quality based on evidence of good practice, as the basis for data collection and also to develop data collection protocols and tools and advise on data collection for clinical audits. 6. To help in understanding how to handle data protection issues related to clinical audit. 7. To understand use of statistics for analyzing and presenting findings of data collection and thus help clinicians to analyze causes of problems that are affecting the quality of care. This helps in applying principles and strategies for taking action to achieve changes in clinical practice. 8. To help clinicians manage review of clinical audit findings with their colleagues. 9. To be able to prepare clinical audit reports. 10. To recognize and handle ethics issues related to clinical audit.
5.	Cardiac first response (2 days)	Upon successful completion of the workshop, the student will be able to: • Recognize and initiate early management of pre-arrest conditions that may result in cardiac arrest or	The workshop is designed to give students the opportunity to practice and demonstrate proficiency in the following skills used in resuscitation: 1. Systematic approach 2. High-quality BLS 3. Airway management

		complicate resuscitation outcome • Demonstrate proficiency in providing BLS care, including prioritizing chest compressions and integrating automated external defibrillator (AED) use • Recognize and manage respiratory arrest • Recognize and manage cardiac arrest until termination of resuscitation or transfer of care, including immediate post-cardiac arrest care • Recognize and initiate early management of ACS, including appropriate disposition • Recognize and initiate early management of stroke, including appropriate disposition • Demonstrate effective communication as a member or leader of a resuscitation team and recognize the impact of team dynamics on overall team Performance	4. Rhythm recognition 5. Defibrillation 6. Intravenous (IV)/intraosseous (IO) access (information only) 7. Use of medications 8. Cardioversion 9. Transcutaneous pacing 10. Team dynamics 11. Reading and interpreting electrocardiograms (ECGs) - Be able to identify—on a monitor and paper tracing—rhythms associated with bradycardia, tachycardia with adequate perfusion, tachycardia with poor perfusion, and pulseless arrest. These rhythms include but are not limited to: ○ Normal sinus rhythm ○ Sinus bradycardia ○ Type I second-degree AV block ○ Type II second-degree AV block ○ Third-degree AV block ○ Sinus tachycardia ○ Supraventricular tachycardias ○ Ventricular tachycardia ○ Asystole ○ Ventricular fibrillation ○ Organized rhythm without a pulse 12. Basic understanding of the essential drugs used in: ○ Cardiac arrest ○ Bradycardia ○ Tachycardia with adequate perfusion ○ Tachycardia with poor perfusion ○ Immediate post–cardiac arrest care
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Section V

**Milestones to be achieved
by the residents**

5.1 Charting the Road to Competence: Developmental Milestones for MS Otolaryngology Program at Rawalpindi Medical University

Introduction to Milestones for the 4-Year MS Otorhinolaryngology Program at Rawalpindi Medical University, Pakistan

The 4-year MS Otorhinolaryngology Program at Rawalpindi Medical University, aligned with ACGME milestones, offers a structured framework for comprehensive training. This ensures the progressive development of clinical skills, medical knowledge, professionalism, practice-based learning, systems-based practice, and research capabilities.

“Remember to celebrate the milestones as you prepare for the road ahead “--- Nelson Mandela.

High-quality assessment of resident performance is needed to guide individual residents' development and ensure their preparedness to provide patient care. To facilitate this aim, reporting milestones are now required across all MS Otorhinolaryngology residency programs. Milestones promote competency-based training in otorhinolaryngology. Residency program directors may use them to track the progress of trainees in the 6 general competencies including patient care, Medical Knowledge, Practice-Based Learning and Improvement, Interpersonal and Communication Skills, Professionalism and Systems-Based Practice. Milestones inform decisions regarding promotion and readiness for independent practice. In addition, the milestones may guide curriculum development, suggest specific assessment strategies, provide benchmarks for resident self-directed assessment-seeking, assist remediation by facilitating identification of specific deficits and provide a degree of national standardization in evaluation. Finally, by explicitly enumerating the profession's expectations for graduates, they may improve public accountability for residency training.

Understanding Milestone Levels and Reporting

Tracking from Level 1 to Level 5 is synonymous with moving from novice to expert resident in the specialty or subspecialty. For each reporting period, the Clinical Competency Committee will review the completed evaluations to select the milestone levels that best describe each learner's

current performance, abilities, and attributes for each sub-competency. These levels do not correspond with post-graduate year of education. Depending on previous experience, a junior resident may achieve higher levels early in his/her educational program just as a senior resident may be at a lower level later in his/her educational program. There is no predetermined timing for a resident to attain any particular level. Residents may also regress in achievement of their milestones. This may happen for many reasons, such as over scoring in a previous review, a disjointed experience in a particular procedure, or a significant act by the resident. Selection of a level implies the resident substantially demonstrates the milestones in that level, as well as those in lower levels.

Systems-Based Practice: Patient Safety and Quality Improvement				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of common patient safety events Demonstrates knowledge of how to report patient safety events Demonstrates knowledge of basic quality improvement methodologies and	Identifies system factors that lead to patient safety events Reports patient safety events through institutional reporting systems (simulated or	Participates in analysis of patient safety events (simulated or actual) Participates in disclosure of patient safety events to patients and families (simulated or actual)	Conducts analysis of patient safety events and offers error prevention strategies (simulated or actual) Discloses patient safety events to patients and families (simulated or actual) Demonstrates the skills required to identify, develop,	Actively engages teams and processes to modify systems to prevent patient safety events Role models or mentors others in the disclosure of patient safety events Creates, implements, and assesses quality improvement

metrics	actual) Describes local quality improvement initiatives	Participates in local quality improvement initiatives	implement, and analyze a quality improvement project	initiatives at the institutional or community level
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Physician Role in Health Care Systems				
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies key components of the complex health care system (e.g., hospital, skilled nursing facility, finance, personnel, technology) Describes basic health payment systems, including government, private,	Describes how components of a complex health care system are interrelated, and how this impacts patient care Delivers care with consideration of each patient's payment model	Discusses how individual practice affects the broader system (e.g., length of stay, readmission rates, clinical efficiency) Engages with patients in shared decision making,	Manages various components of the complex health care system to provide efficient and effective patient care and transition of care Advocates for patient care needs (e.g.,	Advocates for or leads systems change that enhances high-value, efficient, and effective patient care and transition of care Participates in health policy advocacy activities Educates others to prepare them for transition to practice

public, uninsured care, and practice models Identifies basic knowledge domains for effective transition to practice (e.g., information technology, legal, billing and coding, financial, personnel)	(e.g., insurance type) Describes core administrative knowledge needed for transition to practice (e.g., contract negotiations, malpractice insurance, government regulation, compliance)	informed by each patient's payment models Demonstrates use of information technology required for medical practice (e.g., electronic health record, documentation required for billing and coding)	community resources, patient assistance resources) with consideration of the limitations of each patient's payment model Analyzes individual practice patterns and professional requirements in preparation for practice	
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Evidence-Based and Informed Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates how to access available evidence, and	Articulates clinical questions and elicits patient	Locates and applies the best available	Critically appraises and applies	Coaches others to critically appraise and apply evidence for

incorporate patient preferences and values to take care of a routine patient	preferences and values to guide evidence-based care	evidence, integrated with patient preference, to the care of complex patients	evidence even in the face of uncertainty and conflicting evidence to guide care to the individual patient	complex patients; and/or participates in the development of guidelines
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Reflective Practice and Commitment to Personal Growth				
Level 1	Level 2	Level 3	Level 4	Level 5
Accepts responsibility for personal and professional development by establishing goals Identifies the factors	Demonstrates openness to performance data (feedback and other input) to inform goals Analyzes and	Seeks performance data episodically, with adaptability Analyzes, reflects on, and institutes behavioral	Intentionally seeks performance data consistently with adaptability	Role models consistently seeking performance data with adaptability Coaches others on reflective practice Facilitates the design

which contribute to gap(s) between expectations and actual performance Actively seeks opportunities to improve	reflects on the factors which contribute to gap(s) between expectations and actual performance Designs and implements a learning plan, with prompting	change(s) to narrow the gap(s) between expectations and actual performance Independently creates and implements a learning plan	Challenges assumptions and considers alternatives in narrowing the gap(s) between expectations and actual performance Uses performance data to measure the effectiveness of the learning plan and when necessary, improves it	and implementing learning plans for others
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Interprofessional and Team Communication				
Level 1	Level 2	Level 3	Level 4	Level 5
Respectfully requests/receives a consultation Uses language that values all members of the health care team	Clearly and concisely requests/responds to a consultation Communicates information effectively with all health care team members Respectfully receives feedback on performance as a member of the health care team	Receives follow-up and feedback on the outcome of the consultation Uses active listening to adapt communication style to fit team needs Solicits feedback on performance as a member of the health care team	Coordinates recommendations from different members of the health care team to optimize patient care Communicates feedback and constructive criticism to superiors Communicates concerns and provides feedback to peers and learners	Role models flexible communication strategies that value input from all health care team members, resolving conflict when needed Facilitates health care team-based feedback in complex situations Facilitates teaching of team-based communication and feedback

Otologic Disease				
Level 1	Level 2	Level 3	Level 4	Level 5
Performs a history and physical examination in patients with ear disease and/or hearing loss Assists with set-up, performs placement of ventilation tubes, and opens and closes postauricular incisions Interprets routine audiograms	Formulates a diagnostic and treatment plan for a patient with ear disease and/or hearing loss Elevates tympanomeatal flap, performs cortical mastoidectomy Identifies surgical and disease-relevant anatomy on a computerized tomography (CT) scan	Orders routine diagnostic studies for ear disease and/or hearing loss Begins to perform middle ear dissection Identifies normal and disease-relevant anatomy on a magnetic resonance imaging (MRI)	Explains the risks, benefits, and alternatives of medical and surgical interventions for ear disease and/or hearing loss Dissects middle ear structures, performs a facial recess approach, and performs an ossicular reconstruction and cholesteatoma dissection Interprets specialized audiometric and	Adapts standard treatment plans and interventions to special circumstances Skeletonizes facial nerve, sigmoid sinus, and dura, and begins to perform lateral temporal bone resection Leads an otology patient care conference

			vestibular testing	
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Rhinologic Disease				
Level 1	Level 2	Level 3	Level 4	Level 5
Performs a history and physical examination in a patient with rhinologic disease Assists with routine perioperative care for patients with rhinologic disease Recognizes common complications associated with rhinologic disease	Formulates a diagnostic and treatment plan for a patient with rhinologic disease Provides routine perioperative care for patients with rhinologic disease Initiates work-up of common complications associated with rhinologic disease	Explains the risks and benefits of treatment plans for rhinologic disease Assists with routine surgical management for patients with rhinologic disease Manages common complications and recognizes uncommon/infrequent complications associated with rhinologic disease	Identifies when typical treatment plans should be modified Performs routine surgical management and assists with complex surgical management for patients with rhinologic disease Manages	Adapts standard treatment plans and techniques to special circumstances Performs complex surgical management for patients with rhinologic disease Serves as a peer resource for managing uncommon/infrequent complications associated with rhinologic disease

			uncommon/ infrequent complications associated with rhinologic disease	
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Laryngologic Disease				
Level 1	Level 2	Level 3	Level 4	Level 5
Performs a history and physical examination in patients with laryngologic disease Assists with routine perioperative care for patients with laryngologic disease Recognizes common complications associated with	Formulates a diagnostic and treatment plan for a patient with laryngologic disease Provides routine perioperative care for patients with laryngologic disease, including both direct and	Explains the risks and benefits of treatment plans for laryngologic disease Assists with routine surgical management for patients with laryngologic disease, including direct	Identifies when typical treatment plans should be modified Performs routine surgical management and assists with complex surgical	Adapts standard treatment plans and techniques to special circumstances Performs complex surgical management for patients with laryngologic disease, including laryngotracheal reconstruction and arytenoid procedures

laryngologic disease	indirect laryngoscopy Initiates work-up of common complications associated with laryngologic disease	laryngoscopy, microlaryngeal techniques, and vocal fold injections Manages common complications and recognizes uncommon/infrequent complications associated with laryngologic disease	management for patients with laryngologic disease Manages uncommon/infrequent complications associated with laryngologic disease	Serves as a peer resource for managing uncommon/infrequent complications associated with laryngologic disease
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Head and Neck Neoplasm				
Level 1	Level 2	Level 3	Level 4	Level 5
Performs a history and physical examination in patients with head and neck neoplasm Assists with routine peri-operative care for patients with head and neck neoplasm Recognizes common complications	Formulates a diagnostic plan for a patient with head and neck neoplasm Provides routine peri-operative care for patients with head and neck neoplasm Initiates work-up of common complications	Explains the risks and benefits of treatment plans for head and neck neoplasm Assists with routine surgical management for head and neck neoplasm Manages common complications and recognizes uncommon/infrquent complications	Describes typical treatment plan Performs routine surgical management for head and neck disease, assists with complex head and neck neoplasm Manages uncommon/infrquent complications	Adapts standard treatment plans and techniques to special circumstances Performs operative management of complex head and neck neoplasm Serves as a peer resource for managing uncommon/infrquent complications

Pediatric Otolaryngology				
Level 1	Level 2	Level 3	Level 4	Level 5
Performs an age-appropriate history and physical examination with developmental assessment Assists with pediatric otolaryngology procedures Provides routine peri-operative care for pediatric otolaryngology procedures	Formulates a diagnostic and treatment plan for a pediatric patient Performs routine pediatric procedures on typical patients (e.g., ear tube placement, tonsillectomy, adenoidectomy) Recognizes and initiates work-up of routine complications	Explains the risks and benefits of pediatric procedures; adapts diagnoses to age-related variations Performs routine pediatric procedures on atypical patients (e.g., syndromic), and airway and soft tissue pediatric otolaryngology procedures (e.g., bronchoscopy, branchial cleft excision) Manages routine complications and	Adapts standard treatment plans to special circumstances (e.g., syndromic children and infants) Performs airway and soft tissue pediatric procedures; assists with complex pediatric procedures Manages	Actively participates in discussion at an interdisciplinary pediatric case conference or specialty clinic Performs complex pediatric otolaryngology procedures Serves as a peer resource for managing uncommon/infrequent complications associated with pediatric procedures

	of treatment	recognizes complex complications of treatment	uncommon complications of treatment	
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Section VI

Evaluation & Assessment strategies

SECTION -VI

UNIVERSITY RESIDENCY PROGRAM OF RAWALPINDI MEDICAL UNIVERSITY: THE ASSESSMENT STRATEGIES FOR MS OTORHINOLARYNGOLOGY, HEAD & NECK SURGERY

The assessment component of the MS Otolaryngology curriculum at Rawalpindi Medical University, structured in alignment with the Accreditation Council for Graduate Medical Education (ACGME) guidelines, serves as a foundational pillar in evaluating and ensuring the competence of residents. The assessment system is designed to foster a comprehensive understanding of internal medicine through rigorous and multidimensional evaluation methods. These methods encompass formative and summative assessments, including direct observations, written exams, and 360-degree feedback, each of which provides critical insights into a resident's clinical knowledge, procedural skills, communication abilities, and professional behaviour. Assessments are pivotal in guiding teaching and learning, offering feedback that helps residents identify areas for improvement, advance their skills, and meet the standards of quality patient care. By maintaining robust assessment practices, the curriculum ensures that graduates are not only competent in their field but also embody the high standards of professionalism and patient-centered care central to medical practice.

Few definitions before we proceed further made to be clear:

1. What Is Competency?

The ability to do something successfully or efficiently.

2. What Is Competence?

Competency is described as what an individual is enabled to do while performance should describe what an individual actually does in clinical practice. The terms “performance” and “competency” are often used interchangeably.

3. What is performance-based assessment of curriculum?

Performance based assessment measures students’ ability to apply the skills & knowledge learned from a unit of study.

4. What is workplace-based assessment of curriculum?

The apprenticeship model of medical training has existed for thousands of years: the apprentice learns from watching the master and the master in turn observe the apprentice's performance & helps them improve. Performance assessment not therefore a new concept higher work in modern healthcare environment with its discourse of accountability, performance assessment increasing role in ensuring that professionals develop and maintain the knowledge and skills required for practice. However now it will be done in a structured manner.

