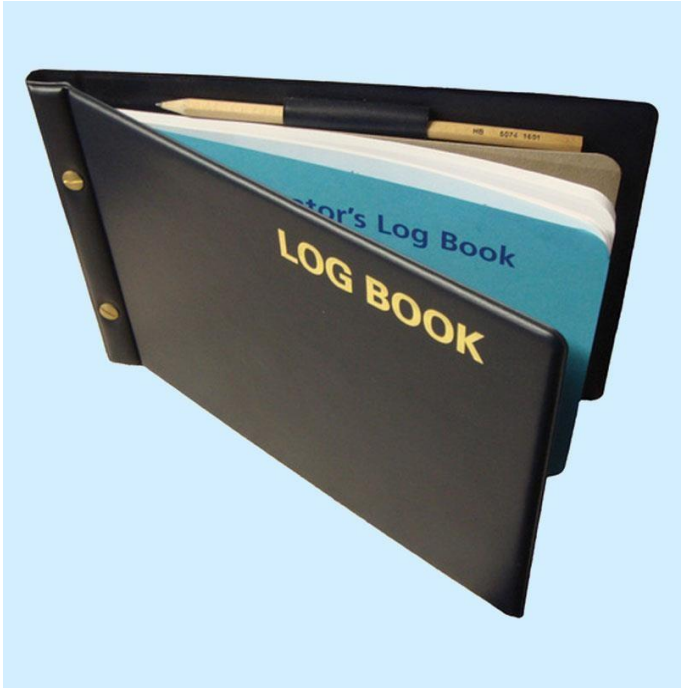
UNIVERSITY RESIDENCY PROGRAM -2019
LOG BOOK FOR NEUROSURGERY
RAWALPINDI MEDICAL UNIVERSITY RAWALPINDI



Observe, record, tabulate, and communicate. Use your five senses.
Learn to see, learn to hear, learn to feel, learn to smell and know that by practice alone you can become expert **(William osler)**

PREFACE

The horizons of *Medical Education* are widening & there has been a steady rise of global interest in *Post Graduate Medical Education*, an increased awareness of the necessity for experience in education skills for all healthcare professionals and the need for some formal recognition of postgraduate training in Internal Medicine.

We are seeing a rise in the uptake of places on postgraduate courses in medical education, more frequent issues of medical education journals and the further development of e-journals and other new online resources. There is therefore a need to provide active support in *Post Graduate Medical Education* for a larger, national group of colleagues in all specialties and at all stages of their personal professional development. If we were to formulate a statement of intent to explain the purpose of this log book, we might simply say that our aim is to help clinical colleagues to teach and to help students to learn in a better and advanced way. This book is a state of the art log book with representation of all activities of the MS Neurosurgery program at RMU.A summary of the curriculum is incorporated in the logbook for convenience of supervisors and residents. MD curriculum is based on six Core Competencies of ACGME ***(Accreditation Council for Graduate Medical Education)*** including ***Patient Care, Medical Knowledge, System Based Practice, Practice Based Learning, Professionalism, Interpersonal and Communication Skills***. A perfect monitoring system of a training program including monitoring of teaching and learning strategies, assessment and Research Activities cannot be denied so we at RMU have incorporated evaluation by ***Quality Assurance Cell*** and its comments in the logbook in addition to evaluation by ***University Training Monitoring Cell (URTMC)***. Reflection of the supervisor in each and every section of the logbook has been made sure to ensure transparency in the training program. The mission of Rawalpindi Medical University is to improve the health of the communities and we serve through education, biomedical research and health care. As an integral part of this mission, importance of research culture and establishment of a comprehensive research structure and research curriculum for the residents has been formulated and a separate journal for research publications of residents isavailable.

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CONTRIBUTION

Sr. No	NAME & DESIGNATION		CONTRIBUTIONS IN FORMULATION OF LOG BOOK OF MS NEUROSURGERY
1		**DR. NADEEM AKHTAR** MBBS, FCPS Head & Professor of Department of NEUROSURGERY, Rawalpindi Medical University	Over all synthesis, structuring & over all write up of MS Neurosurgery Curriculum. Also Proof reading & synthesis of final print version of Log Books of MS Neurosurgery and Rotations Log Book.
2		**DR. YASIR SHAHZAD** MBBS,MCPS,FCPS,ASCD (Spine), CHPE (Medical Education) Assistant Professor NEUROSURGERY DEPARTMENT, Rawalpindi Medical University	Log Book of MS Neurosurgery and also Log Book for MS Neurosurgery rotations under guidance of Prof. Nadeem Akhtar, Rawalpindi Medical University, Rawalpindi
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4		**DR. SYED HAMMAD ALI NAQVI** MBBS POST GRADUATE RESIDENT NEUROSURGERY DEPARTMENT, Rawalpindi Medical University.	Assistance of Faculty in formulating the log books & computer work under their direct guidance & supervision.
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6		**Mr. Zubair Ahmed** MSc. Electronics Computer operator NEUROSURGERY DEPARTMENT, Rawalpindi Medical University.	Assistance of Faculty in designing log books & computer work under their direct guidance & supervision

ENROLMENT DETAILS

Program ofAdmission_____

Session_____

Registration / Tra~~iningNumber~~_____

Name ofCandidate _____

Father'sName_____

DateofBirth_____/_____/_____ CNICNo._____

Present Address_____

PermanentAddress_____

E-mailAddress _____

CellPhone_____

Date of Start ofTraining_____

Date of Completion ofTraining_____

Name ofSupervisor _____

Designation ofSupervisor_____

Qualification ofSupervisor_____

Title of department /Unit_____

Name of Training Institute /Hospital _____

Sr . No Discipline

1. *Head injury adult*
2. *Head injury pediatrics*
3. *Spinal trauma*
4. *Brain*
5. *Spine*
6. *Congenital anomalies of brain and spine*

Please write your discipline on the line below

_____

INTRODUCTION

It is a structured book in which certain types of educational activities and patient related information is recorded, usually by hand.
Logbooks are used all over the world from undergraduate to postgraduate training, in human, veterinary and dental medicine, nursing schools and pharmacy, either in paper or electronic format .
Logbooks provide a clear setting of learning objectives and give trainees and clinical teachers a quick overview of the requirements of training and an idea of the learning progress. Logbooks are especially useful if different sites are involved in the training to set a (minimum) standard of training. Logbooks assist supervisors and trainees to see at one glance which learning objectives have not yet been accomplished and to set a learning plan. The analysis of logbooks can reveal weak points of training and can evaluate whether trainees have fulfilled the minimum requirements of training.
Logbooks facilitate communication between the trainee and clinical teacher. Logbooks help to structure and standardize learning in clinical settings. In contrast to portfolios, which focus on students' documentation and self-reflection of their learning activities, logbooks set clear learning objectives and help to structure the learning process in clinical settings and to ease communication between trainee and clinical teacher. To implement logbooks in clinical training successfully, logbooks have to be an integrated part of the curriculum and the daily routine on the ward. Continuous measures of quality management are necessary.

Reference

BraunsKS,NarcissE, SchneyinckC, BöhmeK, BrüstleP, HolzmannUM, etal. Twelve tips for successfully implementing logbooks in clinical training. Med Teach. 2016 Jun 2; 38(6): 564–569.

INDEX OF LOG:

1. ***MORNING REPORT PRESENTATION/CASEPRESENTATION***
2. ***TOPIC PRESENTATION/SEMINAR***
3. ***DIDACTIC LECTURES/INTERACTIVELECTURES***
4. ***JOURNALCLUB***
5. ***PROBLEM CASEDISCUSSION***
6. ***EMERGENCY CASES***
7. ***INDOORPATIENTS***
8. ***OPD ANDCLINICS***
9. ***PROCEDURES (OBSERVED, ASSISTED,PERFORMED UNDER SUPERVISION & PERFORMEDINDEPENDENTLY)***
10. ***MULTIDISCIPLINARYMEETINGS***
11. ***CLINICOPATHOLOGICALCONFERENCE***
12. ***MORBIDITY/MORTALITYMEETINGS***
13. ***HANDS ONTRAINING/WORKSHOPS***
14. ***PUBLICATIONS***
15. ***MAJOR RESEARCH PROJECT DURING MDTRAINING/ANY OTHER MAJOR RESEARCHPROJECT***
16. ***WRITTEN ASSESMENTRECORD***
17. ***CLINICAL ASSESMENTRECORD***
18. ***EVALUATION RECORD***
19. ***LEAVERECORD***
20. ***RECORD SHEET OFATTENDANCE/COUNCELLING SESSION/DOCUMENTATIONQUALITY***
21. ***ANY OTHER IMPORTANT ANDRELEVANT INFORMATION/DETAILS***

MINIMUM LOG BOOK ENTERIES PER MONTH IN GENERAL

(This minimum number is being provided for uniformity of the training and convenience for monitoring of the resident's performance by Quality Assurance Cell & University Research Training & Monitoring Cell of RMU but resident is encouraged to show performance above this minimum required number)

SR.NO	**ENTRY**	**Minimum cases /Time duration**
01	Case presentation	01 per month
02	Topic presentation	01 per month
03	Journal club	01 per month
04	Bed side teaching	06-08 per month
05	Large group teaching	04-06 per month
06	Emergency cases	06-10 per month
07	OPD	50 per month
08	Indoor (patients allotted)	08 per month plus participation in daily Morning & Evening rounds
09	Directly observed procedures	04-06 per month
10	CPC	02 per month
11	Mortality & Morbidity meetings	01 per month

MISSION STATEMENT

The mission of Neurosurgery Residency Program of Rawalpindi Medical University is:

The mission of the department of neurosurgery is to provide the public with the highest level of compassionate, surgical care of nervous system. We are committed to train the next generation of neurosurgeons to lead with cutting edge psychomotor skills, unsurpassed ethical behavior and Continuously refined analytical abilities. We strive to improve public health by fostering collaborative, innovative research that maintain, restores or repairs neural function.
The department of neurosurgery values diversity and inclusion and is committed to building and sustaining and academic department in which teacher ,researcher and learning achieve to knowledge ,skills and attitude that value and embrace inclusiveness ,equity and awareness as a way to unleash creativity
and innovation.