5. What is a Formative Assessment?

- Such an Assessment which creates learning itself, from one's deficiencies.
- It is non-threatening for the students because it does not decide pass or fail.
- Provision of Feed back to the students is essential component of Formative Assessment

6. What is a Summative Assessment?

- Criteria Based High Stake Examinations
- Provision of Feedback to the students is not essential for Summative Examinations

7. What is continuous Internal Assessment?

A collection of Formative Assessments is called Continuous Internal Assessment

8. What is the basis of curriculum and Assessment of MS Otorhinolaryngology, Head & Neck Surgery of Rawalpindi Medical University Rawalpindi?

The curriculum of MS Otorhinolaryngology, Head & Neck Surgery of Rawalpindi Medical University Rawalpindi is derived from Accreditation Council for Graduate Medical education which is competency / performance-based system depends upon six following competencies.

- 1. Medical Knowledge**
- 2. Patient Care**
- 3. Interpersonal & Communication Skills**
- 4. Professionalism**

5. Practice Based Learning

6. System Based Learning

Rawalpindi Medical University Rawalpindi has two incorporated one additional component in this basic structure of six core competencies

7. Research

Distribution of weightage (if we consider total marks as 100) among various desired competencies of RMU Otorhinolaryngology MS curriculum:

1. Medical knowledge	40% both
2. Patient care	
3. Interpersonal & communication skills	40% both
4. Professionalism	
5. Practice based learning	10% both
6. System based learning	
7. Research	10%

Continuous Internal Assessment:

Competencies includedCIA	Phases of CIA	Timeline for end of various phases ofCIA	Weightage of CIA	Tools for Assessment of CIA
1. Medical knowledge 2. Patient care (40% both) 3. Interpersonal &	Phase -1 ➤ CIA Year 1 ➤ CIA Year 2	till end of Year 2	Equal to or more than 75% of the totalmarks of all formative assessments/ 360° Evaluations	• Multi source feedback/360 degree evaluation

communication skills 4. Professionalism (40%both) 5. Practice based learning 6. System based learning(10% both) 7. Research 10%)	Phase -2 ➤ CIA Year 3 ➤ CIA Year 4	till end of Year 4	Equal to or more than 75% of the totalmarks of all formative assessments/ 360° Evaluations	• MCQs for knowledge • Mini-CEX • Case based discussion • CPC presentations • TOACS/OSCE • Charts stimulated recall • Teaching rounds • Directly observed procedures • Research activities
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Details about various competencies required for MS Otorhinolaryngology, Head & Neck Surgery along with brief details of Teaching Strategies, Type of Assessment, weightagegiven to the competency & Tools of Assessment:

Sr. No	Competency to be assessed	Teaching & learning strategies	Type of Assessment for the competency to be assessed	% weightage of the competency	Tools of Assessment
1.	Medical knowledge	Case based discussion & problem-based learning, large group interactive session, self-directed learning, teaching rounds, and literature search.	Formative Assessment leading to continue internal assessment and summative assessment in highstake exams	40% for both Medical Knowledge and Patient Care both	MCQs, SEQs, Directly observe procedure, mini clinical examinations, charts, OSCE, teaching ward rounds, case discussion, seminars, topic presentation
2.	Patient care	Case based discussion, teaching rounds, morbidity & mortality meetings, 360 ⁰ feedback evaluation, DOPS, long case/ short case discussions OPDs, emergency indoor workshops, hands on trainings.	Formative assessment leading to continue internal assessment and summative assessment in high stake exams		Teaching rounds, case base discussion, presentations, CPC participations, clinical management, problem base learning, peer assisted learning, dealing with paramedics & patient attendants
3.	Professionalism	Teaching rounds, known conferences, workshops, hands on training, CPC, morbidity & mortality meetings, journal Club	Formative assessment leading to continue internal assessment	40% for both professionalism & interpersonal communication skills both	Working in OPDs, wards, emergency, operation theatres, DOPs, clinical case discussion, dealing with paramedics, meeting with supervisor & mentors, mini clinical examination

4.	Interpersonal & communication skills	Teaching rounds, hands on training, workshops related to research methodology, SPSS, data entry, LGIS, session with supervisor & mentors, session with research units, SDL,	Formative assessment leading to continuous internal assessment		Multi source & 360 degree evaluation.
5.	Practice based learning	Case based discussion, teaching rounds, known conferences, morbidity & mortality meetings, OPDs, emergency indoor workshops, hands on trainings.	Formative assessment leading to continuous internal assessment Multi source & 360 degree evaluation (Logbook & portfolio)	10% both Practice Based Learning & System Based Learning both	Working in OPDs, wards, emergency, operation theatres, DOPs, clinical case discussion, dealing with paramedics, meeting with supervisor& mentors, mini clinical examination
6.	System based learning	Working in wards, OPDs, Emergency, operation theatres	Formative assessment leading to continuous internal assessment Multi source & 360 degree evaluation (Logbook & portfolio)		Working in OPDs, wards, emergency DOPs, clinical case discussion, dealing with paramedics, meeting with supervisor & mentors, mini clinical examination
7.	Research	Large group Interactive sessions on Research, hands on training & workshops, practical work of research including literature search, finding research question, synopsis writing, data collection, data analysis, thesis writing	Formative leading to continuous internal assessment Multi source & 360 degree evaluation (Logbook & portfolio) & also Summative assessment	10%	Approval of research topic and synopsis & thesis from URTMC, Board of Advanced studies and Research and ethical review board, Requirement of Completion certificate of research workshops as eligibility criteria for examinations, Defense of Thesis examination

Framework of Assessment Plan for MS Otorhinolaryngology, Head & Neck Surgery Training Program:

S.NO.	Year of Examination	Name of Examination & type of Assessment	Competencies to be Assessed with weightage	Eligibility criteria	Pass Marks required	Total No. of Assessments
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1	At the End of Year 1	In Training -Assessment year1 (Formative Assessment)	1. Medical knowledge 2. Patient care (40% both) 3. Interpersonal & communication skills 4. Professionalism (40% both) 5. Practice based learning 6. System based learning (10% both) 7. Research (10%)	1. 75% or above of CIA the total marks will be considered as eligible 2. Submission of certificates of completion of the Following Mandatory workshops: Communication skills----- 3 days Computer & IT skills ----- 3 days Synopsis writing -----3 days Basic Life Support----- 2 days 3. Submission of certificate of approval of Research Topic/Affidavit that if certificate of approval of Research Topic will not be provided within 30 days of submission of Application for in training examination no.1, the candidate will not be allowed to take examination. 4. Publication of one article in Resident Research Journal (for five-year training program only) 5. OR Statistical report of one disease (for five-year training program only) 6. Completed and duly signed Log Book for Year one 7. Completed and duly signed Portfolio for Year one 8. Submission of certificate of Continuous Internal Assessment for year one: Equal to or more than 75% (a cumulative score of the year one) 9. Certificate of completion of First year Training duly signed by the Supervisor	Not applicable as it is a Formative Assessment	04 evaluations in one year (total evaluations in four years =16) 02 Formative and 02 Summative Assessments in four years.
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				10. Submission of evidence of payment of examination Fee for year-1 examination 11. Submission of no dues certificate from all relevant departments including Library, Hostel, Cashier etc. for year one of training		
2	At the end of Year-2	Mid Training Assessment (Summative Assessment)		1. 75% or above of CIA the total marks will be considered as eligible 2. Submission of Pass Result of Examination of Year-1 3. Submission of certificates of completion of the Following Mandatory workshops: Research methodology & Biostatistics----- -----3 days Professionalism 2 days SPSS (Statistical Package for Social Sciences) 2 days 4. Submission of certificate of approval of Research Protocol/Synopsis or undertaking /Affidavit that if approved synopsis will not be provided within 30 days of submission of Application for Intermediate Module Examination, the candidate will not be allowed to take examination. 5. Publication of one article in Resident Research Journal (for five-year training program only) 6. OR Statistical report of one disease (for five-year training program only) 7. Completed and duly signed Log	Details Described at the end 60% pass marks	

				Book for year one and two 8. Completed and duly signed Portfolio for year one and two 9. Submission of certificate of Continuous Internal Assessment for year one: Equal to or more than 75% (a cumulative score of the year one and two both) 10. Certificate of completion of second year of Training duly signed by the Supervisor 11. Submission of evidence of payment of examination Fee for intermediate Module Examination: Examination Fee once deposited cannot be refunded/carried over the next examination under any circumstances. 12. Submission of no dues certificate from all relevant departments including Library, Hostel, Cashier etc. for year two of training		
3	At the end of Year - 3	In Training -Assessment year 3 (Formative Assessment)		1. Submission of Pass result Mid Training Examination 2. Submission of certificates of completion of the Following Mandatory workshops : Reference Manager (Endnote)-- -1 day Mandalay 1 day 3. Submission of certificate of verification of Data Collection orundertaking /Affidavit that if the certificate of verification of DataCollection will not be provided within 30 days of submission of Application for in training examination no.2, the	Not applicable as it is a Formative Assessment	

				candidate will not be allowed to take examination. 4. Publication of one article in Resident Research Journal (for five-year training program only) 5. OR Statistical report of one disease (for five-year training program only) 6. Completed and duly signed logbook for year three 7. Completed and duly signed Portfolio for year three 8. Submission of certificate of Continuous Internal Assessment for year three: Equal to or more than 75% (a cumulative score of the year three) 9. Certificate of completion of third year of Training duly signed by the Supervisor 10. Submission of evidence of payment of examination Fee for in training examination no.2: Examination Fee once deposited cannot be refunded/carried over the next examination under any circumstances 11. Submission of no dues certificate from all relevant departments including Library, Hostel, Cashier etc. For year three		
4	At the end of year-4	Final Assessment for four-year program (Summative Assessment)		1. 75% or above of CIA the total marks will be considered as eligible 2. Submission of Pass result of In Examination year-3 3. Submission of certificates of completion of the	Details Described at the end 60% Pass marks	

				workshops: 4. Can attend any required workshop optionally if He or She wants and can submit the certificate 5. Submission of certificate of approval of Thesis or undertaking /Affidavit that if approved synopsis within 30 days of submission of Application for Final Examination, the candidate will not be allowed to take examination. 6. Publication of one article in Resident Research Journal (for five-year training program only) OR Statistical report of one disease (for five year training program only) 7. Completed and duly signed Log Book for year three and four 8. Completed and duly signed Portfolio for year three and four 9. Submission of certificate of Continuous Internal Assessment for year three and four: Equal to or more than 75% (a cumulative score of the year three and four) 10. Certificate of completion of Fourth year of Training duly signed by the Supervisor 11. Submission of evidence of payment of examination Fee for Final Examination. Examination Fee once deposited cannot be refunded/carried over the next examination under any circumstances		
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				12. Submission of no dues certificate from all relevant departments including Library, Hostel, Cashier etc. For year four only		
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TABLE OF SPECIFICATION & NOMENCLATURE

Details about Content, number of questions (MCQs &SEQs) and Marks of various High Stake/ Summative Examinations

Name of examination	Content	Eligibility criteria	Questions MCQs/SEQs/TOACS																														
In-Training- Assessment Year-1 (at the end of year 1)	- Otology - Rhinology - Laryngopharyngology - Head & Neck - General Surgery - Neurosurgery - Symptoms analysis - Clinical methods/signs interpretation - Differential diagnosis - Basic investigations - Counseling &ethics - Management of common emergencies - Basic Surgical procedures	i. Completion of 1 year training ii. Workshops completion - Communication skills ----- 3days - Computer &IT skills ----- 3days - Synopsis writing ----- 3days - BLS-----2days iii. Research - Allotment of Thesis topic by supervisor - Publication of one article in Resident Research Journal OR Statistical report of one disease iv. CIS- Minimum 75% marks- Certification by DME and Supervisor/s Special note: Students with less than 75% CIS, such cases will be referred to relevant academic review committee which will work under the umbrella of DME/ UTMC	A. Written Assessment for year -1 total marks 100 (10 SAQs) <i>(Pass percentage: 50%)</i> Table of Specification for written Assessment <table><tr><th>Sr.no</th><th>Discipline</th><th>SAQ</th></tr><tr><td>1.</td><td>Otology</td><td>2</td></tr><tr><td>2.</td><td>Rhinology</td><td>1</td></tr><tr><td>3.</td><td>Laryngology</td><td>1</td></tr><tr><td>4.</td><td>Pharyngology</td><td>1</td></tr><tr><td>5.</td><td>Head & Neck Tumors</td><td>1</td></tr><tr><td>6.</td><td>Pediatric Otolaryngology</td><td>1</td></tr><tr><td>7.</td><td>General Surgery</td><td>1</td></tr><tr><td>8.</td><td>Neurosurgery</td><td>1</td></tr><tr><td>9.</td><td>Maxillofacial</td><td>1</td></tr></table>	Sr.no	Discipline	SAQ	1.	Otology	2	2.	Rhinology	1	3.	Laryngology	1	4.	Pharyngology	1	5.	Head & Neck Tumors	1	6.	Pediatric Otolaryngology	1	7.	General Surgery	1	8.	Neurosurgery	1	9.	Maxillofacial	1
Sr.no	Discipline	SAQ																															
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6.	Pediatric Otolaryngology	1																															
7.	General Surgery	1																															
8.	Neurosurgery	1																															
9.	Maxillofacial	1																															

			Up to 10% Questions may be from any topic B- Clinical Assessment (100marks) On passing the theory, trainee will be eligible to appear in practical exam. Pass marks 50%. Five Interactive OSCE (Rhinology, Otology, Pharyngology, General Surgery, Counselling Scenario (each of 10 marks)
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Mid Training Assessment (MTA) at the end of year 2	• Basic Sciences and endocrine • Otology • Rhinology • Laryngopharyngology • Head & Neck • General Surgery • Neurosurgery • Symptoms analysis • Clinical methods/signs interpretation • Differential diagnosis • Basic investigations • Counseling &ethics • Management of common emergencies • Basic Surgical procedures • Recent advances	i- Completion of 2-year training ii- Passed Year One examination iii-Rotations completion Three rotations (each of 2 months- to be completed in first two years) 1. General Surgery 2. Neurosurgery 3. Maxillofacial iv- Research: • Formulation of research synopsis with approval of ERB & BASR by the end of 2nd year • Certificate will be issued by UTMC v- CIS- Minimum 75% marks minimum 75% marks- Certification by DME and Supervisor/s Special note: Students with less than 75% CIS, such cases will be referred to relevant academic review committee which will work under the umbrella of DME/ UTMC	A – Mid Training Assessment (total marks = 300) B - Written Assessment (150 marks) Two papers of case based 75 MCQs-----total marks 150 <i>(Pass percentage = 60%)</i> C- Table of Specification for paper I & II PAPER-I(Basic Otolaryngology) <table><tr><th><i>Sr.no</i></th><th><i>Discipline</i></th><th><i>MCQs</i></th></tr><tr><td>1.</td><td>Basic sciences</td><td>15</td></tr><tr><td>2.</td><td>Sino Rhinology</td><td>15</td></tr><tr><td>3.</td><td>Otology+ otoneurology</td><td>15</td></tr><tr><td>4.</td><td>Oral cavity</td><td>15</td></tr><tr><td>5.</td><td>Head & Neck</td><td>10</td></tr><tr><td>6.</td><td>General Surgery</td><td>02</td></tr><tr><td>7.</td><td>Neurosurgery</td><td>02</td></tr><tr><td>8.</td><td>Maxillofacial</td><td>01</td></tr></table> PAPER-II (Advanced Otolaryngology) <table><tr><th><i>Sr.no</i></th><th><i>Discipline</i></th><th><i>MCQs</i></th></tr><tr><td>1.</td><td>Otology+ otoneurology</td><td>15</td></tr><tr><td>2.</td><td>Sino-rhinology</td><td>15</td></tr><tr><td>3.</td><td>Laryngopharyngology</td><td>15</td></tr><tr><td>4.</td><td>Head & Neck</td><td>15</td></tr></table>	<i>Sr.no</i>	<i>Discipline</i>	<i>MCQs</i>	1.	Basic sciences	15	2.	Sino Rhinology	15	3.	Otology+ otoneurology	15	4.	Oral cavity	15	5.	Head & Neck	10	6.	General Surgery	02	7.	Neurosurgery	02	8.	Maxillofacial	01	<i>Sr.no</i>	<i>Discipline</i>	<i>MCQs</i>	1.	Otology+ otoneurology	15	2.	Sino-rhinology	15	3.	Laryngopharyngology	15	4.	Head & Neck	15
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3.	Laryngopharyngology	15																																											
4.	Head & Neck	15																																											

			5. Pediatric Otolaryngology	13
			6. Maxillofacial	01
			7. General Surgery	01
Up to 10% Questions may be from any topic D- Clinical Assessment (OSCE 150 marks) On passing the theory, trainee will be eligible to appear in OSCE comprising 15 Stations. <i>(Pass percentage = 60%)</i>				

TOS MTA MS OTORHINOLARYNGOLOGY (CALGARY MODEL)

PAPER I:

1.Basic sciences	Impact (1-3)	Frequency (1-3)	I×F(Impact Frequency)	Weightage	%(×100)	No of items	Rounded off	CI Features	Investigations	Treatment
Microbiology	1	2	2	0.037037	3.7	0.37	0	-	-	-
Wound Healing	1	3	3	0.055556	5.5	0.55	1	1	-	-
Haematology	1	1	1	0.018518	1.8	0.18	0	-	-	-
Pharmacotherapeutics	2	3	6	0.111111	11.1	1.1	1	-	-	1
Perioperative management	3	3	9	0.166667	16.6	1.6	2	2	-	-
Postop care	3	3	9	0.166667	16.6	1.6	2	1	-	1
Safe and effective practice	3	3	9	0.166667	16.6	1.6	2	-	-	2
Blood transfusion	1	1	1	0.018518	1.8	0.18	0	-	-	-
Fluid & electrolyte balance	1	1	1	0.018518	1.8	0.18	0	-	-	-
Types of shocks	1	1	1	0.018518	1.8	0.18	0	-	-	-
Bleeding disorders	2	1	2	0.037037	3.7	0.37	0	-	-	-
Sterilization & disinfection	3	3	9	0.166667	16.6	1.6	2	2	-	-
Total parenteral nutrition	1	1	1	0.018518	1.8	0.18	0	-	-	-
			54			10	10			

2.Sinorhinology	Impact (1-3)	Frequency (1-3)	I×F (Impact Frequency)	Weightage	%(×100)	No of items	Rounded off	CI Features	Investigations	Treatment
Anatomy of nose and PNS	1	1	1	0.018518	1.8	0.27	1	1	-	-

Physiology Of nose +PNS	1	1	1	0.018518	1.8	0.27	1	1	-	-
Allergic Rhinitis	3	3	9	0.166667	16.6	2.49	2	-	1	1
Non allergic rhinitis	2	3	6	0.111111	11.1	1.66	2	-	1	1
Rhinosinusitis	3	3	9	0.166667	16.6	2.49	2	-	1	1
Nasal polypi	3	3	9	0.166667	16.6	2.49	2	-	1	1
Nasal septum + nasal wall	1	1	1	0.018518	1.8	0.27	1	1	-	-
Epistaxis	3	3	9	0.166667	16.6	2.49	2	-	1	1
Juvenile Angiofibroma	3	3	9	0.166667	16.6	2.49	2	1	1	-
			54			15	15			

3.Otology+Otoneurology	Impact (1-3)	Frequency (1-3)	IxF (Impact Frequency)	Weightage	%(×100)	No of items	Rounded off	CI Features	Investigations	Treatment
Anatomy and embryology of Ext and middle ear	1	1	1	0.015384	1.5	0.22	0	-	-	-
Anatomy of cochlea and vestibular system	2	1	2	0.030769	3.0	0.45	0	-	-	-
Physiology of hearing	1	1	1	0.015384	1.5	0.22	0	-	-	-
Tinnitus and hyperacusis	2	2	4	0.061538	6.1	0.91	1	1	-	-
Hearing assessment	2	3	6	0.092307	9.2	1.38	1	1	-	-
Hearing Aids	2	3	6	0.092307	9.2	1.38	1	1	-	-
Furunculosis	3	3	9	0.138461	13.8	2.07	2	1	-	1
Otitis externa+ otomycosis	3	3	9	0.138461	13.8	2.07	2	1	1	-
Perichondritis	3	2	6	0.092307	9.2	1.38	2	1	-	1
Chronic otitis media	3	3	9	0.138461	13.8	2.07	2	1	-	1
Otalgia	2	3	6	0.092307	9.2	1.38	2	1	1	-
Ear Trauma	2	3	6	0.092307	9.2	1.38	2	1	1	-
			65			15	15			

4.Oral cavity	Impact (1-3)	Frequency (1-3)	IxF (Impact Frequency)	Weightage	%(×100)	No of items	Rounded off	CI Features	Investigations	Treatment
Anatomy and embryology of mouth and dentition	1	1	1	0.0175438	1.75	0.26	1	1	-	-
Benign oral diseases	3	3	9	0.1578947	15.78	2.36	2	1	1	-
Inflammatory conditions of oral cavity	3	3	9	0.1578947	15.78	2.36	3	1	1	1
Infective conditions of oral	3	3	9	0.1578947	15.78	2.36	3	1	1	1

cavity										
Acute & chronic tonsillitis	3	3	9	0.1578947	15.78	2.36	2	1	1	-
Adenoiditis & its management	3	3	9	0.1578947	15.78	2.36	2	1	1	-
Tonsillectomy	3	3	9	0.1578947	15.78	2.36	2	1	1	-
			57			15	15			

5.Head & Neck	Impact (1-3)	Frequency (1-3)	I×F (Impact Frequency)	Weightage	%(×100)	No of items	Rounded off	CI Features	Investigations	Treatment
Etiology of head and neck cancers	3	3	9	0.2903225	29.03	2.90	2	1	1	-
Staging of head & neck cancers	2	2	4	0.1290322	12.90	1.29	2	1	1	-
Basic principles of Chemotherapy	3	3	9	0.2903225	29.03	2.90	3	1	1	1
Basic principles of Radiotherapy	3	3	9	0.2903225	29.03	2.90	3	1	1	1
			31			10	10			

6.General Surgery	Impact(1-3)	Frequency(1-3)	I×F(Impact Frequency)	Weightage	%(×100)	No of items	Rounded off	CI Features	Investigations	Treatment
Blood transfusion	1	1	1	0.5	50	1	1	-	-	1
Fluid & electrolyte balance	1	1	1	0.5	50	1	1	-	-	1
			2			02	02			

7.Neurosurgery	Impact (1-3)	Frequency (1-3)	I×F (Impact Frequency)	Weightage	%(×100)	No of items	Rounded off	CI Features	Investigations	Treatment
Management of intracranial complications of CSOM	3	3	9	1	100	2	2	-	1	1
			9			02	02			

8.Maxillofacial	Impact (1-3)	Frequency (1-3)	I×F (Impact Frequency)	Weightage	%(×100)	No of items	Rounded off	CI Features	Investigations	Treatment
Midfacial fractures	1	1	1	1	100	1	1	-	-	1
			1			01	01			

PAPER II:

1.Otology+otoneurology	Impact (1-3)	Frequency (1-3)	I×F (Impact Frequency)	Weightage	%(×100)	No of items	Rounded off	CI Features	Investigations	Treatment
Prevention of hearing loss	3	1	3	0.0517241	5.17	0.775	1	-	-	1
Otoneurology	1	1	1	0.0172413	1.72	0.258	0	-	-	-
Meniere's Disease	3	2	6	0.1034482	10.34	1.551	2	-	1	1
BPPV	3	3	9	0.1551724	15.51	2.326	2	-	1	1
Myringitis	2	1	2	0.0344827	3.44	0.516	0	-	-	-
Exostosis	2	2	4	0.0689655	6.89	1.033	1	-	-	1
Acute otitis media	3	3	9	0.1551724	15.51	2.326	2	1	-	1
Otitis media with effusion	3	3	9	0.1551724	15.51	2.326	2	1	1	-
Myringoplasty	3	3	9	0.1551724	15.51	2.326	2	-	1	1
Ear trauma	3	3	9	0.1551724	15.51	2.326	2	1	-	1
Eustachian tube function	3	3	6	0.1034482	10.34	1.551	1	1	-	1
			58			15	15			

2.Sino-rhinology	Impact (1-3)	Frequency (1-3)	I×F (Impact Frequency)	Weightage	%(×100)	No of items	Rounded off	CI Features	Investigations	Treatment
Surgical management of Rhinosinusitis	3	3	9	0.209302	20.93	3.13	3	-	1	2
Complications of rhinosinusitis	3	3	9	0.209302	20.93	3.13	3	1	1	1
Nasal septal perforations	3	2	6	0.139534	13.95	2.09	2	1	-	1
Abnormalities of smell	1	1	1	0.023255	2.325	0.34	1	-	-	1
Angiofibroma	3	3	9	0.209302	20.93	3.13	3	1	1	1
Management of enlarged turbinates	3	3	9	0.209302	20.93	3.13	3	1	1	1
			43			15	15			

3.Laryngopharyngology	Impact (1-3)	Frequency (1-3)	I×F (Impact Frequency)	Weightage	%(×100)	No of items	Rounded off	CI Features	Investigations	Treatment
Anatomy of pharynx + esophagus	1	1	1	0.024390	2.43	0.364	0	-	-	-
Physiology of swallowing	1	1	1	0.024390	2.43	0.364	0	-	-	-
Causes and assessment of dysphagia and aspiration	2	2	4	0.097560	9.75	1.462	1	1	-	-
Pharyngitis	3	3	9	0.219512	21.95	3.292	3	1	1	1
Anatomy of larynx+	2	2	4	0.097560	9.75	1.462	1	1	-	-

tracheobronchial tree										
Physiology of the larynx	1	1	1	0.024390	2.43	0.364	0	-	-	-
Assessment of larynx	2	1	2	0.048780	4.87	0.730	1	-	1	-
Structural disorders of vocal cords	2	2	4	0.097560	9.75	1.462	2	1	1	-
Functional disorders of voice	3	2	6	0.146341	14.63	2.194	3	1	1	1
Acute infections of larynx and chronic laryngitis	3	3	9	0.219512	21.95	3.292	4	1	1	2
			41			15	15			

4.Head & Neck	Impact (1-3)	Frequency (1-3)	I×F (Impact Frequency)	Weightage	%(×100)	No of items	Rounded off	CI Features	Investigations	Treatment
Surgical anatomy of neck	3	2	6	0.171428	17.1428	2.57142	2	1	1	
Complications & management of chemotherapy	2	1	2	0.057142	5.7142	0.85713	1	1		
Complications & management of radiotherapy	2	1	2	0.057142	5.7142	0.85713	1	1		
Management of cervical lymphadenopathy	2	2	4	0.114285	11.4285	1.7142	2		1	1
Imaging of the neck	3	3	9	0.25714	25.714	3.8571	4		4	
Neck trauma	2	1	2	0.057142	5.7142	0.85713	1			1
Benign neck disease	2	2	4	0.114285	11.4285	1.7142	2	1	1	
Neck space infections	3	2	6	0.171428	17.1428	2.57142	2	1		1
			35			15	15			

5.Paediatric Otolaryngology	Impact (1-3)	Frequency (1-3)	I×F (Impact Frequency)	Weightage	%(×100)	No of items	Rounded off	CI Features	Investigations	Treatment
Syndromic child	1	1	1	0.027027	2.7027	0.351351	0			
Hearing screening& surveillance	3	2	6	0.162162	16.2162	2.108106	2	1	1	
Epistaxis	3	3	9	0.243243	24.3243	3.1621	3	1	1	1
Paediatric rhinosinusitis+ its complications	2	2	4	0.10810	10.810	1.4053	2	1		1
Paediatric OSA	3	2	6	0.162162	16.2162	2.108106	2	1		1
Stridor	3	1	3	0.08108	8.108	1.05404	1			1
Foreign body ear, nose, throat	2	3	6	0.162162	16.2162	2.108106	2	1		1

Juvenile respiratory Papillomatosis	2	1	2	0.054054	5.4054	0.70270	1	1		
			37			13	13			

6.Gen surgery	Impact (1-3)	Frequency (1-3)	I×F (Impact Frequency)	Weightage	%(×100)	No of items	Rounded off	CI Features	Investigations	Treatment
Sterilization & disinfection	2	1	2	1	100	1	1	1		
			2			1				

7.Maxillofacial	Impact (1-3)	Frequency (1-3)	I×F (Impact Frequency)	Weightage	%(×100)	No of items	Rounded off	CI Features	Investigations	Treatment
Jaw cysts	1	1	1	1	100	1	1	1		
			1			1				

In-Training AssessmentYear-3 (at the end of year 3)	• Otology • Rhinology • Laryngopharyngology • Head & Neck • General Surgery • Neurosurgery • Symptoms analysis • Clinical methods/signs interpretation • Differential diagnosis • Basic investigations • Counseling &ethics • Management of commonemergencies • Basic Surgical procedures	i. Completion of 3rd year training ii. Passed Intermediate examination iii. Workshops completion • Reference Manager (Endnote)---1 day iv. Research • data collection • data analysis & interpretation • start writing thesis v.Publication of one article in resident research journal orstatistical report of 11 disease(optional) vi. CIS MINIMUM 75% marks minimum 75% marks certification by DME and Supervisors/s Special note: Students with less than 75% CIS, such cases will be referred to relevant academic review committee which will work under the umbrella of DME/UTMC	A- Written Assessment (100 marks) ➤ 100 MCQs ----- total marks 100 (100 clinical MCQs) (Pass percentage = 50%) B- Table of Specification <table><tr><th>Sr.no</th><th>Discipline</th><th>MCQs</th></tr><tr><td>1.</td><td>Otology</td><td>15</td></tr><tr><td>2.</td><td>Rhinology</td><td>15</td></tr><tr><td>3.</td><td>Laryngology</td><td>15</td></tr><tr><td>4.</td><td>Pharyngology</td><td>10</td></tr><tr><td>5.</td><td>Head & Neck</td><td>10</td></tr><tr><td>6.</td><td>Paediatric Otolaryngology</td><td>10</td></tr><tr><td>7.</td><td>General Surgery</td><td>10</td></tr><tr><td>8.</td><td>Neurosurgery</td><td>5</td></tr><tr><td>9.</td><td>Plastic Surgery</td><td>5</td></tr><tr><td>10.</td><td>Maxillofacial</td><td>5</td></tr></table> Up to 10% Questions may be from any topic B- Clinical Assessment (120 marks) On passing the theory, trainee will be eligible to appear in practical assessment. Pass marks 50%. • Four short cases total 60 marks (each of 15 marks) • One long case 60 marks	Sr.no	Discipline	MCQs	1.	Otology	15	2.	Rhinology	15	3.	Laryngology	15	4.	Pharyngology	10	5.	Head & Neck	10	6.	Paediatric Otolaryngology	10	7.	General Surgery	10	8.	Neurosurgery	5	9.	Plastic Surgery	5	10.	Maxillofacial	5
Sr.no	Discipline	MCQs																																		
1.	Otology	15																																		
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6.	Paediatric Otolaryngology	10																																		
7.	General Surgery	10																																		
8.	Neurosurgery	5																																		
9.	Plastic Surgery	5																																		
10.	Maxillofacial	5																																		