CLINICAL COMPETENCIES FOR 1ST, 2ND , 3RD ,4TH and 5th YEAR MS TRAINEES NEUROSURGERY

CLINICAL COMPETENCIES\SKILL\PROCEDURE

The clinical competencies, a specialist must have, are varied and complex. A complete list of the skills necessary for trainees and trainers is given below. The level of competence to be achieved each year is specified according to the key, as follows:

1. Observer status
2. Assistant status
3. Performed under supervision
4. Performed under indirect supervision
5. Performed independently

Note: Levels 4 and 5 for practical purposes are almost synonymous

	First Year								
	3Months		6Months						Total Cases 1st Year
	Level	Cases	Level	Cases					
Rotations to be incorporated as and when available with the consent of respected supervisor									
X ray Skull	1	10	2	10					20
X ray Spine	1	10	2	10					20
CT scan Brain (Plain and with contrast)	1	10	2	10					20
CT scan spine (Plain and with contrast)	1	5	2	5					10
CT Angio and Myelogram	-	-	-	-					-
MRI Brain (Plain and with contrast)	1	5	2	5					10
MRI spine (Plain and with contrast)	1	5	1	5					10
MRS,MRA,MRV	-	-	-	-					-
Application of cervical collar and traction	1	10	2	10					20
Application of lumber corset	1	10	2	10					20
Lumber puncture and drain	1	2	2	5					7
Ventricular tap	-	-	-	-					-
Shunt examination	1	5	2	5					10
Endotracheal intubation	1	5	2	5					10
External ventricular drainage	-	-	-	-					-
Fundoscopy	-	-	-	-					-
Sacroiliac and epidural block	-	-	-	-					-
EEG,EMG,NCS	-	-	-	-					-
Nasogastric Intubation	1	10	2	10					20
Folleys catheterization	1	10	2	10					20

LOG BOOK ENTERIES REQUIREMENT FOR 3rd YEAR MS NEUROSURGERY TRAINEES

PROCEDURES	THIRD YEAR								
	Level 03 mon	Cases	Level 06 mon	Cases	Level 09 Mon	Cases	Level 12 Mon	Cases	Total Cases in Year
Rotations to be incorporated as and when available with the consent of respected supervisor									
X ray Skull	3	10	3	10	3	15	3	15	50
X ray Spine	3	10	3	10	3	15	3	15	50
CT scan Brain (Plain and with contrast)	3	10	3	10	3	15	3	15	50
	3	5	3	5	3	10	3	10	30
CT scan spine (Plain and with contrast)	1	3	2	4	3	5	3	5	17
	3	5	3	5	3	10	3	10	30
CT Angio and Myelogram	2	5	2	5	3	7	3	7	24
MRI Brain (Plain and with contrast)	1	3	1	3	2	5	2	5	16
MRI spine (Plain and with contrast)	3	10	3	10	3	15	3	15	50
MRS,MRA,MRV	3	10	3	10	3	15	3	15	50
Application of cervical collar and traction	3	5	3	5	3	7	3	7	24
Application of lumber corset	1	2	2	2	3	3	3	3	10
Lumber puncture and drain	3	5	3	5	3	7	3	7	24
Ventricular tap	3	5	3	5	3	7	3	7	24
Shunt examination	1	1	1	2	2	2	3	3	8
Endotracheal intubation	1	2	1	2	2	3	2	3	10
External ventricular drainage	-	-	-	-	-	-	-	-	-
Sacroiliac and epidural block	3	10	3	10	3	15	3	15	50
EEG,EMG,NCS	-	-	-	-					-
Nasogastric Intubation	3	10	3	10	3	15	3	15	50
Folleys catheterization	3	10	3	10	3	15	3	15	50

LOG BOOK ENTERIES REQUIREMENT FOR 4th YEAR MS NEUROSURGERY TRAINEES

	Level 03 mon	Cases	Level 06 mon	Cases	Level 09 Mon	Cases	Level 12 Mon	Cases	Total Cases in Year
Rotations to be incorporated as and when available with the consent of respected supervisor									
X ray Skull	4	15	4	15	4	20	4	20	70
X ray Spine	4	15	4	15	4	20	4	20	70
CT scan Brain (Plain and with contrast)	4	15	4	15	4	20	4	20	70
	4	15	4	15	4	20	4	20	70
CT scan spine (Plain and with contrast)	4	7	4	7	4	10	4	10	34
	4	10	4	10	4	15	4	15	50
CT Angio and Myelogram	4	10	4	10	4	15	4	15	50
MRI Brain (Plain and with contrast)	3	5	3	5	4	7	4	7	24
MRI spine (Plain and with contrast)	4	15	4	15	4	20	4	20	70
MRS,MRA,MRV	4	15	4	15	4	20	4	20	70
Application of cervical collar and traction	4	7	4	7	4	10	4	10	34
Application of lumber corset	4	2	4	2	4	5	4	5	14
Lumber puncture and drain	4	7	4	7	4	10	4	10	34
Ventricular tap	4	10	4	10	4	15	4	15	50
Shunt examination	4	3	4	3	4	5	4	5	16
Endotracheal intubation	3	3	3	3	4	5	4	5	16
External ventricular drainage	4	3	4	3	4	5	4	5	16
Sacroiliac and epidural block	2	3	2	3	3	5	4	7	17
EEG,EMG,NCS	4	15	4	15	4	20	4	20	70
Nasogastric Intubation	4	15	4	15	4	20	4	20	70
Folleys catheterization	4	15	4	15	4	20	4	20	70

LOG BOOK ENTERIES REQUIREMENT FOR FINAL YEAR MS NEUROSURGERY TRAINEES

	Level 03 mon	**Cases**	**Level** 06 mon	**Cases**	**Level** 09 Mon	**Cases**	**Level** 12 Mon	**Cases**	Total Cases in Year
Rotations to be incorporated as and when available with the consent of respected supervisor									
X ray Skull	5	20	5	20	5	25	5	25	90
X ray Spine	5	20	5	20	5	25	5	25	90
CT scan Brain (Plain and with contrast)	5	20	5	20	5	25	5	25	90
	5	20	5	20	5	25	5	25	90
CT scan spine (Plain and with contrast)	5	10	5	10	5	15	5	15	50
	5	15	5	15	5	20	5	20	70
CT Angio and Myelogram	5	15	5	15	5	20	5	20	70
MRI Brain (Plain and with contrast)	5	7	5	7	5	10	5	10	34
MRI spine (Plain and with contrast)	5	20	5	20	5	25	5	25	90
MRS,MRA,MRV	5	20	5	20	5	25	5	25	90
Application of cervical collar and traction	5	10	5	10	5	15	5	15	50
Application of lumber corset	5	4	5	4	5	7	5	7	22
Lumber puncture and drain	5	10	5	10	5	15	5	15	50
Ventricular tap	5	15	5	15	5	20	5	20	70
Shunt examination	5	5	5	5	5	7	5	7	24
Endotracheal intubation	5	5	5	5	5	7	5	7	24
External ventricular drainage	5	5	5	5	5	7	5	7	24
Sacroiliac and epidural block	5	5	5	5	5	7	5	7	24
EEG,EMG,NCS	5	15	5	15	5	20	5	20	70
Nasogastric Intubation	5	15	5	15	5	20	5	20	70
Folleys catheterization	5	20	5	20	5	25	5	25	90

INTRODUCTION

Curriculum of MS Neurological surgery at Rawalpindi Medical University is an important document that defines the educational goals of Residency Training Program and is intended to clarify the learning objectives for all inpatient and outpatient rotations. Program requirements are based on the ACGME (Accreditation Council for Graduate Medical Education) standards for categorical training in neurological surgery. Curriculum is based on 6 core competencies. Detail of these competencies is as follows

CORE COMPETENCIES

Details of The Six Core Competencies of Curriculum of MS Neurosurgery

COMPETENCY NO. 1 PATIENT CARE (PC)

- **Gathers and synthesizes essential and accurate information to define each patient's clinical problem(s). (PC1)**
  - Collects accurate historical data
  - Uses physical exam to confirm history
  - Does not relies exclusively on documentation of others to generate own database or differential diagnosis
  - Consistently acquires accurate and relevant histories from patients
  - Seeks and obtains data from secondary sources when needed
  - Consistently performs accurate and appropriately thorough physical exams
  - Uses collected data to define a patient's central clinical problem(s)
  - Acquires accurate histories from patients in an efficient, prioritized, and hypothesis- driven fashion
  - Performs accurate physical exams that are targeted to the patient's complaints
  - Synthesizes data to generate a prioritized differential diagnosis and problem list
  - Effectively uses history and physical examination skills to minimize the need for further diagnostic testing
  - Obtains relevant historical subtleties, including sensitive information that informs the differential diagnosis
  - Identifies subtle or unusual physical exam findings
  - Efficiently utilizes all sources of secondary data to inform differential diagnosis
  - Role models and teaches the effective use of history and physical examination skills to minimize the need for further diagnostic testing
- **Develops and achieves comprehensive management plan for each patient. (PC2)**
  - Care plans are consistently inappropriate or inaccurate
  - Does not react to situations that require urgent or emergent care
  - Does not seek additional guidance when needed Inconsistently develops an appropriate care plan
  - Inconsistently seeks additional guidance when needed
  - Consistently develops appropriate care plan
  - Recognizes situations requiring urgent or emergent care
  - Seeks additional guidance and/or consultation as appropriate
  - Appropriately modifies care plans based on patient's clinical course, additional data, and patient preferences
  - Recognizes disease presentations that deviate from common patterns and require complex decision- making
  - Manages complex acute and chronic diseases
  - Role models and teaches complex and patient-centered care

- Develops customized, prioritized care plans for the most complex patients, incorporating diagnostic uncertainty and cost effectiveness principles

? **Manages patients with progressive responsibility and independence. (PC3)**
- Assume responsibility for patient management decisions
- Consistently manages simple ambulatory complaints or common chronic diseases
- Consistently manages patients with straightforward diagnoses in the inpatient setting
- Unable to manage complex inpatients or patients requiring intensive care
- Requires indirect supervision to ensure patient safety and quality care
- Provides appropriate preventive care and chronic disease management in the ambulatory setting
- Provides comprehensive care for single or multiple diagnoses in the inpatient setting
- Under supervision, provides appropriate care in the intensive care unit Initiates management plan for urgent or emergent care
- Independently supervise care provided by junior members of the physician-led team
- Independently manages patients across inpatient and ambulatory clinical settings who have a broad spectrum of clinical disorders including undifferentiated syndromes
- Seeks additional guidance and/or consultation as appropriate
- Appropriately manages situations requiring urgent or emergent care
- Effectively supervises the management decisions of the team
- Manages unusual, rare, or complex disorders

? **Skill in performing procedures. (PC4)**
- Does not attempts to perform procedures without sufficient technical skill or supervision
- Willing to perform procedures when qualified and necessary for patient care
- Possesses basic technical skill for the completion of some common procedures
- Possesses technical skill and has successfully performed all procedures required for certification
- Maximizes patient comfort and safety when performing procedures
- Seeks to independently perform additional procedures (beyond those required for certification) that are anticipated for future practice
- Teaches and supervises the performance of procedures by junior members of the team

? **Requests and provides consultative care. (PC5)**
- Is responsive to questions or concerns of others when acting as a consultant or utilizing consultant services
- Willing to utilize consultant services when appropriate for patient care
- Consistently manages patients as a consultant to other physicians/health care teams
- Consistently applies risk assessment principles to patients while acting as a consultant
- Consistently formulates a clinical question for a consultant to address
- Provides consultation services for patients with clinical problems requiring basic risk assessment
- Asks meaningful clinical questions that guide the input of consultants
- Provides consultation services for patients with basic and complex clinical problems requiring detailed risk assessment
- Appropriately weighs recommendations from consultants in order to effectively manage patient care

- Switches between the role of consultant and primary physician with ease
- Provides consultation services for patients with very complex clinical problems requiring extensive risk assessment
- Manages discordant recommendations from multiple consultants

Patient Care PC-1

? **How To Teach**

- Discussions in ward rounds to teach history taking.
- Discussions in ward rounds to teach physical examination.
- Demonstration in ward rounds to teach history taking.
- Demonstration in ward rounds to teach physical examination.
- Discussions in wards of short cases
- Discussions in wards of long cases
- Simulated patient (in order to simulate a set of symptoms or problems.)
- Should write a summary (synthesize a differential diagnosis).

? **How To Assess**

? Discussions in ward rounds to assess history taking
? Discussions in ward rounds to assess physical examination
? Short cases assessment through long cases
? Confirmation of physical findings by supervisor
? Confirmation of history by supervisor.
? OSPE

Patient Care PC-2

9. How To Teach

- Resident should write management plan on history sheet and supervisor should discuss management plan.
- Resident should write investigational plans, should be able to interpret with help
- of supervisor
- Should be taught prioritization of care plans in complex patient by discussion.