Final Assessment (FTA)at the end of year 4	• Basic Sciences and endocrine • Otology • Rhinology • Laryngopharyngology • Head & Neck • General Surgery • Neurosurgery • Symptoms analysis • Clinical methods/signs interpretation • Differential diagnosis • Basic investigations • Counseling &ethics • Management of common emergencies • Basic Surgical procedures • Recent advances	i- Completion of 4th year trainingii- Passed 3rd year examination iii- Research/Thesis • Completion & submission of Thesis 6 monthsbefore completion of training • Defense & Approval of Thesis in BASR • Certificate will be issued by UTMCIv. CIS Minimum 75% marks- Certification by DMEand Supervisor/s v. Rotations: Plastic Surgery Rotation(2 months- to be completed in third years) Special note: Students with less than 75% CIS, such cases will be referred to relevant academic review committee whichwill work under the umbrella of DME/ UTMCI.	(Total Marks = 800) A. Written Assessment (200 marks) PAPER-I- Case Based 100 MCQs---(100 marks)PAPER-II Case Based 100 MCQs---(100 marks)Case Based Clinical MCQs of C3 level Pass percentage = 60% B- Table of Specification for paper I & IIPAPER-I <table><tr><th><i>Sr.no</i></th><th><i>Discipline</i></th><th><i>MCQs</i></th></tr><tr><td>1.</td><td>Endocrinology+ Advances in ENT</td><td>25</td></tr><tr><td>2.</td><td>Sino Rhinology</td><td>25</td></tr><tr><td>3.</td><td>Otology+ otoneurology</td><td>20</td></tr><tr><td>4.</td><td>Salivary gland</td><td>5</td></tr><tr><td>5.</td><td>Head & Neck</td><td>20</td></tr><tr><td>6.</td><td>General Surgery</td><td>2</td></tr><tr><td>7.</td><td>Neurosurgery</td><td>2</td></tr><tr><td>8.</td><td>Plastic Surgery</td><td>1</td></tr></table> PAPER-II <table><tr><th><i>Sr.no</i></th><th><i>Discipline</i></th><th><i>MCQs</i></th></tr><tr><td>1.</td><td>Otology+ otoneurology</td><td>25</td></tr><tr><td>2.</td><td>Sino-rhinology</td><td>20</td></tr><tr><td>3.</td><td>Laryngopharyngology</td><td>20</td></tr><tr><td>4.</td><td>Head & Neck</td><td>20</td></tr><tr><td>5.</td><td>Paediatric Otolaryngology</td><td>12</td></tr><tr><td>6.</td><td>Maxillofacial</td><td>1</td></tr><tr><td>7.</td><td>General Surgery</td><td>2</td></tr></table> Up to 10% Questions may be from any topic C- Clinical Assessment (500 marks) On passing the theory, trainee will be eligible to appear inpractical exam. Pass marks 60%. • Four short cases total 200marks (each of 50 marks) • One long case150 marks • OSCE (15 stations) -----150 marks D- Defense of Thesis (100 marks) • Presentation: 30 marks • Discussion :70 marksPass percentage = 60%	<i>Sr.no</i>	<i>Discipline</i>	<i>MCQs</i>	1.	Endocrinology+ Advances in ENT	25	2.	Sino Rhinology	25	3.	Otology+ otoneurology	20	4.	Salivary gland	5	5.	Head & Neck	20	6.	General Surgery	2	7.	Neurosurgery	2	8.	Plastic Surgery	1	<i>Sr.no</i>	<i>Discipline</i>	<i>MCQs</i>	1.	Otology+ otoneurology	25	2.	Sino-rhinology	20	3.	Laryngopharyngology	20	4.	Head & Neck	20	5.	Paediatric Otolaryngology	12	6.	Maxillofacial	1	7.	General Surgery	2
<i>Sr.no</i>	<i>Discipline</i>	<i>MCQs</i>																																																				
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7.	Neurosurgery	2																																																				
8.	Plastic Surgery	1																																																				
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**MS MEDICINEOTORHINOLARYNGOLOGY, HEAD & NECK FTA
CALGARY TOS**

PAPER I:

1.Endocrinology+Advances in ENT	Impact (1-3)	Frequency (1-3)	IxF (Impact Frequency)	Weightage	%(×100)	No of items	Rounded off	CI Features	Investigations	Treatment
Recent advances	2	1	2	0.060606	6.0606	1.51515	1	-	-	1
Laser Principles in Otolaryngology	2	1	2	0.060606	6.0606	1.51515	1	-	-	1
Image guided surgery, 3-D planning and reconstruction	2	1	2	0.060606	6.0606	1.51515	1	-	1	-
Developmental anatomy of thyroid and parathyroid	2	2	4	0.121212	12.1212	3.03025	3	1	1	1
Imaging in H&N Endocrine disease	3	3	9	0.272727	27.2727	6.818175	7	3	4	-
Benign thyroid disease	2	2	4	0.121212	12.1212	3.03025	3	1	1	1
Thyroidectomy	2	2	4	0.121212	12.1212	3.03025	3	1	1	1
Minimally invasive and robotic thyroid surgery	2	1	2	0.060606	6.0606	1.51515	1	-	-	1
Clinical evaluation of hypocalcemia	3	1	3	0.090909	9.0909	2.2725	1	-	1	-
Investigation & management of Hyperthyroidism	1	1	1	0.030303	3.0303	0.7575	1	-	1	-
Complications of thyroid and parathyroid surgery	2	2	4	0.121212	12.1212	3.03025	3	1	1	1
			33			25	25			

2.Sinorhinology	Impact (1-3)	Frequency (1-3)	IxF (Impact Frequency)	Weightage	No of items	Rounded off	CI Features	Investigations	Treatment
Fungal rhinosinusitis	2	2	4	0.25	6.25	6	2	2	2
Frontal sinus	1	1	1	0.0625	1.5625	2	1	-	1
Mucocele of paranasal sinuses	2	1	2	0.125	3.125	3	1	1	1
Nasal and facial fractures	2	3	6	.375	9.375	10	4	3	3
CSF Leaks	3	1	3	0.1875	4.6875	4	1	2	1
			16		25	25			

3.Otology+Otoneurology	Impact (1-3)	Frequency (1-3)	I×F (Impact Frequency)	Weightage	No of items	Rounded off	CI Features	Investigations	Treatment
Hearing Aids	2	1	2	0.07407	1.4814	2	-	1	1
otosclerosis	3	2	6	0.22222	4.44444	4	1	1	2
NIHL	2	1	2	0.07407	1.4814	2	-	1	1
Ototoxicity	2	1	2	0.07407	1.4814	1	1	-	
Idiopathic sudden sensorineural HL	3	1	3	0.11111	2.22222	2	1	-	1
Evaluation of balance	1	1	1	0.03703	0.74074	1	1	-	-
Vestibular neuritis	2	1	2	0.07407	1.4814	2	1	-	1
Vestibular migraine	2	1	2	0.07407	1.4814	1	1	-	-
Keratitis obturans	2	1	2	0.07407	1.4814	1	1	-	-
Auditory canal cholesteatoma+ benign necrotizing OE	2	1	2	0.07407	1.4814	1	-	1	-
Oto-endoscopy	1	1	1	0.03703	0.74074	1	-	1	-
Age related sensorineural hearing impairment	2	1	2	0.07407	1.4814	2	1	1	-
			27		20	20			

4.Salivary gland	Impact (1-3)	Frequency (1-3)	I×F (Impact Frequency)	Weightage	No of items	Rounded off	CI Features	Investigations	Treatment
Anatomy of salivary gland	2	1	2	0.14285	0.71428	1	1	-	-
Benign conditions of salivary gland	2	2	4	0.28571	1.42857	1	1	-	-
Inflammatory conditions of salivary gland	2	2	4	0.28571	1.42857	2	1	1	-
Imaging of salivary gland	2	2	4	0.28571	1.42857	1	-	1	-
			14		5				

5.Head & Neck	Impact (1-3)	Frequency (1-3)	I×F (Impact Frequency)	Weightage	No of items	Rounded off	CI Features	Investigations	Treatment
Foreign body esophagus	2	2	4	0.12121	2.42424	2	1	-	1
Foreign body air passages	2	2	4	0.12121	2.42424	2	1	-	1
Nasopharyngeal Ca	3	1	3	0.09090	1.81818	3	1	1	1
Tumors of oral cavity	2	2	4	0.12121	2.42424	3	1	1	1
Tumors of the larynx	2	2	4	0.12121	2.42424	3	1	1	1
Rehabilitation	2	2	4	0.12121	2.42424	2	1	-	1

after total laryngectomy									
Differentiated thyroid cancers	2	2	4	0.12121	2.42424	2	1	-	1
Undifferentiated thyroid cancers	2	1	2	0.060606	1.21212	1	-	-	1
Carcinoma of unknown primary	2	2	4	0.12121	2.42424	2	-	1	1
			33		20	20			

6.General Surgery	Impact (1-3)	Frequency (1-3)	I×F (Impact Frequency)	Weightage	No of items	Rounded off	CI Features	Investigations	Treatment
TPN	2	1	2	0.4	0.8	1	1	-	-
Bleeding disorders	3	1	3	0.6	1.2	1	-	1	-
			5		2				

7.Neurosurgery	Impact (1-3)	Frequency (1-3)	I×F (Impact Frequency)	Weightage	No of items	Rounded off	CI Features	Investigations	Treatment
Pituitary and parasellar tumours	2	1	2	0.5	1	1	-	-	1
Stereotactic radiofrequency	2	1	2	0.5	1	1	-	-	1
			4		2				

8.Plastic	Impact (1-3)	Frequency (1-3)	I×F (Impact Frequency)	Weightage	No of items	Rounded off	CI Features	Investigations	Treatment
Cleft lip and palate	2	1	2	0.15384	0.15384	0	-	-	-
Rhinoplasty	1	2	2	0.15384	0.15384	0	-	-	-
Malignant conditions of skin	2	1	2	0.15384	0.15384	0	-	-	-
Grafts and local flaps	3	1	3	0.23076	0.23076	1	-	-	1
Pedicled flaps in Head and neck	2	1	2	0.15384	0.15384	0	-	-	-
Free flaps in head and neck	2	1	2	0.15384	0.15384	0	-	-	-
			13		1				

PAPER II:

1.Otology+otoneurology	Impact (1-3)	Frequency (1-3)	I×F (Impact Frequency)	Weightage	No of items	Rounded off	CI Features	Investigations	Treatment
SSC dehiscence	1	1	1	0.01960	0.49019	0	-	-	-
Vestibular rehabilitation	1	2	2	0.03921	0.98039	1	-	-	1
Acquired atresia of ext. ear	1	1	1	0.01960	0.49019	0	-	-	-
Osteoradionecrosis of temporal bone	1	1	1	0.01960	0.49019	0	-	-	-
TB of temporal bone	1	1	1	0.01960	0.49019	0	-	-	-
Cochlear implant	3	2	6	0.11764	2.94117	3	1	1	1
Imaging of temporal bone	3	3	9	0.17647	4.41176	5	2	2	1
Anatomy of skull base and infratemporal fossa	2	1	2	0.03921	0.98039	1	-	1	-
Vestibular schwannoma	2	2	4	0.07843	1.96078	2	1	1	-
Glomus tumour	2	1	2	0.03921	0.98039	1	-	1	-
CSOM and its complications	3	3	9	0.17647	4.41176	5	2	1	2
Facial nerve + non neoplastic disorders	3	3	9	0.17647	4.41176	5	2	1	2
Tumors of temporal bone	2	1	2	0.03921	0.98039	1	-	-	1
Trauma of temporal bone	2	1	2	0.03921	0.98039	1	1	-	-
-			51		25				

2.Sino-rhinology	Impact (1-3)	Frequency (1-3)	I×F (Impact Frequency)	Weightage	No of items	Rounded off	CI Features	Investigations	Treatment
Imaging in rhinology	3	3	9	0.36	7.2	7	2	3	2
Granulomatous conditions of nose	2	2	4	0.16	3.2	3	1	1	1
Disorders of the orbit	2	1	2	0.08	1.6	2	1	1	-
Endoscopic management of sinonasal tumours	2	2	4	0.16	3.2	3	1	1	1
Open approach management of sinonasal tumours	2	2	4	0.16	3.2	3	-	1	2
Rhinoplasty	2	1	2	0.08	1.6	2	-	-	2
			25		20	20			

3.Laryngopharyngology	Impact (1-3)	Frequency (1-3)	IxF (Impact Frequency)	Weightage	No of items	Rounded off	CI Features	Investigations	Treatment
TM Joints and its disorders	1	1	1	0.02857	0.57142	0	-	-	-
Movement disorders of larynx	1	1	1	0.02857	0.57142	0	-	-	-
Laryngotracheal trauma	2	1	2	0.057142	1.142857	1	1	-	-
Upper airway obstruction and tracheostomy	3	3	9	0.25714	5.14285	5	2	1	2
Physiology of sleep and sleep disorders	3	2	6	0.17142	3.42857	3	1	1	1
Obstructive sleep apnea	3	2	6	0.17142	3.42857	3	1	1	1
Surgical management of OSA	2	2	4	0.114285	2.285714	2	1	-	1
Laryngo-tracheal stenosis in adults	2	1	2	0.057142	1.142857	1	-	-	1
Reflux disease	2	2	4	0.114285	2.285714	2	1	1	-
Paralysis of larynx	3	2	6	0.17142	3.42857	3	1	1	1
			35		20	20			

4 Head & Neck	Impact (1-3)	Frequency (1-3)	IxF (Impact Frequency)	Weightage	No of items	Rounded off	CI Features	Investigations	Treatment
Nasal cavity+ PNS tumours	2	2	4	0.22222	4.44444	4	1	1	2
Ca oropharynx	2	2	4	0.22222	4.44444	5	1	2	2
Ca hypopharynx	2	2	4	0.22222	4.44444	5	2	1	2
Malignant tumors of salivary gland	2	1	2	0.11111	2.22222	2	-	1	1
Benign tumours of nasal cavity	2	1	2	0.11111	2.22222	2	-	1	1
Tumours of parapharyngeal space	2	1	2	0.11111	2.22222	2	-	1	1
			18		20	20			

5 Paediatric Otolaryngology	Impact (1-3)	Frequency (1-3)	IxF (Impact Frequency)	Weightage	No of items	Rounded off	CI Features	Investigations	Treatment
Disorders of speech and language	2	1	2	0.09090	1.09090	1	1	-	-
Microtia and ext. ear abnormalities	1	1	1	0.045454	0.54545	1	-	-	1
Acute laryngeal	3	2	6	0.272727	3.27272	3	1	1	1

infections									
Congenital disorders of larynx, trachea and bronchi	3	1	3	0.13636	1.63636	2	1	-	1
Paediatric tracheostomy	3	1	3	0.13636	1.63636	2	1	-	1
Tumors of head and neck in children	2	1	2	0.09090	1.09090	1	1	-	-
Cysts and sinuses in children	2	2	4	0.18181	2.18181	2	1	-	1
Hemangiomas and vascular malformations	1	1	1	0.045454	0.54545	0	-	-	-
			22		12				

6.Maxillofacial	Impact (1-3)	Frequency (1-3)	I×F (Impact Frequency)	Weightage	No of items	Rounded off	CI Features	Investigations	Treatment
Mandibular reconstruction	2	1	2	1	1	1			1
			2		1				

7.General Surgery	Impact (1-3)	Frequency (1-3)	I×F (Impact Frequency)	Weightage	No of items	Rounded off	CI Features	Investigations	Treatment
General principles of pre+ postoperative care	3	2	6	0.75	1.5	1	1	-	-
Antibiotic prophylaxis	2	1	2	0.25	0.5	1	-	-	1
			8		2				

OSCE IN-TRAINING ASSESMENT YEAR 1

1. Total number of stations – 5 (all Interactive)
2. Time allocation for each station – 10 minutes
3. Total marks 100
4. Marks allocation for each station – 20 marks

Details of OSCE Stations

Station No.	Station Description
1	Otology Short case version of clinical examination
2	Rhinology Short case version of clinical examination
3	Oral cavity Short case version of clinical examination
4	Pharyngolaryngology Short case version of clinical examination
5	General surgery Ability to analyze a clinical scenario and formulate initial management plan A patient, surrogate, video, equipment, and surgical technique can be there at this station

Year I Assessment- OSCE Short Cases Marking Details- Marks 20

Subject: Otolaryngology	Candidates Name:
Hospital/Unit:	Date:

OSCE Station.	Diagnosis/System covered:			
	EXCELLENT (100%)	GOOD (80%)	ADEQUATE (60%)	INADEQUATE (<60%)
Clinical Examination Skills (6 Marks) • Observes professional manners. • Performs proper and relevant clinical examination according to instructions given. • Applies clinical methods systematically and appropriately	6	4.8	3.6	
Discussion (14 Marks) • Gives correct findings with logical interpretation and conclusion.	6	4.8	3.6	
• Justifies diagnosis	4	3.3	2.4	
• Suggests appropriate & relevant investigations and management	4	3.3	2.4	

*Write numbers in inadequate category. These should be less than adequate. The same will be clarified in pre-examination meeting and in relevant training sessions.

Additional Remarks (if any):

Name and Signature of Examiner:

OSCE- MID TERM ASSESSMENT

5. Total number of stations – 15 (all Interactive)
6. Time allocation for each station – 5 minutes

7. Marks allocation for each station – 10 marks

Details of OSCE Stations

Station No.	Station Description	Details	C	P	A
1	Audiogram Otosclerosis, noise induced hearing loss, presbycusis, conductive hearing loss, ototoxicity etc.	<i>Audiogram will be shown to the Candidate.</i> <i>Questions will focus relevant findings, interpretation, and diagnosis/treatment where relevant.</i>	C3	P3	
2	X-ray Station (1 X Ray) Chest, neck for foreign body	<i>X-Rays will be shown.</i> <i>Questions will focus relevant interpretation of findings, diagnosis, etiology, treatment where relevant etc.</i>	C3	P3	
3	1 CT scan (preferably) or MRI- Station Nose+ PNS with Nasal Polyp	<i>CT scan or MRI will be shown.</i> <i>Questions will focus relevant findings, diagnosis, etiology, treatment and complications etc.</i>	C3	P3	
4	Clinical Problem Solution Station One of Otology, rhinology or pharyngolaryngology etc. clinical problem scenario.	<i>Clinical Problems will be presented to Candidate in form of video, picture, clinical details, and clinical data etc.</i> <i>Candidate will be evaluated with reference to diagnostic features and management.</i>	C3	P3	
5	Procedure on Simulator Suturing on suture board	<i>Candidate will be asked to perform the procedure. Mannerism, technique/procedural skills will be evaluated by Examiner.</i> <i>Questions will focus procedure, indication, contraindications, and</i>	C3	P3	A3

		<i>complications etc.</i>			
6	Instrument & Medication Station Instruments of Ear, Nose Throat surgeries etc.	<i>Candidate will be provided one of Instrument.</i> <i>Candidates will be assessed with reference to utilization/indication, practical use, contraindications, practical use/procedure (where relevant) and complications etc.</i>	C3	P3	A3
7	Life Support Station BLS component	<i>Scenario focusing BLS component will be given.</i> <i>Candidate will be observed by Examiner for managing the issue. Relevant questions will be asked.</i>	C3	P3	A3
8	Otology Station Focused short case version of clinical examination	<i>In 5 minutes, candidate will be asked to perform focused clinical examination for assessment of knowledge, skill and attitude.</i> <i>Examiners will observe and ask questions pertaining to correct findings, logical interpretation, and management etc.</i>	C3	P3	A3
9	Rhinology System Focused short case version of clinical examination	<i>In 5 minutes, candidate will be asked to perform focused clinical examination for assessment of knowledge, skill and attitude.</i> <i>Examiners will observe and ask questions pertaining to correct findings, logical</i>	C3	P3	A3

		<i>interpretation, and management etc.</i>			
10	Oral cavity system Focused short case version of clinical examination	<i>In 5 minutes, candidate will be asked to perform focused clinical examination for assessment of knowledge, skill and attitude.</i>	C3	P3	A3
		<i>Examiners will observe and ask questions pertaining to correct findings, logical interpretation, and management etc.</i>			
11	Laryngopharyngology Station Focused short case version of clinical examination	<i>In 5 minutes, candidate will be asked to perform focused clinical for assessment of knowledge, skill and attitude.</i>	C3	P3	A3
		<i>Examiners will observe and ask questions pertaining to correct findings, logical interpretation, and management etc.</i>			
12	Counseling Station- Focusing autonomy, confidentiality, beneficence, justice, no harm, empathy, breaking bad diseases, and safety net etc.	<i>In each scenario Candidate ability to solve relevant issue will be evaluated with involvement of patient or surrogate.</i>	C3	P3	A3
13	Procedural Station Surgical procedure like myringotomy etc.	<i>Candidate will be shown video/picture and or asked to perform examination on patient or surrogate. Examination competency, diagnostic features, management, and complications etc will be evaluated.</i>	C3	P3	A3

14	Emergency Management Station Stridor, Neck trauma, Epistaxis etc.	<i>With reference to one of the scenarios, Candidates ability to plan management avoiding complications will be evaluated</i>	C3	P3	
15	Voice disorder Station Patients with voice disorder i.e., vocal nodule, vocal polyp etc.	<i>With reference to one of the scenarios, Candidates ability to diagnose and plan management will be evaluated</i>	C3	P3	

As a guideline 50% of the station will focus cognition, 40% psychomotor skills, and 10% on attitude. This can be varied however depending on scenario, station type, and examiners preference

OSCE Short Cases Stations MTA (8-11) Marking Details- 10 Marks

Subject: Otolaryngology	Candidates Roll No:
Examiner Name:	Date:
OSCE Station.	Diagnosis/System covered:

	Maximum Marks	Obtained Marks
Observes professional manners	1	
Use correct clinical methods	3	
Gives correct clinical findings	3	

Gives logical interpretation and differential diagnosis	3	
Suggests appropriate & relevant investigations and management		
TOTAL MARKS	10	

Additional Remarks (if any):

Name and Signature of Examiner:

IN-TRAINING ASSESMENT YEAR-3 CLINICAL COMPONENT

1. Total marks 120
2. 4 Short Cases – 15 marks

each Otology, Rhinology,

Laryngopharyngology,

Neck

Time allocation for each short case – 10 minutes

3. 01 Long Case- 60 marks

Time allocation for each short case – 60 minutes

In training Assessment Year III- Short Cases Marking Details- 15 Marks

Subject: Otolaryngology	Candidates Roll No:
Examiner Name:	Date:
OSCE Station.	Diagnosis/System covered:

	Maximum Marks	Obtained Marks
Observes professional manners	1	
Use correct clinical methods	5	
Gives correct clinical findings	4	
Gives logical interpretation and differential diagnosis	5	
Suggests appropriate & relevant investigations and management		
TOTAL MARKS	15	

Additional Remarks (if any):

Name and Signature of Examiner

**In Training Assessment Year III- Long Case-
Marking Details- 60 Marks**

Subject: Otolaryngology	Candidates Roll #:	Instructions to examiners: Please enter your award on the performance against each item according to the rating scale		
Station No;	Date:			
Examiners Name;	Diagnosis of the case:			
	Excellent (100%)	Good (80%)	Adequate (60%)	Inadequate* (<60%)
History Taking Skills Introduces self to patient, listens patiently and attentively, is polite, and obtains informed consent. Communicates efficiently. Asks necessary and relevant questions. Assess patient's symptoms, identify potential risk factors, and establish a comprehensive understanding of health status to guide further diagnosis and treatment. Focuses relevant components of history, including hospital course where relevant Presents logically	20	16	12	
Clinical Examination Uses correct clinical methods, is systemic and examines the patient as a whole. (including appropriate exposure and re-draping) Performs examinations of relevant area in detail.	20	16	12	

Case Presentation and Discussion Presentation skills Correctness of findings Interpretation of findings Diagnosis and differential diagnosis Management plan including multidisciplinary approach Counseling, recent advances,	20	16	12	
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*Write numbers in inadequate category. These should be less than adequate. The same will be clarified in pre-examination meeting and in relevant training sessions.

Additional Remarks (if any):

Name and Signature of Examiner:

FTA CLINICAL/ OSCE COMPONENTS MARKING DETAILS

Components	Time allowed	Max. Marks	Min. Pass marks
CLINICAL	60 minutes		
Long case	30 minutes for history taking and clinical examination 30 minutes for discussion	150	90
Short cases (Four cases)	40 minutes (includes both examination and discussion)	200	120
OSCE (15 interactive Stations)	5 minutes per station	150	90
AGGREGATE		500	300 (60%)

OSCE- FINAL TERM ASSESSMENT

1. Total number of stations – 15 (all Interactive)
2. Time allocation for each station – 5 minutes
3. Marks allocation for each station – 10marks

Details of OSCE Stations

Station No.	Station Description	Description	C	P	A
1	Audiogram/Tympanometry Presbycusis, Acoustic trauma, CSOM, Ototoxicity, Middle ear volumes etc.	<i>Audiogram/tympanogram focusing above mentioned diagnosis will be shown to the Candidate.</i> <i>Questions will focus relevant findings, diagnosis, etiology, treatment planning, and complications etc.</i>	C3	P3	
2	X-ray Station- 2 X Rays Chest, Neck (foreign body, abscess, adenoids) etc.	<i>2 X-Rays focusing above mentioned diagnosis will be shown to the Candidate.</i> <i>Questions will focus relevant findings, diagnosis, etiology, treatment planning, and complications etc.</i>	C3	P3	

3	CT scan or MRI scan-Station Nose+ PNS mandatory (focusing Nasal polyp, neoplasm etc.) Neck etc.	<i>CT scan or MRI will be shown to the Candidate.</i> <i>Questions will focus relevant findings, diagnosis, etiology, treatment and complications etc.</i>	C3	P3	
4	Diagnostic investigations Station Barium Studies, Endoscopic findings, etc.	<i>One of above-mentioned investigation will be shown to the Candidate.</i> <i>Questions will focus relevant findings, diagnosis, etiology, treatment and complications etc. in given scenario.</i>	C3	P3	
5	Clinical Problem Solution Station Otology etc. scenario.	<i>Clinical Problems will be provided to Candidate in form of video, picture, clinical details, and clinical data etc.</i> <i>Questions will focus diagnostic features and management.</i>	C3	P3	
6	Procedure on Simulator: Tracheostomy, etc.	<i>Candidate will be asked to perform one of the procedures. Mannerism, technique/procedural skills will be evaluated by Examiner.</i> <i>Questions will focus procedure, indication, contraindications, and complications etc.</i>	C3	P3	A3
7	Instrument Station: Otological procedure etc.	<i>Candidate will be provided one of Instrument.</i> <i>Questions will focus utilization, practical use, indication, contraindications, procedure (where relevant) and complications etc.</i>	C3	P3	A3

8	Clinical Video/Audio Station Clinical sign interpretation (Facial nerve palsy, laryngocele, etc.)	<i>Candidate will be shown video or audio focusing one of above-mentioned clinical feature.</i> <i>Questions will focus characteristic features leading to diagnosis and management etc.</i>	C3	P3	
9	Life saving Station Repair of laryngeal transaction	<i>Candidate will be provided simulator</i> <i>He will be observed by Examiner for surgical management. Relevant questions focusing management will be asked.</i>	C3	P3	A3
10	Clinical Problem Solution Station Clinical Features/signs pertaining Rhinology etc.	<i>Candidate will be shown video/picture and or asked to perform examination on patient or surrogate.</i> <i>Procedural competency, diagnostic features, management, and complications etc will be evaluated.</i>	C3	P3	A3
11	Counseling Station Focusing autonomy, confidentiality, beneficence, justice, no harm, and safety net etc.	<i>In a given scenario Candidate ability to solve relevant issue will be evaluated.</i>	C3	P3	A3
12	Tuning Fork Station CSOM, Wax, Otosclerosis etc.	<i>Candidate will perform examination on patient or surrogate.</i> <i>Performance, diagnostic features, management, and complications etc will be evaluated.</i>	C3	P3	A3

13	Hearing tests Interpretation BERA, ASSR etc.	<i>Candidate's ability to interpret audiological test.</i>	C3	P3	A3
14	Procedural skill station Posterior nasal packing for epistaxis etc	<i>Candidate will be asked to perform one of the procedures. Mannerism, technique/procedural skills will be evaluated by Examiner.</i> <i>Questions will focus procedure, indication, contraindications, and complications etc.</i>	C3	P3	
15	CT scan or MRI scan-Station Temporal bone	<i>CT scan or MRI will be shown to the Candidate.</i> <i>Questions will focus relevant findings, diagnosis, etiology, treatment and complications etc.</i>	C3	P3	A3

As a guideline 50% of the station will focus cognition, 40% psychomotor skills, and 10% on attitude. This can be varied however depending on scenario, station type, and examiners preference.

Short Cases FTA Marking Details- 50 Marks

Subject: Otolaryngology	Candidates Roll No:
Examiner Name:	Date:
Diagnosis/System covered:	

	Excellent (100%)	Good (80%)	Adequate (60%)	Inadequate (<60%) *
Clinical Examination Skills (6 Marks) • Observes professional manners (consent, hand hygiene, appropriate exposure and re-draping) • Performs proper and focused clinical examination according to instructions given. • Applies clinical methods systematically and appropriately	30	24	18	
Discussion (4 Marks) • Gives correct findings with logical interpretation and conclusion. Justifies diagnosis • Suggests appropriate & relevant investigations and management	20	16	11	

*Write numbers in inadequate category. These should be less than adequate. The same will be clarified in pre-examination meeting and in relevant training sessions.

Additional Remarks (if any):

Name and Signature of Examiner:

Long Case- Marking Details- 150 Marks

Subject: Otolaryngology	Candidates Roll #:	Instructions to examiners:			
Station No;	Date:	Please enter your award on the performance against each item according to the rating scale			
Examiners Name;	Diagnosis of the case:				
		Excellent (100%)	Good (80%)	Adequate (60%)	Inadequate* (<60%)
History Taking Skills - Introduces self to patient, listens patiently and attentively, is polite, and obtains informed consent. - Communicates efficiently. - Asks necessary and relevant questions. - Assess patient's symptoms, identify potential risk factors, and establish a comprehensive understanding of health status to guide further diagnosis and treatment. - Focuses relevant components of history, including hospital course where relevant - Presents logically		30	24	18	
Clinical Examination - Uses correct clinical methods, is systemic and examines the patient as a whole. (including appropriate exposure and re-draping) - Performs examinations of relevant system in detail.		60	48	36	
Case Presentation and Discussion - Presentation skills - Correctness of findings - Interpretation of findings - Diagnosis - Management plan including multidisciplinary approach - Counseling, recent advances,		60	48	36	

*Write numbers in inadequate category. These should be less than adequate. The same will be clarified in pre-examination meeting and in relevant training sessions.

Additional Remarks (if any):

Name and Signature of Examiner:

SECTION NO. VII
Entrust able Professional Activities

An Entrustable Professional Activity (EPA), a concept introduced in 2005, can be defined as a unit of professional practice that can be fully entrusted to a trainee, as soon as he or she has demonstrated the necessary competence to execute this activity unsupervised. The concept was developed to operationalize competency-based postgraduate medical education (ten Cate 2005; ten Cate & Scheele 2007), but is now more widely applied in health professions education (Mulder et al. 2010; Chen et al. 2015b).

This serves as a roadmap, navigating the intricate landscape of EPAs, which are pivotal in assessing the competence and readiness of Otolaryngology residents to independently perform essential tasks. With a focus on practical application and skill acquisition, our aim is to equip residents with the knowledge, confidence, and expertise necessary to excel in their roles as future ENT specialists.

Through a blend of theoretical foundations, real-life case studies, and hands-on exercises, we delve into the core competencies required for successful practice in Otolaryngology. From diagnostic evaluations to surgical interventions, each EPA outlined in this book is meticulously crafted to encompass the breadth and depth of skills essential for the modern Otolaryngologist.

As we embark on this journey together, our commitment remains unwavering—to empower residents with the tools they need to thrive in their professional endeavors, uphold the highest standards of patient care, and make meaningful contributions to the field of Otolaryngology. Join us as we explore the diverse array of EPAs, paving the way for the next generation of ENT specialists to leave an indelible mark on the healthcare landscape.