? **How To Assess**

- Long cases and short cases to assess the clear concepts of management by the trainee.

? **Patient Care PC-3**

? **How To Teach**

- Discuss thoroughly the management side effects /interactions/dosage/therapeutic procedures and intervention

? **How To Assess**

- Long case
- Short case

- OSPE
- Simulated patient
- Stimulated chart recall
- Log book
- Portfolio
- Internal assessment record

? **Patient Care PC-4**

? **How To Teach**

- Supervisor should ensure that the resident has complete knowledge about the procedures.
- Trainee should observe procedures
- Should perform procedures under supervision
- Should be able to perform procedures independently

- Videos regarding different procedures.

? **How To Assess**

- OSPE
- Logbook/ portfolio
- Direct observation

Patient Care PC-5

How to Teach

- All consultations by the trainees should be discussed by the supervisor.

How to Assess

- Consultation record of the log book
- Feedback by other department regarding consultation

COMPETENCY NO. 2 MEDICAL KNOWLEDGE (MK)

? **Clinical knowledge (MK1)**

- Possesses sufficient scientific, socioeconomic and behavioral knowledge required to provide care for common medical conditions and basic preventive care.
- Possesses the scientific, socioeconomic and behavioral knowledge required to provide care for complex medical conditions and comprehensive preventive care
- Possesses the scientific, socioeconomic and behavioral knowledge required to successfully diagnose and treat medically uncommon, ambiguous and complex conditions.

- Knowledge of diagnostic testing and procedures. (MK2)
- Consistently interprets basic diagnostic tests accurately
- Does not need assistance to understand the concepts of pre-test probability and test performance Characteristics
- Fully understands the rationale and risks associated with common procedures
- Interprets complex diagnostic tests accurately
- Understands the concepts of pre-test probability and test performance characteristics
- Teaches the rationale and risks associated with common procedures and anticipates potential complications when performing procedures
- Anticipates and accounts for pitfalls and biases when interpreting diagnostic tests and procedures
- Pursues knowledge of new and emerging diagnostic tests and procedures

? **Medical Knowledge (MK-1, MK-2)**

? **How to Teach**

- Books etc
- Articles
- CPC(Clinic Pathological Conference)
- Lecture
- Videos
- SDL(Self Directed Learning)
- PBL(Problem Based Learning)
- Teaching experience with medical student
- Read procedural knowledge.

? **How To Assess**

- MCQs
- SEQs
- Viva
- Videos
- Internal assessment

COMPETENCY NO. 3 SYSTEM BASED PRACTICE (SBP)

? **Works effectively within an inter professional team (e.g. peers, consultants, nursing, Ancillary professionals and other support personnel). (SBP1).**

- Recognizes the contributions of other inter professional team members
- Does not frustrates team members with inefficiency and errors
- Identifies roles of other team members and recognize how/when to utilize them as resources.
- Does not requires frequent reminders from team to complete physician responsibilities (e.g. talk to family, enter orders)
- Understands the roles and responsibilities of all team members and uses them effectively
- Participates in team discussions when required and actively seek input from other team members

- Understands the roles and responsibilities of and effectively partners with, all members of the team
- Actively engages in team meetings and collaborative decision-making
- Integrates all members of the team into the care of patients, such that each is able to maximize their skills in the care of the patient
- Efficiently coordinates activities of other team members to optimize care
- Viewed by other team members as a leader in the delivery of high quality care

? **Recognizes system error and advocates for system improvement. (SBP2)**

- Does not ignore a risk for error within the system that may impact the care of a patient.
- Does not make decisions that could lead to error which are otherwise corrected by the system or supervision.
- Does not resistant to feedback about decisions that may lead to error or otherwise cause harm.
- Recognizes the potential for error within the system.
- Identifies obvious or critical causes of error and notifies supervisor accordingly.
- Recognizes the potential risk for error in the immediate system and takes necessary steps to mitigate that risk.
- Willing to receive feedback about decisions that may lead to error or otherwise cause harm.
- Identifies systemic causes of medical error and navigates them to provide safe patient care.
- Advocates for safe patient care and optimal patient care systems
- Activates formal system resources to investigate and mitigate real or potential medical error.
- Reflects upon and learns from own critical incidents that may lead to medical error.
- Advocates for system leadership to formally engage in quality assurance and quality improvement activities.
- Viewed as a leader in identifying and advocating for the prevention of medical error.
- Teaches others regarding the importance of recognizing and mitigating system error.

? **Identifies forces that impact the cost of health care, and advocates for, and practices cost-effective care. (SBP3).**

- Does not ignores cost issues in the provision of care
- Demonstrates effort to overcome barriers to cost- effective care
- Has full awareness of external factors (e.g. socio- economic, cultural, literacy, insurance status) that impact the cost of health care and the role that external stakeholders (e.g. providers, suppliers, financers, purchasers) have on the cost of care
- Consider limited health care resources when ordering diagnostic or therapeutic interventions
- Recognizes that external factors influence a patient's utilization of health care and Does not act as barriers to cost- effective care
- Minimizes unnecessary diagnostic and therapeutic tests
- Possesses an incomplete understanding of cost- awareness principles for a population of patients (e.g. screening tests)
- Consistently works to address patient specific barriers to cost-effective care
- Advocates for cost-conscious utilization of resources (i.e. emergency department visits, hospital readmissions)
- Incorporates cost-awareness principles into standard clinical judgments and decision-making, including screening tests

- Teaches patients and healthcare team members to recognize and address common barriers to cost- effective care and appropriate utilization of resources
- Actively participates in initiatives and care delivery models designed to overcome or mitigate barriers to cost-effective high quality care

? **Transitions patients effectively within and across health delivery systems. (SBP4)**

- Regards need for communication at time of transition
- Responds to requests of caregivers in other delivery systems
- Inconsistently utilizes available resources to coordinate and ensure safe and effective patient care within and across delivery systems
- Written and verbal care plans during times of transition are complete
- Efficient transitions of care lead to only necessary expense or less risk to a patient (e.g. avoids duplication of tests readmission)
- Recognizes the importance of communication during times of transition
- Communication with future caregivers is present but with lapses in pertinent or timely information
- Appropriately utilizes available resources to coordinate care and ensures safe and effective patient care within and across delivery systems
- Proactively communicates with past and future care givers to ensure continuity of care
- Coordinates care within and across health delivery systems to optimize patient safety, increase efficiency and ensure high quality patient outcomes
- Anticipates needs of patient, caregivers and future care providers and takes appropriate steps to address those needs
- Role models and teaches effective transitions of care

? **How To Teach**

- Lecture/ orientation session
- Various system/policies should be identified and discussed with the residents.
- Examples:
- Zakaat
- Admission procedure
- Bait-ul-Mall
- Discharge procedure
- Consultation procedure
- Shifting of patients according to SOPS
- Preferably a manual should be designed regarding various systems existing in the
- Hospital for the resident.
- Cost effectiveness/availability of medicine
- Avoidance of unnecessary tests because of limited health resources.
- Direct observation by the supervisor during ward rounds
- Feed back
- Assessment during case discussion

COMPETENCY NO. 4 PRACTICE BASED LEARNING (PBL)

? **Monitors practice with a goal for improvement. (PBLI1)**

- Willing to self-reflect upon one's practice or performance
- Concerned with opportunities for learning and self-improvement
- Unable to self-reflect upon one's practice or performance
- Avails opportunities for learning and self-improvement
- Consistently acts upon opportunities for learning and self-improvement
- Regularly self-reflects upon one's practice or performance and consistently acts upon those reflections to improve practice
- Recognizes sub-optimal practice or performance as an opportunity for learning and self-improvement
- Regularly self-reflects and seeks external validation regarding this reflection to maximize practice improvement
- Actively engages in self- improvement efforts and reflects upon the experience

? **Learns and improves via performance audit. (PBLI2)**

- Regards own clinical performance data
- Demonstrates inclination to participate in or even consider the results of quality improvement efforts
- Adequate awareness of or desire to analyze own clinical performance data
- Participates in a quality improvement projects
- Familiar with the principles, techniques or importance of quality improvement
- Analyzes own clinical performance data and identifies opportunities for improvement
- Effectively participates in a quality improvement project
- Understands common principles and techniques of quality improvement and appreciates the responsibility to assess and improve care for a panel of patients Analyzes own clinical performance data and actively works to improve performance
- Actively engages in quality improvement initiatives
- Demonstrates the ability to apply common principles and techniques of quality improvement to improve care for a panel of patients
- Actively monitors clinical performance through various data sources
- Is able to lead a quality improvement project
- Utilizes common principles and techniques of quality improvement to continuously improve care for a panel of patients

? **Learns and improves via feedback. (PBLI3)**

- Does not resists feedback from others
- Often seeks feedback
- Never responds to unsolicited feedback in a defensive fashion
- Temporarily or superficially adjusts performance based on feedback

- Does not solicits feedback only from supervisors
- Is open to unsolicited feedback
- Solicits feedback from all members of the inter professional team and patients
- Consistently incorporates feedback
- Performance continuously reflects incorporation of solicited and unsolicited feedback
- Able to reconcile disparate or conflicting feedback

? **Learns and improves at the point of care. (PBLI4)**
- Acknowledges uncertainly and does not revert to reflexive patterned response when inaccurate
- Seeks or applies evidence when necessary
- Familiar with strengths and weaknesses of the medical literature
- Has adequate awareness of or ability to use information technology
- Does not accepts the findings of clinical research studies without critical appraisal Can translate medical information needs into well- formed clinical questions independently
- Aware of the strengths and weaknesses of medical information resources and utilizes information technology with sophistication
- Appraises clinical research reports, based on accepted criteria
- Does not "slows down" to reconsider an approach to a problem, ask for help, or seek new information
- Routinely translates new medical information needs into well-formed clinical questions
- Utilizes information technology with sophistication
- Independently appraises clinical research reports based on accepted criteria
- Searches medical information resources efficiently, guided by the characteristics of clinical questions
- Role models how to appraise clinical research reports based on accepted criteria
- Has a systematic approach to track and pursue emerging clinical question

? **Practice Based Learning (PBL1, PBL2, PBL3, PBL4)**

? **How to Teach**
- Discussions about problem cases
- Should discuss errors and omissions

? **How to Assess**
- Feed back
- 360 evaluation
- Research article presentation
- Journal club presentation
- CPC presentation
- Ward presentation
- Quality improvement of projects

COMPETENCY NO. 5 PROFESSIONALISM(PROF)

- Has professional and respectful interactions with patients, caregivers and members of the interprofessional team (e.g. peers, consultants, nursing, ancillary professionals and support personnel). (PROF1)
- Consistently respectful in interactions with patients, caregivers and members of the interprofessional team, even in challenging situations
- Is available and responsive to needs and concerns of patients, caregivers and members of the interprofessional team to ensure safe and effective care Emphasizes patient privacy and autonomy in all interactions
- Demonstrates empathy, compassion and respect to patients and caregivers in all situations
- Anticipates, advocates for, and proactively works to meet the needs of patients and caregivers
- Demonstrates a responsiveness to patient needs that supersedes self-interest
- Positively acknowledges input of members of the interprofessional team and incorporates that input into plan of care as appropriate
- Role models compassion, empathy and respect for patients and caregivers
- Role models appropriate anticipation and advocacy for patient and caregiver needs
- Fosters collegiality that promotes a high-functioning interprofessional team

? **Teaches others regarding maintaining patient privacy and respecting patient autonomyAccepts responsibility and follows through on tasks. (PROF2)**

- Demonstrates responsibilities expected of a physician professional
- Accepts professional responsibility even when not assigned or not mandatory
- Completes administrative and patient care tasks in a timely manner in accordance with local practice and/or policy
- Completes assigned professional responsibilities without questioning or the need for reminders
- Prioritizes multiple competing demands in order to complete tasks and responsibilities in a timely and effective manner
- Willingness to assume professional responsibility regardless of the situation
- Role models prioritizing multiple competing demands in order to complete tasks and responsibilities in a timely and effective manner
- Assists others to improve their ability to prioritize multiple, competing tasks

- **Responds to each patient's unique characteristics and needs. (PROF3)**
  - Willing to modify care plan to account for a patient's unique characteristics and needs
  - Is sensitive to and has basic awareness of differences related to culture, ethnicity, gender, race, age and religion in the patient/caregiver encounter
  - Seeks to fully understand each patient's unique characteristics and needs based upon culture, ethnicity, gender, religion, and personal preference
  - Modifies care plan to account for a patient's unique characteristics and needs with complete success
  - Recognizes and accounts for the unique characteristics and needs of the patient/ caregiver
  - Appropriately modifies care plan to account for a patient's unique characteristics and needs
  - Role models professional interactions to negotiate differences related to a patient's unique characteristics or needs
  - Role models consistent respect for patient's unique characteristics and needs
- **Exhibits integrity and ethical behavior in professional conduct. (PROF4)**
  - Has a basic understanding of ethical principles, formal policies and procedures, and does not intentionally disregard them
  - Honest and forthright in clinical interactions, documentation, research, and scholarly activity
  - Demonstrates accountability for the care of patients
  - Adheres to ethical principles for documentation, follows formal policies and procedures, acknowledges and limits conflict of interest, and upholds ethical expectations of research and scholarly activity
  - Demonstrates integrity, honesty, and accountability to patients, society and the profession
  - Actively manages challenging ethical dilemmas and conflicts of interest
  - Identifies and responds appropriately to lapses of professional conduct among peer group
  - Assists others in adhering to ethical principles and behaviors including integrity, honesty, and professional responsibility
  - Role models integrity, honesty, accountability and professional conduct in all aspects of professional life
  - Regularly reflects on personal professional conduct

? **Professionalism (PROF1, PROF2, PROF3 AND PROF4)**

? **How To Teach**

1. Should be taught during ward rounds.
2. By supervisor
3. Through workshop

? **How To Assess**

1. Punctuality
2. Behavior
3. Direct observation during ward rounds
4. Feed back
5. 360 degree evaluation

Competency No. 6 INTERPERSONAL AND COMMUNICATION SKILL (ICS)

- Communicates effectively with patients and caregivers. (ICS1)
- Does not ignores patient preferences for plan of care
- Makes attempt to engage patient in shared decision-making
- Does not engages in antagonistic or counter-therapeutic relationships with patients and caregivers
- Engages patients in discussions of care plans and respects patient preferences when offered by the patient, and also actively solicit preferences.
- Attempts to develop therapeutic relationships with patients and caregivers which is often successful
- Defers difficult or ambiguous conversations to others
- Engages patients in shared decision making in uncomplicated conversations
- Requires assistance facilitating discussions in difficult or ambiguous conversations
- Requires guidance or assistance to engage in communication with persons of different socioeconomic and cultural backgrounds
- Identifies and incorporates patient preference in shared decision making across a wide variety of patient care conversations
- Quickly establishes a therapeutic relationship with patients and caregivers, including persons of different socioeconomic and cultural backgrounds
- Incorporates patient-specific preferences into plan of care
- Role models effective communication and development of therapeutic relationships in both routine and challenging situations
- Models cross-cultural communication and establishes therapeutic relationships with persons of diverse socioeconomic backgrounds

? **Communicates effectively in inter professional teams (e.g. peers, consultants, nursing, ancillary professionals and other support personnel). (ICS2**)

- Does not uses unidirectional communication that fails to utilize the wisdom of the team
- Does not resists offers of collaborative input
- Consistently and actively engages in collaborative communication with all members of the team
- Verbal, non-verbal and written communication consistently acts to facilitate collaboration with the team to enhance patient care
- Role models and teaches collaborative communication with the team to enhance patient care, even in challenging settings and with conflicting team member opinions

? **Appropriate utilization and completion of health records. (ICS3)**

- Health records are organized and accurate and are not superficial and does not miss key data or fails to communicate clinical reasoning
- Health records are organized, accurate, comprehensive, and effectively communicate clinical reasoning
- Health records are succinct, relevant, and patient specific
- Role models and teaches importance of organized, accurate and comprehensive health records that are succinct and patient specific

Interpersonal and Communication Skill (ISC1, ICS2 AND ICS3)

? **How to Teach**

- Teaching through communication skills by supervisor
- Through workshop

? **How to Assess**

1. Direct observation
2. Feed back
3. 360 degree evaluation
4. History taking
5. CPC presentation
6. Journal club presentation
7. Article presentation
8. Consultation
9. OPD working
10. Counseling sessions
11. OSPE
12. VIVA

INTRODUCTION

Curriculum of MS Neurosurgery at Rawalpindi Medical University is an important document that defines the educational goals of Residency Training Program and is intended to clarify the learning objectives for all inpatient and outpatient rotations. Program requirements are based on the ACGME (Accreditation Council for Graduate Medical Education) standards for categorical training in Internal Medicine. Curriculum is based on 6 core competencies. Detail of these competencies is as follows

CORE COMPETENCIES

Details of The Six Core Competencies of Curriculum of MD InternalMedicineCOMPETENCYNO.1 PATIENT CARE(PC)

- **Gathers and synthesizes essential and accurate information to define each patient's clinical problem(s).(PC1)**
  - Collects accurate historicaldata
  - Uses physical exam to confirmhistory
  - Does not relies exclusively on documentation of others to generate own database or differentialdiagnosis
  - Consistently acquires accurate and relevant histories frompatients
  - Seeks and obtains data from secondary sources whenneeded
  - Consistently performs accurate and appropriately thorough physicalexams
  - Uses collected data to define a patient's central clinicalproblem(s)
  - Acquires accurate histories from patients in an efficient, prioritized, and hypothesis- drivenfashion
  - Performs accurate physical exams that are targeted to the patient'scomplaints
  - Synthesizes data to generate a prioritized differential diagnosis and problemlist
  - Effectively uses history and physical examination skills to minimize the need for further diagnostictesting
  - Obtains relevant historical subtleties, including sensitive information that informs the differentialdiagnosis
  - Identifies subtle or unusual physical examfindings
  - Efficiently utilizes all sources of secondary data to inform differentialdiagnosis
  - Role models and teaches the effective use of history and physical examination skills to minimize the need for further diagnostictesting
- **Develops and achieves comprehensive management plan for each patient.(PC2)**
  - Care plans are consistently inappropriate orinaccurate
  - Does not react to situations that require urgent or emergentcare
  - Does not seek additional guidance when needed Inconsistently develops an appropriate careplan
  - Inconsistently seeks additional guidance whenneeded
  - Consistently develops appropriate careplan
  - Recognizes situations requiring urgent or emergentcare
  - Seeks additional guidance and/or consultation asappropriate
  - Appropriatelymodifiescareplansbasedonpatient'sclinicalcourse,additionaldata,andpatientpreferences
  - Recognizes disease presentations that deviate from common patterns and require complex decision-making
  - Manages complex acute and chronicdiseases
  - Role models and teaches complex and patient-centeredcare

- Develops customized, prioritized care plans for the most complex patients, incorporating diagnostic uncertainty and cost effectiveness principles

- **Manages patients with progressive responsibility and independence.(PC3)**
  - Assume responsibility for patient managementdecisions
  - Consistently manages simple ambulatory complaints or common chronicdiseases
  - Consistently manages patients with straightforward diagnoses in the inpatientsetting
  - Unable to manage complex inpatients or patients requiring intensivecare
  - Requires indirect supervision to ensure patient safety and qualitycare
  - Provides appropriate preventive care and chronic disease management in the ambulatorysetting
  - Provides comprehensive care for single or multiple diagnoses in the inpatientsetting
  - Under supervision, provides appropriate care in the intensive care unit Initiates management plan for urgent or emergentcare
  - Independently supervise care provided by junior members of the physician-ledteam
  - Independently manages patients across inpatient and ambulatory clinical settings who have a broad spectrum of clinical disorders including undifferentiatedsyndromes
  - Seeks additional guidance and/or consultation asappropriate
  - Appropriately manages situations requiring urgent or emergentcare
  - Effectively supervises the management decisions of theteam
  - Manages unusual, rare, or complexdisorders
- **Skill in performing procedures.(PC4)**
  - Does not attempts to perform procedures without sufficient technical skill orsupervision
  - Willing to perform procedures when qualified and necessary for patientcare
  - Possesses basic technical skill for the completion of some commonprocedures
  - Possesses technical skill and has successfully performed all procedures required forcertification
  - Maximizes patient comfort and safety when performingprocedures
  - Seeks to independently perform additional procedures (beyond those required for certification) that are anticipated for future practice
  - Teaches and supervises the performance of procedures by junior members of theteam
- **Requests and provides consultative care.(PC5)**
  - Is responsive to questions or concerns of others when acting as a consultant or utilizing consultantservices
  - Willing to utilize consultant services when appropriate for patientcare
  - Consistently manages patients as a consultant to other physicians/health careteams
  - Consistently applies risk assessment principles to patients while acting as aconsultant
  - Consistently formulates a clinical question for a consultant toaddress
  - Provides consultation services for patients with clinical problems requiring basic riskassessment
  - Asks meaningful clinical questions that guide the input ofconsultants
  - Provides consultation services for patients with basic and complex clinical problems requiring detailed riskassessment
  - Appropriately weighs recommendations from consultants in order to effectively manage patientcare

- Switches between the role of consultant and primary physician withease
- Provides consultation services for patients with very complex clinical problems requiring extensive riskassessment
- Manages discordant recommendations from multipleconsultants

PatientCare PC-1

- **How ToTeach**
  - Discussions in ward rounds to teach historytaking.
  - Discussions in ward rounds to teach physicalexamination.
  - Demonstration in ward rounds to teach historytaking.
  - Demonstration in ward rounds to teach physicalexamination.
  - Discussions in wards of shortcases
  - Discussions in wards of longcases
  - Simulated patient (in order to simulate a set of symptoms orproblems.)
  - Should write a summary (synthesize a differentialdiagnosis).
- **How ToAssess**
  - Discussions in ward rounds to assess historytaking
  - Discussions in ward rounds to assess physicalexamination
  - Short cases assessment through longcases
  - Confirmation of physical findings bysupervisor
  - Confirmation of history bysupervisor.
  - OSPE

PatientCare PC-2

- **How ToTeach**
  - Resident should write management plan on history sheet and supervisor should discuss managementplan.
  - Resident should write investigational plans, should be able to interpret withhelp
  - ofsupervisor
  - Should be taught prioritization of care plans in complex patient bydiscussion.
- **How ToAssess**
  - Long cases and short cases to assess the clear concepts of management by thetrainee.
- **PatientCare PC-3**
- **How ToTeach**
  - Discuss thoroughly the management side effects /interactions/dosage/therapeutic procedures andintervention
- **How ToAssess**
  - Longcase
  - Short case

- OSPE
- Simulatedpatient
- Stimulated chartrecall
- Logbook
- Portfolio
- Internal assessmentrecord

- **PatientCare PC-4**
- **How ToTeach**
  - Supervisor should ensure that the resident has complete knowledge about theprocedures.
  - Trainee should observeprocedures
  - Should perform procedures undersupervision
  - Should be able to perform proceduresindependently
  - Videos regarding differentprocedures.
- **How ToAssess**
  - OSPE
  - Logbook/portfolio
  - Directobservation

PatientCare PC-5

How to Teach
- All consultations by the trainees should be discussed by thesupervisor.