EDUCATIONAL GOALS

The overall educational goals of the Department of Otolaryngology-Head and Neck Surgery Residency are:

1. To provide a strong background in the basic and clinical sciences related to Otolaryngology
2. To assist in the development of clinical and surgical expertise
3. To provide the opportunity to learn and practice research skills.

All residents participate in a series of didactic lectures, clinical conferences, journal reading assignments, and independent reading which is directed primarily toward achieving the first goal. The effectiveness of this program is monitored by resident evaluation of the program, results of AAO-HNS FLEX Course testing, results of the Annual Otolaryngology Examination, and success with the American Board of Otolaryngology Head and Neck Surgery certification process. The goals for each major rotation, which relate primarily to the second and third major goals above, will

be outlined in the following sections.

Common to all years will be these specific goals:

Interpersonal and Communication skills:

- Understand the importance of good communication, and its impact on patient care.
- Develop excellent communication skills with patients, peers, staff, and attendings.
- Learn how to interact with other health care professionals in a courteous manner.

Professionalism:

- Learn how to ethically treat patients and always work in their best interest.
- Understand the importance of timeliness in dictations, rounding, charting.
- Understand the need for showing sensitivity to patients' ethnicity, age and disabilities.
- Learn how to practice medicine with integrity and honesty.

Systems-based practice:

- Learn how to work with an interdisciplinary team in the pre- and post-operative care of the surgical patient.
- Become adept at interacting with social work for the post-hospital care of our patients.
- Learn how to approach patient care problems from a systems-based approach rather than the “bandaid” approach.
- Begin to develop a feel for providing cost-effective medicine without compromising patient care.

Practice-based learning:

- Learn how to evaluate your own practice of medicine and correct any inefficient or incorrect behaviors.
- Learn how to use evidence-based medicine to better care for the patients.
- Become proficient at using the electronic medical record and the use of the Internet to look up medical information.
- Understand how professionals learn and the best way to teach medical students.

COMPETENCY LEVELS

Level 1	Be present, observe, and assist
Level 2	Perform under direct supervision
Level 3	Perform under readily available indirect supervision
Level 4	Perform under distant indirect supervision
Level 5	Able to supervise juniors

EPA	Level 1	Level 2	Level 3	Level 4	Level 5	Signature
General ENT						
1- Ability to perform a complete clinical ENT interview in OPD / IPD settings						
2- Ability to perform aural syringing						
3- Ability to counsel patients about the nature of disease and its natural history in a non-alarming way						

4- Ability to evaluate comorbidities & specific appropriate investigations before a surgery						
5- Ability to counsel patients about the indications, complications of a particular surgery/ procedure and take written informed consent						
6- Ability to administer and implement preoperative instructions for different types of common ENT surgeries						
7- Ability to write initial case sheets, procedure / operating and follow up notes, Discharge summaries						
8- Ability to plan elective ENT surgery under appropriate anesthesia						
9- Ability to ensure application of pharmacovigilance principles						
10- Ability to ensure transfusion services are provided safely						
11- Ability to conduct clinical ward rounds						
12- Ability to make a referral note seeking specialist consultation of other specialty						

13- Ability to identify patient and procedure before surgery using the standard surgical safety checklist						
OPD Skills						
14- Ability to perform and document otoscopy including pneumatic otoscopy						
15- Ability to perform a complete otoneurological examination						
16- Ability to independently perform an indirect laryngoscopic examination						
17- Ability to perform anterior and posterior rhinoscopy						
18- : Ability to perform a clinical examination of the neck and document findings						
19- Ability to perform a clinical examination of the salivary glands and document findings						
20- Ability to counsel a patient how to instill topical medications in ENT						
21- Ability to perform and interpret common tuning fork tests						

22- Ability to perform micro-otoscopy and aural toileting						
23- Ability to perform otoendoscopy and recording of findings						
24- Ability to independently perform a diagnostic nasal endoscopy						
25- Ability to perform flexible fiber optic laryngoscopy						
Minor OT Skills						
26- Ability to apply and remove a mastoid dressing						
27- Ability to plan, and maintain a minor OT of the ENT department						
28- Ability to perform aural syringing						
29- Ability to ensure patient safety during opd / minor procedures						
30- Perform an anterior nasal packing						
31- Ability to perform Endoscopic nasal biopsy						
32- Ability to take a per oral biopsy from an accessible lesion						

ENT Emergencies						
33- Ability to perform Endotracheal intubation						
34- Ability to independently perform a tracheostomy						
35- Ability to perform a cricothyroidotomy						
36- Ability to independently perform a incision and drainage of a peritonsillar abscess						
37- Ability to independently manage a case of epistaxis in the emergency setting						
38- Ability to diagnose and independently manage a case of foreign body ear						
39- Ability to diagnose and independently manage a case of foreign body in the nose						
40- Ability to diagnose and independently manage a case of foreign body in the oral cavity / oropharynx						
41- Ability to diagnose and manage a case of foreign body in the esophagus						

42- : Ability to diagnose and independently manage a case of foreign body in the tracheobronchial tree						
43- Ability to evaluate and make a differential diagnosis in patient of acute vertigo						
44- Ability to diagnose and independently manage a case of Sudden SNHL						
45- Ability to evaluate and make a differential diagnosis in case of Acute dysphagia						
46- : Ability to evaluate and make a differential diagnosis in case of Acute stridor in an adult						
47- Ability to evaluate and make a differential diagnosis in case of Acute stridor in a child						
48- Ability to evaluate and make a differential diagnosis in case of neck trauma						
49- Ability to diagnose and manage a case of Deep Neck Space infection						
50- Ability to diagnose and drain Parapharyngeal abscess						

51- Ability to diagnose and manage a case of Ludwig's angina						
General Otology						
52- Ability to clinically evaluate, investigate and form a differential diagnosis for patient presenting with otalgia						
53- Ability to clinically evaluate, investigate and form a differential diagnosis for patient presenting with otorrhea						
54- Ability to clinically evaluate, investigate and form a differential diagnosis for patient presenting with tinnitus						
55- Ability to clinically evaluate, investigate and form a differential diagnosis for patient presenting with hearing loss						
56- Ability to identify and manage a case of perichondritis of pinna						
57- Ability to diagnose and manage a case of keloid pinna						

58- Ability to diagnose and manage a case of preauricular sinus/cyst/abscess						
59- Ability to diagnose and form a management plan in case of developmental anomaly of ear						
60- Ability to diagnose and manage a case of Acute Otitis Externa						
61- Ability to diagnose and manage a case of Impacted Wax						
62- Ability to diagnose and manage a case of Otomycosis						
63- Ability to diagnose and manage a case of trauma to external ear						
64- Ability to diagnose and manage a case of Herpes Zoster Oticus						
65- Ability to diagnose and manage a case of Herpes Zoster Oticus						
66- Ability to diagnose and manage a case of acquired atresia of external auditory canal						

67- Ability to diagnose and form a management plan in case of Malignant Otitis Externa						
68- Ability to diagnose and manage a case of acute otitis media						
69- Ability to diagnose and manage a case of tympanosclerosis						
70- Ability to diagnose and manage a case of traumatic perforation						
71- Ability to diagnose and manage a case of myringitis						
72- Ability to diagnose and manage a case of otitis media with effusion						
73- Ability to diagnose and manage a case of chronic otitis media mucosal						
74- Ability to diagnose and manage a case of chronic otitis media squamous inactive						
75- Ability to diagnose and manage a case of chronic otitis media squamous active						
76- Ability to diagnose and manage a case of paediatric cholesteatoma						

77- Ability to clinically evaluate, investigate and formulate a management plan for a case of complicated otitis media						
78- Ability to clinically evaluate, investigate and formulate a management plan for a case of tuberculous otitis media						
79- Ability to clinically evaluate, investigate and form a management plan for a suspected case of otosclerosis						
80- Ability to diagnose and formulate a management plan for a case of fracture temporal bone						
81- Ability to clinically evaluate, investigate and formulate a management plan for a case of CSF otorrhea						
82- Ability to clinically evaluate, investigate and formulate a management plan for a case of otitic barotrauma						
83- Ability to clinically evaluate, investigate and form a differential diagnosis for patient presenting with asymmetric hearing loss						

84- Ability to clinically evaluate, investigate and form a differential diagnosis for patient presenting with conductive hearing loss with intact tympanic membrane						
85- Ability to clinically evaluate, investigate and manage a case of acute acoustic trauma						
86- Ability to clinically evaluate, investigate and manage a case of Noise Induced Hearing Loss						
87- Ability to clinically evaluate, investigate and manage a case of age-related hearing loss (Presbycusis)						
88- Ability to clinically evaluate, investigate and manage a case of Non-Organic Hearing loss						
89- Ability to clinically evaluate, investigate and form a management plan for a case of ototoxicity						
90- Ability to clinically evaluate, investigate and formulate a management plan for a child presenting with congenital bilateral sensorineural hearing loss						

91- Ability to clinically evaluate, investigate and formulate a management plan for a child of auditory neuropathy spectrum disorder						
Facial Nerve Disorders						
92- Ability to clinically evaluate, investigate and make a differential diagnosis and manage a patient of acute facial palsy						
93- Ability to evaluate and manage non-surgical traumatic facial nerve palsy						
94- Ability to evaluate and manage iatrogenic traumatic facial nerve palsy						
95- Ability to formulate a management plan for a case of suspected facial nerve tumour						
96- Ability to evaluate and refer a case of prolonged LMN facial palsy for various facial reanimation procedures						

Balance Disorders						
97- Ability to clinically evaluate, investigate and manage a case of benign paroxysmal positional vertigo						
98- Ability to clinically evaluate, investigate and manage a case of Vestibular neuritis						
99- Ability to explain the common rehabilitative exercises for patient of vestibular disorder						
100- Ability to explain the common rehabilitative exercises for patient of vestibular disorder						
101- Ability to clinically evaluate, investigate and manage a case of Meniere's Disease						
102- Ability to clinically evaluate, investigate and formulate a plan for management of a case of Superior canal dehiscence						
103- Ability to clinically evaluate, investigate and manage a case of Vestibular migraine						
104- Ability to clinically evaluate, investigate and formulate a						

management plan for a child presenting with vertigo						
Hearing Rehab						
105- Ability to diagnose and formulate a management plan in case of hearing loss in a newborn child						
106- Ability to prescribe appropriate hearing aid to an individual						
107- Ability to assess suitability and formulate a plan for a candidate for Bone Anchored Hearing Aid						
108- Ability to assess suitability and formulate a plan for a candidate for Cochlear Implantation						
Lateral Skull Base						
109- Ability to clinically evaluate, investigate and offer a management plan based on differential diagnosis for a patient presenting with CP angle mass						
110- Ability to clinically evaluate, investigate and formulate a						

management plan for a patient presenting with jugular foramen lesion						
111- Ability to clinically evaluate, investigate and formulate a management plan for a patient presenting with temporal bone neoplasm						
Operative Otology						
112- Ability to perform lobuloplasty						
113- Ability to drain and manage Haematoma Auris						
114- Ability to perform excision of preauricular cyst / sinus						
115- Ability to perform myringotomy with grommet insertion						
116- Ability to perform type I tympanoplasty with an underlay technique with an operating microscope						
117- Ability to Perform cortical mastoidectomy						
118- Ability to perform modified radical mastoidectomy						

119- Ability to perform Intact canal wall mastoidectomy						
120- Ability to perform a type I tympanoplasty using endoscope and underlay technique						
121- Ability to perform ossicular reconstruction using autologous incus						
122- Ability to perform ossicular reconstruction using TORP						
123- Ability to perform ossicular reconstruction using PORP						
124- Ability to perform mastoid obliteration procedure						
125- Ability to perform stapedotomy						
126- Ability to perform facial nerve decompression						
127- Ability to perform facial neurorrhaphy						
128- Ability to repair Intraoperative perilymph leak						
129- Ability to repair Intraoperative dural tear						
130- Ability to evaluate and workup for a case of otoplasty						

131- : Ability to administer intratympanic injections						
General Rhinology						
132- Ability to clinically evaluate, investigate, make a differential diagnosis and manage a patient presenting with rhinorrhea						
133- Ability to clinically evaluate, investigate, make a differential diagnosis and manage a patient presenting with nasal obstruction						
134- Ability to clinically evaluate, investigate and reach a differential diagnosis for an adult presenting with unilateral nasal mass						
135- : Ability to clinically evaluate, investigate, make a differential diagnosis and manage a patient presenting with facial pain						
136- Ability to clinically evaluate, investigate, make a differential diagnosis and manage a patient presenting with headache						
137- Ability to clinically evaluate, investigate, make a differential						

diagnosis and manage a patient presenting with anosmia/hyposmia						
138- Ability to clinically evaluate, investigate, make a differential diagnosis and manage a patient presenting with epistaxis						
139- Ability to clinically evaluate, investigate, make a differential diagnosis and manage a patient presenting with allergic symptoms						
140- Ability to clinically evaluate, investigate, make a differential diagnosis and manage a patient presenting with allergic symptoms						
141- Ability to diagnose and manage a case of non allergic perennial rhinitis						
142- Ability to diagnose and manage a case of atrophic rhinitis						
143- Ability to diagnose and manage a case of symptomatic deviated nasal septum						
144- Ability to diagnose and manage a case of nasal bone fracture						

145- Ability to diagnose and formulate a management plan in a case of AFRS						
146- Ability to diagnose and formulate a management plan in a suspected case of invasive fungal sinusitis						
147- : Ability to clinically evaluate, investigate and manage a case of Acute Rhinosinusitis in adults						
148- Ability to diagnose and manage a case of rhinosinusitis in a child						
149- Ability to diagnose and manage a case of Chronic Rhinosinusitis without nasal polyps (CRSsNP) in adults						
150- Ability to diagnose and manage cases of CRS with Nasal Polyps in adults						
151- Ability to diagnose and manage a case of antrochoanal polyp (AC Polyp)						
152- Ability to diagnose and manage a case of orbital complications of Rhinosinusitis						

153- Ability to diagnose and manage a case of intracranial complications of Rhinosinusitis						
154- Ability to diagnose and manage a case of chronic complications of Rhinosinusitis						
155- : Ability to diagnose and manage a case of frontal pyocoele/ mucocoele						
156- Ability to diagnose and prepare a management plan in a case of granulomatous diseases of nose						
157- Ability to diagnose and prepare a management plan in a case of rhinosporidiosis						
158- Ability to diagnose and manage a case of chronic NLD obstruction in an adult						
159- Ability to clinically evaluate, investigate and formulate a management plan for a case of sinus barotrauma						
160- Ability to diagnose and prepare a management plan for a case of sinonasal neoplasms						

Nasopharyngeal lesions						
161- Ability to clinically evaluate, investigate and formulate a management plan for a case of adenoid hypertrophy						
162- Ability to diagnose and manage a case of choanal atresia						
163- Ability to clinically evaluate, investigate and formulate a management plan for a case of nasopharyngeal carcinoma						
164- Ability to clinically evaluate, investigate and formulate a management plan for a case of juvenile nasopharyngeal angiofibroma						
165- Ability to clinically evaluate, investigate and formulate a management plan for a case of velopharyngeal insufficiency						
Rhinoplasty & Facial Plastics						
166- Ability to clinically evaluate, investigate and formulate a management plan for a patient with external nasal deformity						

167- Ability to perform closed rhinoplasty						
168- Ability to perform open rhinoplasty						
Sleep Disordered Breathing						
169- Ability to clinically evaluate, investigate and formulate a management plan for a case of child presenting with sleep disordered breathing						
170- Ability to clinically evaluate, investigate and formulate a management plan for a case of sleep disordered breathing in adults						
171- Ability to administer conservative management of patients with obstructive sleep apnea						
172- Ability to perform surgical management of obstructive sleep Apnea						
Anterior skull base						
173- Ability to clinically evaluate, investigate and formulate a						

management plan for a case of CSF rhinorrhoea						
174- Ability to clinically evaluate, investigate and formulate a management plan for a suspected case of meningocele/ meningomyelocele in children						
Maxillofacial Trauma						
175- Ability to diagnose and manage a case of naso orbito ethmoid fracture						
176- Ability to diagnose and prepare a management plan of a case of maxillary fracture as per Le Fort classification						
177- Ability to diagnose and prepare a management plan of a case of mandibular fracture						
178- Ability to diagnose and prepare a management plan of a case of zygomatic fracture						
179- Ability to diagnose and prepare a management plan of a case of fracture of orbital floor						