How to Assess
- Consultation record of the logbook
- Feedback by other department regardingconsultation

COMPETENCYNO. 2 MEDICAL KNOWLEDGE (MK)

- **Clinical knowledge(MK1)**
  - Possesses sufficient scientific, socioeconomic and behavioral knowledge required to provide care for common medical conditions and basic preventivecare.
  - Possesses the scientific, socioeconomic and behavioral knowledge required to provide care for complex medical conditions and comprehensive preventivecare
  - Possesses the scientific, socioeconomic and behavioral knowledge required to successfully diagnose and treat medically uncommon, ambiguous and complexconditions.

- Knowledge of diagnostic testing and procedures.(MK2)
- Consistently interprets basic diagnostic testsaccurately
- Does not need assistance to understand the concepts of pre-test probability and test performanceCharacteristics
- Fully understands the rationale and risks associated with commonprocedures
- Interprets complex diagnostic testsaccurately
- Understands the concepts of pre-test probability and test performancecharacteristics
- Teaches the rationale and risks associated with common procedures and anticipates potential complications when performing procedures
- Anticipates and accounts for pitfalls and biases when interpreting diagnostic tests andprocedures
- Pursues knowledge of new and emerging diagnostic tests andprocedures

- **Medical Knowledge (MK-1,MK-2)**
- **How toTeach**
  - Booksetc
  - Articles
  - CPC(Clinic PathologicalConference)
  - Lecture
  - Videos
  - SDL(Self DirectedLearning)
  - PBL(Problem BasedLearning)
  - Teaching experience with medicalstudent
  - Read proceduralknowledge.
- **How ToAssess**
  - MCQs
  - SEQs
  - Viva
  - Videos
  - Internalassessment

<u>COMPETENCYNO. 3</u> **<u>SYSTEM BASED PRACTICE</u>(SBP)**

- **Works effectively within an interprofessional team(e.g.peers,consultants,nursing,Ancillaryprofessionalsand other support personnel).(SBP1).**
  - Recognizes the contributions of other inter professional teammembers
  - Does not frustrates team members with inefficiency anderrors
  - Identifies roles of other team members and recognize how/when to utilize them asresources.
  - Does not requires frequent reminders from team to complete physician responsibilities (e.g. talk to family, enterorders)
  - Understands the roles and responsibilities of all team members and uses themeffectively
  - Participates in team discussions when required and actively seek input from other teammembers

- Understands the roles and responsibilities of and effectively partners with, all members of theteam
- Actively engages in team meetings and collaborativedecision-making
- Integrates all members of the team into the care of patients, such that each is able to maximize their skills in the care of the patient
- Efficiently coordinates activities of other team members to optimizecare
- Viewed by other team members as a leader in the delivery of high qualitycare

- **Recognizes system error and advocates for system improvement.(SBP2)**
  - Does not ignore a risk for error within the system that may impact the care of apatient.
  - Does not make decisions that could lead to error which are otherwise corrected by the system orsupervision.
  - Does not resistant to feedback about decisions that may lead to error or otherwise causeharm.
  - Recognizes the potential for error within thesystem.
  - Identifies obvious or critical causes of error and notifies supervisoraccordingly.
  - Recognizes the potential risk for error in the immediate system and takes necessary steps to mitigate thatrisk.
  - Willing to receive feedback about decisions that may lead to error or otherwise causeharm.
  - Identifies systemic causes of medical error and navigates them to provide safe patientcare.
  - Advocates for safe patient care and optimal patient caresystems
  - Activates formal system resources to investigate and mitigate real or potential medicalerror.
  - Reflects upon and learns from own critical incidents that may lead to medicalerror.
  - Advocates for system leadership to formally engage in quality assurance and quality improvementactivities.
  - Viewed as a leader in identifying and advocating for the prevention of medicalerror.
  - Teaches others regarding the importance of recognizing and mitigating systemerror.
- **Identifies forces that impact the cost of health care, and advocates for, and practices cost-effective care.(SBP3).**
  - Does not ignores cost issues in the provision ofcare
  - Demonstrates effort to overcome barriers to cost- effectivecare
  - Has full awareness of external factors (e.g. socio- economic, cultural, literacy, insurance status) that impact the cost of health care and the role that external stakeholders (e.g. providers, suppliers, financers, purchasers) have on the cost ofcare
  - Consider limited health care resources when ordering diagnostic or therapeuticinterventions
  - Recognizes that external factors influence a patient's utilization of health care and Does not act as barriers to cost- effectivecare
  - Minimizes unnecessary diagnostic and therapeutictests
  - Possesses an incomplete understanding of cost- awareness principles for a population of patients (e.g. screeningtests)
  - Consistently works to address patient specific barriers to cost-effectivecare
  - Advocates for cost-conscious utilization of resources (i.e. emergency department visits, hospitalreadmissions)
  - Incorporates cost-awareness principles into standard clinical judgments and decision-making, including screeningtests

- Teaches patients and healthcare team members to recognize and address common barriers to cost- effective care and appropriate utilization ofresources
- Actively participates in initiatives and care delivery models designed to overcome or mitigate barriers to cost-effective high quality care

- **Transitions patients effectively within and across health delivery systems.(SBP4)**
  - Regards need for communication at time oftransition
  - Responds to requests of caregivers in other deliverysystems
  - Inconsistently utilizes available resources to coordinate and ensure safe and effective patient care within and across delivery systems
  - Written and verbal care plans during times of transition arecomplete
  - Efficient transitions of care lead to only necessary expense or less risk to a patient (e.g. avoids duplication of testsreadmission)
  - Recognizes the importance of communication during times oftransition
  - Communication with future caregivers is present but with lapses in pertinent or timelyinformation
  - Appropriatelyutilizes availableresourcestocoordinate careandensuressafeandeffectivepatientcarewithinandacross deliverysystems
  - Proactively communicates with past and future care givers to ensure continuity ofcare
  - Coordinates care within and across health delivery systems to optimize patient safety, increase efficiency and ensure high quality patientoutcomes
  - Anticipates needs of patient, caregivers and future care providers and takes appropriate steps to address thoseneeds
  - Role models and teaches effective transitions ofcare
- **How ToTeach**
  - Lecture/ orientationsession
  - Various system/policies should be identified and discussed with theresidents.
  - Examples:
  - Zakaat
  - Admissionprocedure
  - Bait-ul-Mall
  - Dischargeprocedure
  - Consultationprocedure
  - Shifting of patients according toSOPS
  - Preferably a manual should be designed regarding various systems existing inthe
  - Hospital for the resident.
  - Cost effectiveness/availability ofmedicine
  - Avoidance of unnecessary tests because of limited healthresources.
  - Direct observation by the supervisor during ward rounds
  - Feedback
  - Assessment during casediscussion

COMPETENCY NO. 4PRACTICE BASED LEARNING (PBL)

- **Monitors practice with a goal for improvement.(PBLI1)**
  - Willing to self-reflect upon one's practice orperformance
  - Concerned with opportunities for learning andself-improvement
  - Unable to self-reflect upon one's practice orperformance
  - Avails opportunities for learning andself-improvement
  - Consistently acts upon opportunities for learning andself-improvement
  - Regularly self-reflects upon one's practice or performance and consistently acts upon those reflections to improvepractice
  - Recognizes sub-optimal practice or performance as an opportunity for learning andself-improvement
  - Regularly self-reflects and seeks external validation regarding this reflection to maximize practiceimprovement
  - Actively engages in self- improvement efforts and reflects upon theexperience
- **Learns and improves via performance audit.(PBLI2)**
  - Regards own clinical performancedata
  - Demonstrates inclination to participate in or even consider the results of quality improvementefforts
  - Adequate awareness of or desire to analyze own clinical performancedata
  - Participates in a quality improvementprojects
  - Familiar with the principles, techniques or importance of qualityimprovement
  - Analyzes own clinical performance data and identifies opportunities forimprovement
  - Effectively participates in a quality improvementproject
  - Understands common principles and techniques of quality improvement and appreciates the responsibility to assess and improve care for a panel of patients Analyzes own clinical performance data and actively works to improveperformance
  - Actively engages in quality improvementinitiatives
  - Demonstrates the ability to apply common principles and techniques of quality improvement to improve care for a panel of patients
  - Actively monitors clinical performance through various datasources
  - Is able to lead a quality improvementproject
  - Utilizes common principles and techniques of quality improvement to continuously improve care for a panel ofpatients
- **Learns and improves via feedback.(PBLI3)**
  - Does not resists feedback fromothers
  - Often seeksfeedback
  - Never responds to unsolicited feedback in a defensivefashion
  - Temporarily or superficially adjusts performance based onfeedback

- Does not solicits feedback only fromsupervisors
- Is open to unsolicitedfeedback
- Solicits feedback from all members of the inter professional team andpatients
- Consistently incorporates feedback
- Performance continuously reflects incorporation of solicited and unsolicitedfeedback
- Able to reconcile disparate or conflictingfeedback

- **Learns and improves at the point of care.(PBLI4)**
  - Acknowledges uncertainly and does not revert to reflexive patterned response wheninaccurate
  - Seeks or applies evidence whennecessary
  - Familiar with strengths and weaknesses of the medicalliterature
  - Has adequate awareness of or ability to use informationtechnology
  - Does not accepts the findings of clinical research studies without critical appraisal Can translate medical information needs into well- formed clinical questionsindependently
  - Aware of the strengths and weaknesses of medical information resources and utilizes information technology with sophistication
  - Appraises clinical research reports, based on acceptedcriteria
  - Does not "slows down" to reconsider an approach to a problem, ask for help, or seek newinformation
  - Routinely translates new medical information needs into well-formed clinicalquestions
  - Utilizes information technology withsophistication
  - Independently appraises clinical research reports based on acceptedcriteria
  - Searches medical information resources efficiently, guided by the characteristics of clinicalquestions
  - Role models how to appraise clinical research reports based on acceptedcriteria
  - Has a systematic approach to track and pursue emerging clinicalquestion
- **Practice Based Learning (PBL1, PBL2, PBL3,PBL4)**
  - **How toTeach**
    - Discussions about problemcases
    - Should discuss errors andomissions
  - **How toAssess**
    - Feedback
    - 360evaluation
    - Research article presentation
    - Journal clubpresentation
    - CPCpresentation
    - Wardpresentation
    - Quality improvement ofprojects

COMPETENCY NO. 5PROFESSIONALISM(PROF)

- Has professional and respectful interactions with patients, caregivers and members of the interprofessional team (e.g. peers, consultants, nursing, ancillary professionals and support personnel).(PROF1)
- Consistently respectful in interactions with patients, caregivers and members of the interprofessional team, even in challenging situations
- Is available and responsive to needs and concerns of patients, caregivers and members of the interprofessional team to ensure safe and effective care Emphasizes patient privacy and autonomy in allinteractions
- Demonstrates empathy, compassion and respect to patients and caregivers in allsituations
- Anticipates, advocates for, and proactively works to meet the needs of patients andcaregivers
- Demonstrates a responsiveness to patient needs that supersedesself-interest
- Positively acknowledges input of members of the interprofessional team and incorporates that input into plan of care as appropriate
- Role models compassion, empathy and respect for patients andcaregivers
- Role models appropriate anticipation and advocacy for patient and caregiverneeds
- Fosters collegiality that promotes a high-functioning interprofessionalteam

- **Teaches others regarding maintaining patient privacy and respecting patient autonomyAccepts responsibility and follows through on tasks. (PROF2)**
  - Demonstrates responsibilities expected of a physicianprofessional
  - Accepts professional responsibility even when not assigned or notmandatory
  - Completes administrative and patient care tasks in a timely manner in accordance with local practice and/orpolicy
  - Completes assigned professional responsibilities without questioning or the need forreminders
  - Prioritizes multiple competing demands in order to complete tasks and responsibilities in a timely and effectivemanner
  - Willingness to assume professional responsibility regardless of thesituation
  - Role models prioritizing multiple competing demands in order to complete tasks and responsibilities in a timely and effective manner
  - Assists others to improve their ability to prioritize multiple, competingtasks

- **Responds to each patient's unique characteristics and needs.(PROF3)**
    - Willing to modify care plan to account for a patient's unique characteristics andneeds
    - Is sensitive to and has basic awareness of differences related to culture, ethnicity, gender, race, age and religion in the patient/caregiverencounter
    - Seeks to fully understand each patient's unique characteristics and needs based upon culture, ethnicity, gender, religion, and personalpreference
    - Modifies care plan to account for a patient's unique characteristics and needs with completesuccess
    - Recognizes and accounts for the unique characteristics and needs of the patient/caregiver
    - Appropriately modifies care plan to account for a patient's unique characteristics andneeds
    - Role models professional interactions to negotiate differences related to a patient's unique characteristics orneeds
    - Role models consistent respect for patient's unique characteristics andneeds
- **Exhibits integrity and ethical behavior in professional conduct.(PROF4)**
    - Has a basic understanding of ethical principles, formal policies and procedures, and does not intentionally disregardthem
    - Honest and forthright in clinical interactions, documentation, research, and scholarlyactivity
    - Demonstrates accountability for the care ofpatients
    - Adheres to ethical principles for documentation, follows formal policies and procedures, acknowledges and limits conflict of interest, and upholds ethical expectations of research and scholarlyactivity
    - Demonstrates integrity, honesty, and accountability to patients, society and theprofession
    - Actively manages challenging ethical dilemmas and conflicts ofinterest
    - Identifies and responds appropriately to lapses of professional conduct among peergroup
    - Assists others in adhering to ethical principles and behaviors including integrity, honesty, and professionalresponsibility
    - Role models integrity, honesty, accountability and professional conduct in all aspects of professionallife
    - Regularly reflects on personal professionalconduct

- **Professionalism (PROF1, PROF2, PROF3 ANDPROF4)**
- **How ToTeach**
    1. Should be taught during wardrounds.
    2. By supervisor
    3. Throughworkshop
- **How ToAssess**
    1. Punctuality
    2. Behavior
    3. Direct observation during wardrounds
    4. Feedback
    5. 360 degree evaluation

CompetencyNo.6 INTERPERSONAL AND COMMUNICATION SKILL (ICS)

- Communicates effectively with patients and caregivers.(ICS1)
- Does not ignores patient preferences for plan ofcare
- Makes attempt to engage patient in shareddecision-making
- Does not engages in antagonistic or counter-therapeutic relationships with patients andcaregivers
- Engages patients in discussions of care plans and respects patient preferences when offered by the patient, and also actively solicitpreferences.
- Attempts to develop therapeutic relationships with patients and caregivers which is oftensuccessful
- Defers difficult or ambiguous conversations toothers
- Engages patients in shared decision making in uncomplicatedconversations
- Requires assistance facilitating discussions in difficult or ambiguousconversations
- Requires guidance or assistance to engage in communication with persons of different socioeconomic and culturalbackgrounds
- Identifies and incorporates patient preference in shared decision making across a wide variety of patient careconversations
- Quickly establishes a therapeutic relationship with patients and caregivers, including persons of different socioeconomic and culturalbackgrounds
- Incorporates patient-specific preferences into plan ofcare
- Role models effective communication and development of therapeutic relationships in both routine and challengingsituations
- Models cross-cultural communication and establishes therapeutic relationships with persons of diverse socioeconomic backgrounds

- **Communicates effectively in inter professional teams (e.g. peers, consultants, nursing, ancillary professionals and other support personnel).(ICS2**)
    - Does not uses unidirectional communication that fails to utilize the wisdom of theteam
    - Does not resists offers of collaborativeinput
    - Consistently and actively engages in collaborative communication with all members of theteam
    - Verbal, non-verbal and written communication consistently acts to facilitate collaboration with the team to enhance patientcare
    - Role models and teaches collaborative communication with the team to enhance patient care, even in challenging settings and with conflicting team memberopinions

- **Appropriate utilization and completion of health records.(ICS3)**
    - Health records are organized and accurate and are not superficial and does not miss key data or fails to communicate clinical reasoning
    - Health records are organized, accurate, comprehensive, and effectively communicate clinicalreasoning
    - Health records are succinct, relevant, and patientspecific
    - Role models and teaches importance of organized, accurate and comprehensive health records that are succinct and patient specific

Interpersonal and Communication Skill (ISC1, ICS2 AND ICS3)

- **How toTeach**
    - Teaching through communication skills bysupervisor
    - Throughworkshop
- **How toAssess**
    1. Directobservation
    2. Feedback
    3. 360 degreeevaluation
    4. Historytaking
    5. CPCpresentation
    6. Journal clubpresentation
    7. Articlepresentation
    8. Consultation
    9. OPDworking
    10. Counselingsessions
    11. OSPE
    12. VIVA

Practice and Procedural Skills	Attitudes, Values and Habits	Professionalism	Interpersonal and Communication Skills	Practice Based Learning Improvement	Evaluation of Medical Knowledge
• Development of proficiency in examination of brain and spine • Preoperative evaluation of High risk in-patients undergoing neurosurgery • Preoperative evaluation of cardiac risk in-patients undergoing non-cardiac surgery • The appropriate way to answer Neurosurgical consultations • The appropriate follow-up, including use of substantive progress notes, of patients who have been seen in consultation. • Out-patient Neurosurgical care. • Differential diagnosis of neurological disease	• Keeping the patient and family informed on the clinical status of the patient, results of tests, etc. • Frequent, direct communication with the physician who requested the consultation. • Review of previous medical records and extraction of information relevant to the patient's neurological status. Other sources of information may be used, when pertinent • Understanding that patients have the right to either accepts or decline recommendations made by the surgeon Education of the patient	• The PGT should continue to develop his/her ethical behavior and the humanistic qualities of respect, compassion, integrity, and honesty. • The PGT must be willing to acknowledge errors and determine how to avoid future similar mistakes. • The PGT must be responsible and reliable at all times. • The PGT must always consider the needs of patients, families,colleagues, and support staff. • The PGT must maintain a professional appearance at all times	• The PGT should learn when to call a subspecialist for evaluation and management of a patient with a neurological disease. • The PGT should be able to clearly present the consultation cases to the staff in an organized and thorough manner • The PGT must be able to establish a rapport with the patients and listens to the patient's complaints to promote the patient's welfare. • The PGT should provide effective education and counseling for patients. The PGT must write organized and legible notes • The PGT must communicate any patient problems to the staff in a timely fashion	• The PGT should use feedback and self-evaluation in order to improve performance • The PGT should read the required material and articles provided to enhance learning • The PGT should use the medical literature search tools in the library to find appropriate articles related to interesting cases	• The PGT's ability to answer directed questions and to participate in the didactic sessions. • The PGT's presentation of assigned short topics. These will be examined for their completeness, accuracy, organization, and the PGTs' understanding of the topic. • The PGT's ability to apply the information learned in the didactic sessions to the patient care setting. • The PGT's interest level in learning.

***FOR EXAMPLE*: In cardiology the competencies other than Medical knowledge should be monitored/supervised /evaluated as follows**

METHODS OF TEACHING & LEARNING DURING COURSE CONDUCTION

1. *Inpatient Services:*All residents will have rotations in, general medical wards,general medicine, ambulatory experiences etc. The required knowledge and skills pertaining to the ambulatory based training in following areas shall bedemonstrated;

2. ***Outpatient Experiences:*** Residents should demonstrate expertise in diagnosis and management of patients in acute care clinics and longitudinal clinic and gain adequate experience in brain and spine diseases.

3. ***Emergency services:*** Our residents take an early and active role in patient care and obtain decision-making roles quickly. Within the Emergency Department, residents direct the initial stabilization of all neuro-trauma patients, manage airway interventions, and oversee all aspect critical care.

4. ***Electives/ Specialty Rotations****:* In addition, the resident will elect rotations in a variety of electives including

TRAINING MAP

Total 5 Years (60 months)
Total time period spent in Neurosurgery :38months(03 years and 02 months)
1st and 2nd year
06 month neurosurgery
12 month general surgery
07 Rotations
22 months (01 year and 10 months)
03 rotations of 06 months duration in various departments as follows
02 months orthopedics(compulsory)
Any two from remaining three rotations
02 months : Paeds surgery
02 months : Plastic surgery
02 months : Urology
Schedule for 3rd ,4th and 5th year

32 months :Neurosurgery

02 month :Compulsory rotation in neurology
01 month :Neuro- Oncology

01 month :Neuro- Radiology

Neurosurgery: 06month rotation

5. ***Mandatory Workshops:*** *R*esidents achieve hands on training while participating in mandatory workshops of Research Methodology, Advanced Life Support, Communication Skills, Computer & Internet and Clinical Audit. Surgical skills are given in detail in the relevant section of Mandatory Workshops.

6 ***Core Faculty Lectures (CFL):*** The core faculty lecture's focus on monthly themes of the various specialty topics for eleven months of the year. Lectures are still an efficient way of delivering information. Good lectures can introduce new material or synthesize concepts students have through text-, web-, or field-based activities. *Buzz groups* can be incorporated into the lectures in order to promote more active learning.

7 ***Introductory Lecture Series (ILS):*** Various introductory topics are presented by Neurosurgery faculty to introduce interns to basic and essential topics in this subject.

8 ***Long and short case presentations:*** Giving an oral presentation on ward rounds is an important skill for medical student to learn. It is medical reporting which is terse and rapidly moving. After collecting the data, you must then be able both to document it in a written format and transmit it clearly to other health care providers. In order to do this successfully, you need to understand the patient's medical illnesses, the psychosocial contributions to their History of Presenting Illness and their physical diagnosis findings. You then need to compress them into a concise, organized recitation of the most essential facts. The listener needs to be given all of the relevant information without the extraneous details and should be able to construct his/her own differential diagnosis as the story unfolds. Consider yourself an advocate who is attempting to persuade an informed, interested judge the merits of your argument, without distorting any of the facts. An oral case presentation is NOT a simple recitation of your write-up. It is a concise, edited presentation of the most essential information. Basic structure for oral case presentations includes Identifying information/chief complaint (ID/CC) , History of present illness (HPI) including relevant ROS (Review of systems) questions only ,Other active medical problems , Medications/allergies/substance use (note: e. The complete ROS should

not be presented in oral presentations , Brief social history (current situation and major issues only) . Physical examination (pertinent findings only) , One line summary & Assessment and plan

9 ***Seminar Presentation:*** Seminar is held in a noon conference format. Upper level residents present an in-depth review of a medical topic as well as their own research. Residents are formally critiqued by both the associate program director and their resident colleagues.