180- Ability to diagnose and prepare a management plan of a case of frontal fracture						
Operative Rhinology						
181- Ability to perform Septoplasty						
182- Ability to perform basic endoscopic sinus surgical procedures (uncinectomy, anterior ethmoidectomy, middle meatal antrostomy, posterior ethmoidectomy)						
183- Ability to perform Endoscopic polypectomy						
184- Ability to perform Endoscopic Sphenoidotomy						
185- Ability to perform Endoscopic Frontal Sinusotomy						
186- Ability to perform endoscopic inferior meatal antrostom						
187- Ability to independently perform Adenoidectomy						
188- Ability to perform Endoscopic Dacryocystorhinostomy						

189- Ability to raise a Bassagasteguy-Hadad flap						
190- Ability to perform endoscopic approach to frontal sinus via DRAF procedures						
191- Ability to perform endoscopic marsupialization of fronto ethmoid mucocoele						
192- Ability to perform frontal sinus trephination						
193- Ability to approach the sella turcica endoscopically						
194- Ability to perform endoscopic orbital decompression						
195- Ability to perform orbital decompression by lateral canthotomy						
196- Ability to perform an endoscopic excision of JNA						
197- Ability to perform a medial maxillectomy using a lateral rhinotomy approach						
Oral Cavity and throat						
198- Ability to clinically evaluate, investigate and manage a patient presenting with acute pharyngitis						

199- Ability to clinically evaluate, investigate and manage a patient presenting with chronic pharyngitis						
200- Ability to clinically evaluate, investigate and manage a patient presenting with acute tonsillitis						
201- Ability to clinically evaluate, investigate and manage a patient of recurrent tonsillitis						
202- Ability to clinically evaluate, investigate and manage a patient presenting with oral ulceration of recent onset						
203- Ability to clinically evaluate, investigate and manage a patient presenting with non healing ulcer in the oral cavity						
204- Ability to evaluate, investigate, form a differential diagnosis and management plan for a case of oral premalignant lesions						
205- Ability to diagnose and manage a patient presenting with Oral Submucous Fibrosis						
206- Ability to clinically evaluate and prepare a management plan for a case of Cleft lip/ cleft palate						

Esophagology						
207- Ability to clinically evaluate, investigate and form a differential diagnosis for a patient presenting with Dysphagia						
208- Ability to diagnose and form a management plan for a case of post corrosive poisoning causing esophageal stenosis						
209- Ability to investigate & manage swallowing disorders						
210- Ability to diagnose and form a management plan for a case of pharyngeal pouch						
211- Ability to diagnose and form a management plan for a case of tracheo-oesophageal fistula						
Laryngology						
212- Ability to clinically evaluate, investigate and reach a differential diagnosis for a patient presenting with dysphonia / hoarseness						
213- Ability to clinically evaluate, investigate, form a differential						

diagnosis & management plan for a child presenting with stridor						
214- Ability to clinically evaluate, investigate and formulate a management plan for patients presenting with unilateral adductor vocal cord palsy						
215- Ability to clinically evaluate, investigate and formulate a management plan for patients presenting with unilateral abductor vocal cord palsy						
216- Ability to clinically evaluate, investigate and formulate a management plan for patients presenting with bilateral adductor vocal cord palsy						
217- Ability to clinically evaluate, investigate and formulate a management plan for patients presenting with bilateral abductor vocal cord palsy						
218- Ability to clinically evaluate, investigate and formulate a management plan for patients presenting with congenital lesion of larynx						

219- Ability to clinically evaluate, investigate, form a differential diagnosis & management plan for an adult presenting with acute laryngeal infection						
220- Ability to clinically evaluate, investigate, form a differential diagnosis & management plan for a patient presenting with chronic laryngitis						
221- Ability to clinically evaluate, investigate, form a differential diagnosis & management plan for cases of laryngotracheal stenosis						
222- Ability to clinically evaluate, investigate, form a differential diagnosis & management plan for cases of laryngopharyngeal reflux						
223- Ability to diagnose and manage cases of recurrent respiratory papillomatosis						
224- Ability to clinically evaluate, investigate, form a differential diagnosis & management plan for a patient with structural disorders of vocal cords						

225- Ability to diagnose and manage a patient presenting with functional voice disorder						
226- Ability to clinically evaluate, investigate, form a differential diagnosis & management plan for a patient with acute laryngotracheal trauma						
227- Ability to clinically evaluate, investigate, form a differential diagnosis & management plan for pediatric patients with compromised airway (subglottic stenosis/ tracheal stenosis)						
Operative Laryngology/Upper Airway						
228- Ability to perform Tonsillectomy						
229- Ability to perform direct laryngoscopy						
230- Ability to perform microlaryngoscopy						
231- Ability to perform rigid esophagoscopy						
232- Ability to perform rigid bronchoscopy						

233- Ability to perform flexible fibre optic bronchoscopy						
234- Ability to perform transoral microscopic excision of benign vocal cord lesions						
235- Ability to perform percutaneous tracheostomy						
236- Ability to perform paediatric tracheostomy						
237- Ability to perform injection laryngoplasty						
238- Ability to perform medialisation thyroplasty						
239- Ability to perform vocal cord lateralisation procedures						
240- Ability to perform endoscopic vocal cord cordectomies						
General Head and Neck						
241- Ability to clinically evaluate, investigate, form a differential diagnosis and manage a patient presenting with Deep Neck Space infections						
242- Ability to clinically evaluate, investigate, form a differential diagnosis and manage a patient						

presenting with midline neck swelling						
243- Ability to clinically evaluate, investigate, form a differential diagnosis and manage a patient presenting with lateral neck swelling						
244- Ability to diagnose and form a management plan for a case of cervical tuberculosis						
245- Ability to diagnose and form a management plan for a case of cysts around the maxilla						
246- Ability to clinically evaluate, investigate, form a differential diagnosis and manage a patient presenting with features of hypothyroidism/ hyperthyroidism						
247- Ability to clinically evaluate, investigate, form a differential diagnosis and manage a patient presenting with features of hypoparathyroidism/ hyperparathyroidism						
248- Ability to clinically evaluate, investigate, form a differential						

diagnosis and manage a patient presenting with thyroid swelling						
249- Ability to clinically evaluate a form a management plan for a case of Cervical lymphadenopathy						
250- Ability to clinically evaluate and make a diagnosis of extent of trauma to the neck						
Head and Neck Oncology						
251- Ability to diagnose and form a management plan for a case of parapharyngeal tumors						
252- Ability to diagnose and form a management plan for a case of carotid body tumor						
253- Ability to evaluate, investigate and form a management plan for a case of Carcinoma of Unknown primary						
254- Ability to clinically evaluate, investigate and form a differential diagnosis for a patient presenting with Trismus						
255- Ability to evaluate, investigate, form a differential diagnosis and management plan for						

a patient presenting with Growth in the oral cavity						
256- Ability to diagnose and form a management plan for a patient with malignancy of lip						
257- Ability to diagnose and form a management plan for a patient with Oral malignancy						
258- Ability to diagnose and form a management plan for a patient with Oropharyngeal malignancy						
259- Ability to diagnose and form a management plan for a patient with Laryngeal Malignancy						
260- Ability to diagnose and form a management plan for a patient with Hypopharyngeal Malignancy						
261- Ability to diagnose and form a management plan for a patient with malignancy of Post cricoid region						
262- : Ability to diagnose and form a management plan for a case of malignancy of Thyroid						
263- Ability to diagnose and form a management plan for a case of malignancy of salivary glands						

264- Ability to diagnose and form a management plan for a case of malignancy of esophagus						
Reconstructive Surgery						
265- Ability to perform reconstruction of superficial defects in head and neck using Local flaps						
266- Ability to harvest Pectoralis Major Myocutaneous flap						
267- Ability to harvest Deltopectoral flap						
268- Ability to plan a reconstructive plan using free flaps in head & neck region						
269- Ability to plan a facial reanimation surgery						
270- Ability to plan external ear reconstruction procedures						
Salivary Glands						
271- Ability to diagnose and manage a case of acute parotid swelling						

272- Ability to diagnose and manage a case of Acute Submandibular Sialadenitis						
273- Ability to diagnose and manage a case of Chronic Submandibular Sialadenitis						
274- Ability to diagnose and manage a case of Sialolithiasis						
275- Ability to diagnose and manage a case of benign salivary gland tumour						
Operative Head and Neck						
276- Ability to perform excision biopsy of cervical lymph node						
277- Ability to perform Hemithyroidectomy						
278- Ability to perform Total Thyroidectomy						
279- Ability to perform Parathyroidectomy						
280- Ability to perform excision of Ranula						
281- Ability to independently perform submandibular gland excision						

282- Ability to perform sialendoscopy						
283- Ability to perform maxillectomy						
284- Ability to perform surgical approach to the parapharyngeal space						
285- Ability to perform oncologically sound neck dissection						
286- Ability to perform excision of thyroglossal cyst						
287- Ability to drain abscess of submandibular gland						
288- Ability to perform superficial parotidectomy						
289- Ability to perform Total Parotidectomy						
Audiology						
290- Ability to perform and interpret pure tone audiometry						
291- Ability to perform and interpret tympanometry						
292- Ability to perform and interpret stapedial reflex						

293- Ability to perform and interpret eustachian tube function test						
294- Ability to conduct universal neonatal hearing screening in conjunction with relevant agencies						
295- Ability to perform and interpret age-appropriate hearing tests in children						
296- Ability to perform and interpret Speech Recognition Threshold						
297- Ability to perform and interpret Speech Discrimination Score						
298- Ability to perform and interpret Automated Brainstem Response (ABR)						
299- Ability to interpret audiological tests to differentiate cochlear from retrocochlear hearing loss						
300- Ability to perform and interpret Auditory Steady State Response Audiometry (ASSR)						

Speech Language Pathology						
301- Ability to counsel a patient/caregiver for Auditory Verbal therapy post cochlear implant						
302- Ability to counsel a patient for speech therapy post phonosurgery						
303- Ability to manage a case of post laryngectomy voice and swallowing rehabilitation						
304- Ability to diagnose and counsel a patient for speech therapy for speech disorders (stuttering/stammering)						
305- Ability to counsel a patient for speech therapy for voice disorders (dysphonia plica ventricularis/phonophobia)						
306- Ability to counsel a patient for therapy for swallowing disorders						

SECTION NO. VIII
Log book & Portfolio

E-LOGBOOK:

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

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Rawalpindi Medical University
University Residency Program 2021
MS OTORHINOLARYNGOLOGY
Research Elective Logbook



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Rawalpindi Medical University
University Residency Program 2021
MS OTORHINOLARYNGOLOGY
Log Book



SECTION NO. VIII
References

REFERENCES:

1. Bloom, B.S. (Ed.). Engelhart, M.D., Furst, E.J., Hill, W.H., Krathwohl, D.R. (1956). *Taxonomy of Educational Objectives, Handbook I : The Cognitive Domain*. New York: David McKay Co Inc.
2. Harvey, P. D. (2019). Domains of cognition and their assessment. *Dialogues in clinical neuroscience*, 21(3), 227.
3. PMDC Approved PG regulation 2023.
4. ACGME Core competencies / Graduate Medical Education.
5. Harden For medical education A Practical Guide for Medical Teachers E-Book
- John Dent, Ronald M Harden - Google Books

SECTION NO. IX
Appendices

360 evaluation, evaluation of trainees by Nursing staff regarding core competencies, WPBA, Annual report,
Evaluation of faculty by resident, Program evaluation

Annual Program Evaluation (APE)

Minutes& Action Plan

Date of the APE meeting:

Date; Minutes & Action Plan were reviewed and Approved by teaching faculty:

Please attach the minutes of the meeting where the Minutes & Action Plan were reviewed and approved.

Academic Year reviewed:

Faculty Members of the PEC in attendance

Other Members of the PEC in attendance:

Areas reviewed:

1. Resident performance
 - Supporting documents:
2. Faculty development
 - Supporting documents:
3. Graduate performance
 - Supporting documents:
4. Program quality
 - Supporting documents:
5. Policies, Protocols & Procedures
 - Supporting document

Appendices Documents.

**MENTOR / SUPERVISOR EVALUATION OF TRAINEE**

Resident's Name: _____

Evaluator's Name(s): _____

Hospital Name: _____

Date of Evaluation: _____

☐ Traditional Track (10% Clinic) ☐ Primary Care Track (20% Clinic)

1	Unsatisfactory
2	Below Average
3	Average
4	Good
5	Superior

Please circle the appropriate number for each item using the scale above.

Patient Care	Scale				
1. Demonstrates sound clinical judgment	1	2	3	4	5
2. Presents patient information case concisely without significant omissions or digressions	1	2	3	4	5
3. Able to integrate the history and physical findings with the clinical data and identify all of the patient's major problems using a logical thought process	1	2	3	4	5
4. Develops a logical sequence in planning for diagnostic tests and procedures and Formulates an appropriate treatment plan to deal with the patient's major problems	1	2	3	4	5
5. Able to perform commonly used office procedures	1	2	3	4	5
6. Follows age appropriate preventative medicine guidelines in patient care	1	2	3	4	5
Medical Knowledge	Scale				
1. Uses current terminology	1	2	3	4	5
2. Understands the meaning of the patient's abnormal findings	1	2	3	4	5
3. Utilizes the appropriate techniques of physical examination	1	2	3	4	5
4. Develops a pertinent and appropriate differential diagnosis for each patient	1	2	3	4	5
5. Demonstrates a solid base of knowledge of ambulatory medicine	1	2	3	4	5
6. Can discuss and apply the applicable basic and clinically supportive sciences	1	2	3	4	5
Professionalism	Scale				
1. Demonstrates consideration for the patient's comfort and modesty	1	2	3	4	5
2. Arrives to clinic on time and follows clinic policies and procedures	1	2	3	4	5
3. Works effectively with clinic staff and other health professionals	1	2	3	4	5
4. Able to gain the patient's cooperation and respect	1	2	3	4	5
5. Demonstrates compassion and empathy for the patient	1	2	3	4	5
6. Demonstrates sensitivity to patient's culture, age, gender, and disabilities	1	2	3	4	5
7. Discusses end-of-life issues (DPOA, advanced directives, etc.) when appropriate	1	2	3	4	5



Interpersonal and Communication Skills	Scale				
1. Demonstrates appropriate patient/physician relationship	1	2	3	4	5
2. Uses appropriate and understandable layman's terminology in discussions with patients	1	2	3	4	5
3. Patient care documentation is complete, legible, and submitted in timely manner	1	2	3	4	5
4. Recognizes need for behavioral health services and understands resources available	1	2	3	4	5
Systems-based Practice	Scale				
1. Spends appropriate time with patient for the complexity of the problem	1	2	3	4	5
2. Able to discuss the costs, risks and benefits of clinical data and therapy	1	2	3	4	5
3. Recognizes the personal, financial, and health system resources required to carry out the prescribed care plan	1	2	3	4	5
4. Demonstrates effective coordination of care with other health professionals	1	2	3	4	5
5. Recognizes the patient's barriers to compliance with treatment plan such as age, gender, ethnicity, socioeconomic status, intelligence, dementia, etc.	1	2	3	4	5
6. Demonstrates knowledge of risk management issues associated with patient's case	1	2	3	4	5
7. Works effectively with other residents in clinic as if a member of a group practice	1	2	3	4	5
Practice-Based Learning and Improvement	Scale				
1. Locates, appraises, and assimilates evidence from scientific studies	1	2	3	4	5
2. Apply knowledge of study designs and statistical methods to the appraisal of clinical studies to assess diagnostic and therapeutic effectiveness of treatment plan	1	2	3	4	5
3. Uses information technology to access information to support diagnosis and treatment	1	2	3	4	5
Comments					

Total Score _____/165

Resident's Signature_____
Date_____
Evaluator's Signature_____
Date

**Patient Medical Record / Chart Evaluation Proforma**

Name of Resident

Location of Care or Interaction
(OPD/Ward/Emergency/Endoscopy Department)

S#		Poor	Fair	Good	V. Good	Excellent
1.	Basic Data on Front Page Recorded	☐	☐	☐	☐	☐
2.	Presenting Complaints written in chronological order	☐	☐	☐	☐	☐
3.	Presenting Complaints Evaluation Done	☐	☐	☐	☐	☐
4.	Systemic review Documented	☐	☐	☐	☐	☐
5.	All Components of History Documented	☐	☐	☐	☐	☐
6.	Complete General Physical Examination done	☐	☐	☐	☐	☐
7.	Examination of all systems documented	☐	☐	☐	☐	☐
8.	Differential Diagnosis framed	☐	☐	☐	☐	☐
9.	Relevant and required investigations documented	☐	☐	☐	☐	☐
10.	Management Plan framed	☐	☐	☐	☐	☐
11.	Notes are properly written and eligible	☐	☐	☐	☐	☐
12.	Progress notes written in organized manner	☐	☐	☐	☐	☐
13.	Daily progress is written	☐	☐	☐	☐	☐
14.	Chart is organized no loose paper	☐	☐	☐	☐	☐
15.	Investigations properly pasted	☐	☐	☐	☐	☐
16.	Abnormal findings in investigations encircled.	☐	☐	☐	☐	☐
17.	Procedures done on patient documented properly	☐	☐	☐	☐	☐
18.	Medicine written in capital letter	☐	☐	☐	☐	☐
19.	I/v fluids orders are proper with rate of infusion mentioned	☐	☐	☐	☐	☐
20.	All columns of chart complete	☐	☐	☐	☐	☐

Poor: 0, Fair: 1, Good: 2, V.Good: 3, Excellent: 4



Preview Form

RESIDENT EVALUATION BY NURSE / STAFF

Please take a few minutes to complete this evaluation form. All information is confidential and will be used constructively. You need not answer all the questions

Name of Resident*

Location of care or interaction: (OPD/Ward/Emergency/Endoscopy Department)

Your position (Nurse, Ward Servant, Endoscopy Attendant)

S#	PROFESSIONALISM	Poor	Fair	Good	V Good	Excellent	Insufficient Contact
1.	Resident is Honest and Trustworthy	☐	☐	☐	☐	☐	☐
2.	Resident treats patients and families with courtesy, compassion and respect	☐	☐	☐	☐	☐	☐
3.	Resident treats me and other member of the team with courtesy and respect	☐	☐	☐	☐	☐	☐
4.	Resident shows regard for my opinions	☐	☐	☐	☐	☐	☐
5.	Resident maintains a professional manner and appearance	☐	☐	☐	☐	☐	☐
INTERPERSONAL AND COMMUNICATIONS SKILLS							
6.	Resident communicates well with patients, families, and members of the healthcare team	☐	☐	☐	☐	☐	☐
7.	Resident provides legible and timely documentation	☐	☐	☐	☐	☐	☐
8.	Resident respect differences in religion, culture age, gender sexual orientation and disability	☐	☐	☐	☐	☐	☐
SYSTEMS BASED PRACTICE							
9.	Resident works effectively with nurses and other professionals to improve patient care.	☐	☐	☐	☐	☐	☐
PATIENT CARE							
10.	Resident respects patient preferences	☐	☐	☐	☐	☐	☐
11.	Resident is reasonable accessible to patients	☐	☐	☐	☐	☐	☐
12.	Resident take care of patient comfort and dignity during procedures.	☐	☐	☐	☐	☐	☐
PRACTICE BASED LEARNING AND IMPROVEMENT							
13.	Resident facilitates the learning of students and other professionals	☐	☐	☐	☐	☐	☐
COMMENTS							
14.	Please describe any praises or concerns or information about specific incidents	☐	☐	☐	☐	☐	☐

THANK YOU for your time and thoughtful input. You play a vital role in the education and training of the internal medicine residents.

Poor: 0, Fair: 1, Good: 2, V. Good: 3, Excellent: 4

Total Score _____/56



RAWALPINDI MEDICAL UNIVERSITY

4

Patient Evaluation of Trainee

Trainee Name: _____

Date of Evaluation: _____

1	Strongly Disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly Agree

Please circle the appropriate number for each item using this scale. Please provide any relevant comments on the back of this form.

This Trainee:		Scale				
1.	Introduces him/herself and greets me in a way that makes me feel comfortable. ڈاکٹر صاحب نے خود کو متعارف کرایا اور خوش اسلوبی سے پیش آئے	1	2	3	4	5
2.	Manages his/her time well and is respectful of my time. ڈاکٹر صاحب نے میرے اور اپنے وقت کا خیال رکھا۔	1	2	3	4	5
3.	Is truthful, upfront, and does not keep things from me that I believe I should know. ڈاکٹر صاحب نے میرے مرض کی صورتحال پوری سچائی سے بیان کی۔	1	2	3	4	5
4.	Talks to me in a way that I can understand, while also being respectful. ڈاکٹر صاحب نے میرے احساسات کا خیال رکھا اور عزت سے میرا علاج کیا۔	1	2	3	4	5
5.	Understands how my health affects me, based on his/her understanding of the details of my life. ڈاکٹر صاحب نے میرے علاج میں میری صحت پر ذاتی زندگی کو مد نظر رکھا۔	1	2	3	4	5
6.	Takes time to explain my treatment options, including benefits and risks. ڈاکٹر صاحب نے میرے مرض کے علاج کے فوائد اور نقصانات کو تفصیلاً بیان کیا۔	1	2	3	4	5

Total Score _____/30

**Resident/Fellow Evaluation of Faculty Teaching**

Evaluator: _____

Evaluation of: _____

Date: _____

Evaluation information entered here will be anonymous and made available only in aggregated form.

S#		Strongly Disagree	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Strongly Agree
PATIENT CARE							
1.	Teaches current scientific evidence for daily patient management*						
2.	Explains rationale behind clinical judgements/decisions*						
3.	Teaches clear diagnostic algorithms*						
4.	Teaches clear treatment algorithms*						
PATIENT CARE - OPERATIVE AND PROCEDURAL SKILLS							
5.	Teaches operative/procedural skills during cases*						
6.	Allows learners to perform operative/procedural skills when appropriate*						
MEDICAL KNOWLEDGE							
7.	Teaches relevant pathophysiology needed to evaluate patient medical conditions*						
8.	Teaches how/when to use-order-perform procedures/tests*						
9.	Teaching content adds significantly to my medical knowledge						
10.	Teaches the use of literature / evidence based medicine to support clinical decisions/teaching points*						



PRACTICE-BASED LEARNING & IMPROVEMENT/TEACHING							
11.	Asks questions about differential diagnosis*						
12.	Teaches trainees when to consider referrals/consults with other specialists*						
13.	Actively teaches trainees in clinical settings/labs*						
INTERPERSONAL & COMMUNICATION SKILLS							
14.	Motivates learners to expand medical knowledge*						
15.	Stimulates critical thinking*						
16.	Encourages questions*						
17.	Teaches at the appropriate level for the trainee*						
18.	Provides feedback specific enough to be helpful*						
PROFESSIONALISM							
19.	Demonstrates respect for trainees of all levels*						
20.	Does not belittle/ publicly humiliate learners*						
21.	Teaches professional behavior with respect to patient care.*						
22.	Exhibits professional behavior with respect to patient care*						
23.	Role models professional behavior*						
SYSTEMS-BASED PRACTICE							
24.	Teaches cost/benefit decision making*						
25.	Teaches how to call on resources in the system to provide optimal health care*						
26.	Role models the necessity of working in inter-professional teams to enhance patient safety/outcomes.*						

Strongly Disagree: 0, Disagree Moderately: 1, Disagree Slightly: 2,

Agree Slightly: 3, Agree Moderately: 4, Strongly Agree: 5

Total Score _____ / 130



E

FINAL Evaluation Scoring Sheet

Name of Resident		Name of Supervisor		Year of Training	

Date _____

	Faculty #1 (165)	Faculty #2 (165)	Faculty #3 (165)	Average Score
Medical Patient Care (30)				___/30
Medical Knowledge (30)				___/30
Professionalism (35)				___/35
Interpersonal and Communication Skills (20)				___/20
System Based Practice (35)				___/35
Practice Based Learning and Improvement (15)				___/15
Overall Rating				
Average:				___/165

Duration of Assessment _____

Specialty _____

Hospital _____

Unit _____

	Patient # 1 (30)	Patient # 2 (30)	Patient # 3 (30)	Medical Record Performa #1 (80)	Medical Record Performa #2 (80)	Medical Record Performa #3 (80)	Staff # 1 (56)	Staff #2 (56)	Staff #3 (56)
Grand Total				___/80		___/50			___/331



RAWALPINDI MEDICAL UNIVERSITY

7

RESIDENT SELF-ASSESSMENT PROFORMA

Resident Name _____ Date _____

Year of Training _____ Hospital Name _____ Unit _____

☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
Not Applicable	I rarely demonstrates (<25% of the time)	I do this Sometimes (25-50% of the time)	I do this most of the time (50-75% of the time)	I do this all the time (>75% of the time)

1.	I am able to acquire accurate and relevant histories from my patients in an efficient, prioritized and hypothesis driven fashion.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
2.	I am able to seek and obtain appropriate, verified, and prioritized data from secondary sources (e.g. family, records and pharmacy)	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
3.	I am able to perform accurate physical examinations that are appropriately targeted to the patient's complaints.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
4.	I am able to synthesize all available data, including interview, physical exam, and preliminary lab data to define each patient's central clinical problem.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
5.	I am able to develop prioritized differential diagnoses, evidence based diagnostic and therapeutic plans for common conditions in Internal Medicine patients.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
6.	I am able to recognize situations with a need for urgent or emergent medical care, including life threatening conditions.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
7.	I am able to recognize when to seek additional guidance.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
8.	I am able to provide appropriate preventive care.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
9.	I am able to manage patients with common clinical disorders in the practice of outpatient internal medicine with minimal supervision.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
10.	I have performed several invasive procedures and documented them in my New Innovations log.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
11.	I demonstrate sufficient knowledge to diagnose and treat common conditions that require hospitalization.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
12.	I understand the indications for and the basic interpretation of common diagnostic tests.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
13.	I have reviewed my in service exam scores and believe my medical knowledge is where it should be for my level of training.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
14.	I am able to identify clinical questions as they emerge	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4



	in patient care activities.					
15.	I am responsive to feedback from all members of the healthcare team including faculty, residents, students, nurses, allied health professionals, patients and their advocates.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
16.	I am an active participant in teaching rounds and intern report.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
17.	I effectively use verbal and non verbal skills to create rapport with patients and their advocates.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
18.	I communicate effectively with other caregivers to ensure safe transitions in care.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
19.	My patient presentations on rounds are organized, complete and succinct.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
20.	I am able to communicate the plan of care to all the members of the healthcare team.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
21.	My documentation in the medical record is accurate, complete and timely.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
22.	I accept personal errors and honestly acknowledge them.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
23.	I demonstrate compassion and respect to all patients.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
24.	I complete my clinical, administrative and academic tasks promptly.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
25.	I maintain patient confidentiality	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
26.	I log my duty hours regularly and make every effort not to violate the rules	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
27.	When I feel I am too fatigued to work safely, I understand that I can call the chief medical residents for back-up.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
28.	I understand the unique roles and services provided by the workers in the local health delivery system (social workers, case managers, dept of public health etc...)	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
29.	I am able to identify, reflect on, and learn from critical incidents and preventable medical errors.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4
30.	I do my best to minimize unnecessary care including tests, procedures, therapies and consultations.	☐ NA	☐ 1	☐ 2	☐ 3	☐ 4

Please identify three specific clinical skills that you have improved over the past six months:

Please set three specific goals for the next six months:

Signature _____

Date _____



DIRECT OBSERVATION OF PROCEDURAL SKILLS (DOPS)

Please complete the questions using a cross ☒ Please use black ink and CAPITAL LETTERS

Doctor's Name: _____

PMDC Number: _____

Clinical setting:	A&E ☐	OPD ☐	In-patient ☐	Acute Admission ☐	Other ☐			
Procedure number:	☐							
Assessors position:	Consultant ☐	SpSR ☐	SpR ☐	Specialty doctor ☐	Nurse ☐	Other ☐		
Number of previous DOPS observed by assessor with any trainee	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5-9 ☐	>9 ☐	
Number of times procedure performed by trainee:	0 ☐	1-4 ☐	5-9 ☐	>10 ☐	Difficulty of procedure:	Low ☐	Average ☐	High ☐
Please grade the following areas	Well below expectations	Below Expectations	Borderline	Meets Expectations	Above Expectations	Well above expectations	U/C*	
	1	2	3	4	5	6		
1 Demonstrate understanding of indications, relevant anatomy, technique of procedure	☐	☐	☐	☐	☐	☐	☐	
2 Obtains informed consent	☐	☐	☐	☐	☐	☐	☐	
3 Demonstrates appropriate preparation pre-procedure	☐	☐	☐	☐	☐	☐	☐	
4 Appropriate analgesia or preparation pre-procedure	☐	☐	☐	☐	☐	☐	☐	
5 Technical ability safe sedation	☐	☐	☐	☐	☐	☐	☐	
6 Aseptic technique	☐	☐	☐	☐	☐	☐	☐	
7 Seeks help where appropriate	☐	☐	☐	☐	☐	☐	☐	
8 Post procedure management	☐	☐	☐	☐	☐	☐	☐	
9 Communication skills	☐	☐	☐	☐	☐	☐	☐	
10 Consideration of Patient/Professionalism	☐	☐	☐	☐	☐	☐	☐	
11 Overall ability to perform procedure	☐	☐	☐	☐	☐	☐	☐	
* U/C Please mark this if you have not observed the behaviour and therefore feel unable to comment.								
Please use this space to record areas of strength or any suggested development								
Anything especially good?				Suggestions for development:				
Have you had training in the use of this assessment tool? ☐ Face to face ☐ Have read guidelines ☐ Web/ CD-Rom								
Assessors signature: _____				Time taken for observation: (in minutes) ☐				
Date (mm/yy) ☐ / ☐ / ☐				Time taken for feedback ☐				
Assessor's Name: _____								

*if appropriate Please note failure of return of all completed forms to your administrator is a probity issue

Acknowledgement: Adapted with permission of the American Board of Internal Medicine

SpSR - Specialty Senior Registrar

SpR - Specialty Registrar



CASE BASED CLINICAL EVALUATION OF TRAINEE

Resident's Name: _____

Evaluator's Name(s): _____

Hospital Name: _____

Date of Evaluation: _____

☐ Traditional Track (10% Clinic) ☐ Primary Care Track (20% Clinic)

1	Unsatisfactory
2	Below Average
3	Average
4	Good
5	Superior

Please circle the appropriate number for each item using the scale above.

History	Scale				
1. Introduces himself and greet the patient.	1	2	3	4	5
2. Listen to the patient problems.	1	2	3	4	5
3. Shows politeness and empathy	1	2	3	4	5
4. Gathers proper information of present and past history	1	2	3	4	5
Physical Examination	Scale				
1. Physical examination done correctly	1	2	3	4	5
2. Pick physical signs correctly	1	2	3	4	5
3. Relevant examination done in detail	1	2	3	4	5
4. Interpret physical signs correctly	1	2	3	4	5
Assessment Plans	Scale				
1. Can list a logical differential diagnosis	1	2	3	4	5
2. Defend the diagnosis logically	1	2	3	4	5
3. Identifies patient active problems	1	2	3	4	5
Interpretation and Correlation of Laboratory and Imaging Data	Scale				
1. Can order logical and relevant investigations	1	2	3	4	5
2. Correctly interpret investigations (Laboratory and Imaging)	1	2	3	4	5
3. Formulate a logical management plan	1	2	3	4	5
4. Treatment plan is logical and relevant	1	2	3	4	5
5. Able to write a proper prescription	1	2	3	4	5