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

11 ***Small Group Discussions/ Problem based learning/ Case based learning:*** Traditionally small groups consist of 8-12 participants. Small groups can take on a variety of different tasks, including problem solving, role play, discussion, brainstorming, debate, workshops and presentations. Generally students prefer small group learning to other instructional methods. From the study of a problem students develop principles and rules and generalize their applicability to a variety of situations PBL is said to develop problem solving skills and an integrated body of knowledge. It is a student-centered approach to learning, in which students determine what and how they learn. Case studies help learners identify problems and solutions, compare options and decide how to handle a real situation.

12 ***Discussion/Debate:*** There are several types of discussion tasks which would be used as learning method for residents including: *guided discussion*, in which the facilitator poses a discussion question to the group and learners offer responses or questions to each other's contributions as a means of broadening the discussion's scope; *inquiry-based discussion* , in which learners are guided through a series of questions to discover some relationship or principle; *exploratory discussion*, in which learners examine their personal opinions, suppositions or assumptions and then visualize alternatives to these assumptions; and *debate* in which students argue opposing sides of a controversial topic. With thoughtful and well-designed discussion tasks, learners can practice critical inquiry and reflection, developing their individual thinking, considering alternatives and negotiating meaning with other discussants to arrive at a shared understanding of the issues at hand.

13 ***Case Conference (CC):*** These sessions are held three days each week; the focus of the discussion is selected by the presenting resident. For example, some cases may be presented to discuss a differential diagnosis, while others are presented to discuss specific management issues.

14 ***Noon Conference (NC):*** The noon conferences focus on monthly themes of the various specialty medicine topics for eleven months of the year, i.e., Cardiology, Gastroenterology, Hematology, etc.

15 ***Grand Rounds (GR):*** The Department of Medicine hosts Grand Rounds on weekly basis. Speakers from local, regional and national medicine training programs are invited to present topics from the broad spectrum of internal medicine. All residents on inpatient floor teams, as well as those on ambulatory block rotations and electives are expected to attend.

16 ***Professionalism Curriculum (PC)*** **:** This is an organized series of recurring large and small group discussions focusing upon current issues and dilemmas in medical professionalism and ethics presented primarily by an associate program director. Lectures are usually presented in a noon conference format.

17 ***Evening Teaching Rounds:*** During these sign-out rounds, the inpatient Chief Resident makes a brief educational presentation on a topic related to a patient currently on service, often related to the discussion from morning report. Serious cases are mainly focused during evening rounds.

18 ***Clinico-pathological Conferences:*** The clinicopathological conference, popularly known as CPC primarily relies on case method of teaching medicine. It is a teaching tool that illustrates the logical, measured consideration of a differential diagnosis used to evaluate patients. The process involves case presentation, diagnostic data, discussion of differential diagnosis, logically narrowing the list to few selected probable diagnoses and eventually reaching a final diagnosis and its brief discussion. The idea was first practiced in Boston, back in 1900 by a Harvard internist, Dr. Richard C. Cabot who practiced this as an informal discussion session in his private office. Dr. Cabot incepted this from a resident, who in turn had received the idea from a roommate, primarily a law student.

19 ***Evidence Based Medicine (EBM)*** **:** Residents are presented a series of noon monthly lectures presented to allow residents to learn how to critically appraise journal articles, stay current on statistics, etc. The lectures are presented by the program director.

20 ***Clinical Audit based learning:*** "Clinical audit is a quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria…Where indicated, changes are implemented…and further monitoring is used to confirm improvement in healthcare delivery." *Principles for Best Practice in Clinical Audit (2002, NICE/CHI)*

21 ***Peer Assisted Learning:*** Any situation where people learn from, or with, others of a similar level of training, background or other shared characteristic. Provides opportunities to reinforce and revise their learning. Encourages responsibility and increased self-confidence. Develops

teaching and verbalization skills. Enhances communication skills, and empathy. Develops appraisal skills (of self and others) including the ability to give and receive appropriate feedback. Enhance organizational and team-working skills.

22. ***Morbidity and Mortality Conference (MM):*** The M&M Conference is held occasionally at noon throughout the year. A case, with an adverse outcome, though not necessarily resulting in death, is discussed and thoroughly reviewed. Faculty members from various disciplines are invited to attend, especially if they were involved in the care of the patient. The discussion focuses on how care could have been improved.
23. ***Clinical Case Conference:*** Each resident, except when on vacation, will be responsible for at least one clinical case conference each month. The cases discussed may be those seen on either the consultation or clinic service or during rotations in specialty areas. The resident, with the advice of the Attending Physician on the Consultation Service, will prepare and present the case(s) and review the relevant literature
24. ***SEQ as assignments on the content areas:*** SEQs assignments are given to the residents on regular basis to enhance their performance during written examinations.
25. ***Skill teaching in ICU, emergency, ward settings& skill laboratory:*** Two hours twice a month should be assigned for learning and practicing clinical skills. List of skills to be learnt during these sessions is as follows:

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

26. ***Bedside teaching rounds in ward:***

"To study the phenomenon of disease without a book is to sail an uncharted sea whilst to study books without patients is not to go to sea at all" Sir William Osler 1849-1919 .Bedside teaching is regularly included in the ward rounds. Learning activities include the physical exam, a discussion of particular medical diseases, psychosocial and ethical themes, and management issues

27. ***Directly Supervised Procedures - (DSP)*** **:** Residents learn procedures under the direct supervision of an attending or fellow during some rotations. For example, in the General surgery(rotation) attending,observe the placement of central venous and arterial lines. Specific procedures used in patient care vary by rotation.
28. ***Self-directed learning:*** self-directed learning residents have primary responsibility for planning, implementing, and evaluating their effort. It is an adult learning technique that assumes that the learner knows best what their educational needs are. The facilitator's role in self-directed learning is to support learners in identifying their needs and goals for the program, to contribute to clarifying the learners' directions and objectives and to provide timely feedback. Self-directed learning can be highly motivating, especially if the learner is focusing on problems of the immediate present, a potential positive outcome is anticipated and obtained and they are not threatened by taking responsibility for their own learning.
29. ***Follow up clinics:*** The main aims of our clinic for patients and relatives include (a) Explanation of patient's stay in ICU or Ward settings: Many patients do not remember their ICU stay, and this lack of recall can lead to misconceptions, frustration and having unrealistic expectations of themselves during their recovery. It is therefore preferable for patients to be aware of how ill they have been and then they can understand why it is taking some time to recover.(b)Rehabilitation information and support: We discuss with patients and relatives their individualized recovery from critical illness. This includes expectations, realistic goals, change in family dynamics and coming to terms with life style changes.(c)**Identifying physical, psychological or social problems**
Some of our patients have problems either as a result of their critical illness or because of other underlying conditions. The follow-up team will refer patients to various specialties, if appropriate. (d)**Promoting a quality service**: By highlighting areas which require change in nursing and medical practice, we can improve the quality of patient and relatives care. Feedback from patients and relatives

about their ICU & ward experience is invaluable. It has initiated various audits and changes in clinical practice, for the benefit of patients and relatives in the future.

30. ***Core curriculum meeting:*** All the core topics of Medicine should be thoroughly discussed during these sessions. The duration of each session should be at least two hours once a month. It should be chaired by the chief resident (elected by the residents of the relevant discipline). Each resident should be given an opportunity to brainstorm all topics included in the course and to generate new ideas regarding the improvement of the course structure
31. ***Annual Grand Meeting*** Once a year all residents enrolled for MS Neurosurgery should be invited to the annual meeting at RMU. One full day will be allocated to this event. All the chief residents from affiliated institutes will present their annual reports. Issues and concerns related to their relevant courses will be discussed. Feedback should be collected and suggestions should be sought in order to involve residents in decision making. The research work done by residents and their literary work may be displayed. In the evening an informal gathering and dinner can be arranged. This will help in creating a sense of belonging and ownership among students and the faculty.
32. ***Learning through maintaining log book:*** *it is* used to list the core clinical problems to be seen during the attachment and to document the student activity and learning achieved with each patient contact.
33. ***Learning through maintaining portfolio:*** Personal Reflection is one of the most important adult educational tools available. Many theorists have argued that without reflection, knowledge translation and thus genuine "deep" learning cannot occur. One of the Individual reflection tools maintaining portfolios, Personal Reflection allows students to take inventory of their current knowledge skills and attitudes, to integrate concepts from various experiences, to transform current ideas and experiences into new knowledge and actions and to complete the experiential learning cycle.
34. ***Task-based-learning:*** A list of tasks is given to the students: participate in consultation with the attending staff, interview and examine patients, review a number of new radiographs with the radiologist.
35. ***Teaching in the ambulatory care setting:*** A wide range of clinical conditions may be seen. There are large numbers of new and return patients. Students have the opportunity to experience a multi-professional approach to patient care. Unlike ward teaching, increased numbers of students can be accommodated without exhausting the limited No. of suitable patients.

36. ***Community Based Medical Education:*** CBME refers to medical education that is based outside a tertiary or large secondary level hospital. Learning in the fields of epidemiology, preventive health, public health principles, community development, and the social impact of illness and understanding how patients interact with the health care system. Also used for learning basic clinical skills, especially communication skills.
37. ***Audio visual laboratory:*** audio visual material for teaching skills to the residents is used specifically in teaching gastroenterology procedure details.
38. ***E-learning/web-based medical education/computer-assisted instruction:*** Computer technologies, including the Internet, can support a wide range of learning activities from dissemination of lectures and materials, access to live or recorded presentations, real-time discussions, self-instruction modules and virtual patient simulations. distance-independence, flexible scheduling, the creation of reusable learning materials that are easily shared and updated, the ability to individualize instruction through adaptive instruction technologies and automated record keeping for assessment purposes.
39. ***Research based learning:*** All residents in the categorical program are required to complete an academic outcomes-based research project during their training. This project can consist of original bench top laboratory research, clinical research or a combination of both. The research work shall be compiled in the form of a thesis which is to be submitted for evaluation by each resident before end of the training. The designated Faculty will organize and mentor the residents through the process, as well as journal clubs to teach critical appraisal of the literature.
40. ***Other teaching strategies specific for different specialties as mentioned in the relevant parts of the curriculum***
    Some of the other teaching strategies which are specific for certain domains of internal medicine are given along with relevant modules.

2. MandatoryWorkshops.
3. ***Core Faculty Lectures (CFL):***The core faculty lecture's focus on monthly themes of the various specialty medicine topics for eleven months of the year, i.e., Cardiology, Gastroenterology, Hematology, etc. Lectures are still an efficient way of delivering information. Good lectures can introduce new material or synthesize concepts students have through text-, web-, or field-based activities. *Buzz groups* can be incorporated into the lectures in order to promote more activelearning.
4. ***Introductory Lecture Series (ILS):***Various introductory topics are presented by subspecialty and general medicine faculty to introduce interns to basic and essential topics in internalmedicine.
5. ***Long and short case presentations:***Giving an oral presentation on ward rounds is an important skill for medical student to learn. It is medical reporting which is terse and rapidly moving. After collecting the data, you must then be able both to document it in a written format and transmit it clearly to other health care providers. In order to do this successfully, you need to understand the patient's medical illnesses, the psychosocial contributions to their History of Presenting Illness and their physical diagnosis findings. You then need to compress them into a concise, organized recitation of the most essential facts. The listener needs to be given all of the relevant information without the extraneous details and should be able to construct his/her own differential diagnosis as the story unfolds. Consider yourself an advocate who is attempting to persuade an informed, interested judge the merits of your argument, without distorting any of the facts. An oral case presentation is NOT a simple recitation of your write-up. It is a concise, edited presentation of the most essential information. Basic structure for oral case presentations includes Identifying information/chief complaint (ID/CC) , History of present illness (HPI) including relevant ROS (Reviewofsystems)questionsonly,Otheractivemedicalproblems,Medications/allergies/substanceuse(note:e.ThecompleteROSshould not be presented in oral presentations , Brief social history (current situation and major issues only) . Physical examination (pertinent findings only) , One line summary & Assessment and plan
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16. ***Evidence Based Medicine (EBM)*:** Residents are presented a series of noon monthly lectures presented to allow residents to learn how to critically appraise journal articles, stay current on statistics, etc. The lectures are presented by the programdirector.
17. ***Clinical Audit based learning:***"Clinical audit is a quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria…Where indicated, changes are implemented…and further monitoring is used to confirm improvement in healthcare delivery." *Principles for Best Practice in Clinical Audit (2002,NICE/CHI)*
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20. ***Clinical Case Conference:***Each resident, except when on vacation, will be responsible for at least one clinical case conference each month. The cases discussed may be those seen on either the consultation or clinic service or during rotations in specialty areas. The resident, with the advice of the Attending Physician on the Consultation Service, will prepare and present the case(s) and review the relevantliterature

21. ***SEQ as assignments on the content areas:***SEQs assignments are given to the residents on regular basis to enhance their performance during writtenexaminations.
22. ***Skill teaching in ICU, emergency, ward settings& skill laboratory:***Two hours twice a month should be assigned for learning and practicing clinical skills. List of skills to be learnt during these sessions is asfollows:

- Residents must develop a comprehensive understanding of the indications, contraindications, limitations, complications, techniques, and interpretation of results of those technical procedures integral to the discipline (mentioned in the Courseoutlines)
- Residents must acquire knowledge of and skill in educating patients about the technique, rationale and ramifications of procedures and in obtaining procedure-specific informed consent. Faculty supervision of residents in their performance is required, and each resident's experience in such procedures must be documented by the programdirector
- Residents must have instruction in the evaluation of medical literature, clinical epidemiology, clinical study design, relative and absolute risks of disease, medical statistics and medicaldecision-making
- Training must include cultural, social, family, behavioral and economic issues, such as confidentiality of information, indications for life support systems, and allocation of limitedresources
- Residents must be taught the social and economic impact of their decisions on patients, the primary care physician and society. This can be achieved by attending the bioethics lectures and becoming familiar with Project Professionalism Manual such as that of the American Board of InternalMedicine
- Residents should have instruction and experience with patient counseling skills and communityeducation
- This training should emphasize effective communication techniques for diverse populations, as well as organizational resources useful for patient and communityeducation
- Residents may attend the series of lectures on Nuclear Medicine procedures (radionuclide scanning and localization tests and therapy) presented to the Radiologyresidents

- Residents should have experience in the performance of clinical laboratory and radionuclide studies and basic laboratory techniques including quality control, quality assurance and proficiencystandards.

23. ***Bedside teaching rounds in ward:*** ***"To STUDy the phenomenon of disease withoUT a book is to sail an UNCHarted sea whilst to STUDy books withoUT patients is not to go to sea at all" Sir William Osler 1849-1919***.Bedside teaching is regularly included in the ward rounds. Learning activities include the physical exam, a discussion of particular medical diseases, psychosocial and ethical themes, and managementissues
24. ***Directly Supervised Procedures - (DSP)*****:** Residents learn procedures under the direct supervision of an attending or fellow during some rotations. For example, in the Medical Intensive Care Unit the Pulmonary /Critical Care attending or fellow, or the MICU attending, observe the placement of central venous and arterial lines. Specific procedures used in patient care vary byrotation.
25. ***Self-directed learning:***self-directed learning residents have primary responsibility for planning, implementing, and evaluating their effort. It is an adult learning technique that assumes that the learner knows best what their educational needs are. The facilitator's role in self-directed learning is to support learners in identifying their needs and goals for the program, to contribute to clarifying the learners' directions and objectives and to provide timely feedback. Self-directed learning can be highly motivating, especially if the learner is focusing on problems of the immediate present, a potential positive outcome is anticipated and obtained and they are not threatened by taking responsibility for their ownlearning.
26. ***Follow up clinics:***The main aims of our clinic for patients and relatives include (a) Explanation of patient's stay in ICU or Ward settings: Many patients do not remember their ICU stay, and this lack of recall can lead to misconceptions, frustration and having unrealistic expectations of themselves during their recovery. It is therefore preferable for patients to be aware of how ill they have been and then they can understand why it is taking some time to recover.(b)Rehabilitation information and support: We discuss with patients and relatives their individualized recovery from critical illness. This includes expectations, realistic goals, change in family dynamics and coming to terms with life style changes.(c)**Identifying physical, psychological or social problems** Some of our patients have problems either as a result of their critical illness or because of other underlying conditions. The follow- up team will refer patients to various specialties, if appropriate. (d)**Promoting a quality service**: By highlighting areas which require changeinnursingandmedicalpractice,wecanimprovethequalityofpatientandrelativescare.Feedbackfrompatientsandrelatives
about their ICU & ward experience is invaluable. It has initiated various audits and changes in clinical practice, for the benefit of patients and relatives in the future.
27. ***Core curriculum meeting:***All the core topics of Medicine should be thoroughly discussed during these sessions. The duration of each session should be at least two hours once a month. It should be chaired by the chief resident (elected by the residents of the relevant discipline). Each resident should be given an opportunity to brainstorm all topics included in the course and to generate new ideas regarding the improvement of the coursestructure
28. ***Annual Grand Meeting***Once a year all residents enrolled for MS Neurosurgery should be invited to the annual meeting at RMU. One full day will be allocated to this event. All the chief residents from affiliated institutes will present their annual reports. Issues and concerns related to their relevant courses will be discussed. Feedback should be collected and suggestions should be sought in order to involve residents in decision making. The research work done by residents and their literary work may be displayed. In the evening an informal gathering and dinner can be arranged. This will help in creating a sense of belonging and ownership among students and the faculty.
29. ***Learning through maintaining log book:*** *it is*used to list the core clinical problems to be seen during the attachment and to document the

student activity and learning achieved with each patientcontact.

30. ***Learning through maintaining portfolio:***Personal Reflection is one of the most important adult educational tools available. Many theorists have argued that without reflection, knowledge translation and thus genuine "deep" learning cannot occur. One of the Individual reflection tools maintaining portfolios, Personal Reflection allows students to take inventory of their current knowledge skills and attitudes, to integrate concepts from various experiences, to transform current ideas and experiences into new knowledge and actions and to complete the experiential learningcycle.
31. ***Task-based-learning:***A list of tasks is given to the students: participate in consultation with the attending staff, interview and examine patients, review a number of new radiographs with theradiologist.
32. ***Teaching in the ambulatory care setting:***A wide range of clinical conditions may be seen. There are large numbers of new and return patients. Students have the opportunity to experience a multi-professional approach to patient care. Unlike ward teaching, increased numbers of students can be accommodated without exhausting the limited No. of suitablepatients.
33. ***Community Based Medical Education:***CBME refers to medical education that is based outside a tertiary or large secondary level hospital. Learning in the fields of epidemiology, preventive health, public health principles, community development, and the social impact of illness and understanding how patients interact with the health care system. Also used for learning basic clinical skills, especially communicationskills.
34. ***Audio visual laboratory:***audio visual material for teaching skills to the residents is used specifically in teaching gastroenterology proceduredetails.
35. ***E-learning/web-based medical education/computer-assisted instruction:***Computer technologies, including the Internet, can support a wide range of learning activities from dissemination of lectures and materials, access to live or recorded presentations, real-time discussions, self-instruction modules and virtual patient simulations. distance-independence, flexible scheduling, the creation of reusable learning materials that are easily shared and updated, the ability to individualize instruction through adaptive instruction technologies and automated record keeping for assessmentpurposes.
36. ***Research based learning:***All residents in the categorical program are required to complete an academic outcomes-based research project during their training. This project can consist of original bench top laboratory research, clinical research or a combination of both. The research work shall be compiled in the form of a thesis which is to be submitted for evaluation by each resident before end of the training. The designated Faculty will organize and mentor the residents through the process, as well as journal clubs to teach critical appraisal of theliterature.
37. ***Other teaching strategies specific for different specialties as mentioned in the relevant parts of thecurriculum***

    Some of the other teaching strategies which are specific for certain domains of internal medicine are given along with relevant modules.

AIMS AND OBJECTIVES OF THE COURSE

AIM

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

GENERAL OBJECTIVES

MS Neurosurgery training should enable a student to:

1. Access and apply relevant knowledge to clinical practice:
   - Maintain currency of knowledge
   - Apply scientific knowledge in practice
   - Appropriate to patient need and context
   - Critically evaluate new technology

2. Safely and effectively performs appropriate surgical procedures:
   - Consistently demonstrate sound surgical skills
   - Demonstrate procedural knowledge and technical skill at a level appropriate to the level of training
   - Demonstrate manual dexterity required to carry out procedures
   - Adapt their skills in the context of each patient and procedure
   - Maintain and acquire new skills
   - Approach and carries out procedures with due attention to safety of patient, self and others
   - Critically analyze their own clinical performance for continuous improvement.

3. Design and implement effective management plans:
   - Recognize the clinical features, accurately diagnose and manage neurological problems
   - Formulate a well-reasoned provisional diagnosis and management plan based on a thorough history and examination
   - Formulate a differential diagnosis based on investigative findings.
   - Manage patients in ways that demonstrate sensitivity to their physical, social, cultural and psychological needs
   - Recognize disorders of the nervous system and differentiate those amenable to surgical treatment
   - Effectively manage the care of patients with neurotrauma including multiple system trauma

- Effectively recognize and manage complications
- Accurately identify the benefits, risks and mechanisms of action of current and evolving treatment modalities
- Indicate alternatives in the process of interpreting investigations and in decision-making
- Manage complexity and uncertainty
- Access and implement a risk management plan onside all issues relevant to the patient Identify risk
- Assess and implement a risk management plan
- Critically evaluate and integrate new technologies and techniques.

4. Organize diagnostic testing, imaging and consultation as needed:
   - Select medically appropriate investigative tools and monitoring techniques in a cost-effective and useful manner
   - Appraise and interpret appropriate diagnostic imaging and investigations according to patients' needs
   - Critically evaluates the advantages and disadvantages of different investigative modalities
5. Communicate effectively
   - Communicate appropriate information to patients (and their family) about procedures, potentialities and risks associated with surgery in ways that encourage their participation in informed decision making
   - Communicate with the patient (and their family) the treatment option as including benefits and risks of each
   - Communicate with and co-ordinate health management teams to achieve an optimal surgical environment
   - Initiate the resolution of misunderstandings or disputes
   - Modify communication to accommodate cultural and linguistic sensitivities of the patient
6. Recognize the value o f knowledge and research and its application to clinical practice
   - Assume responsibility for self-directed learning
   - Critically appraise new trends in neurosurgery
   - Facilitate the learning of others.
7. Appreciate ethical issues associated with Neurosurgery:
   - Consistently apply ethical principles
   - Identify ethical expectations that impact on medico-legal issues
   - Recognize the current legal aspects of informed consent and confidentiality
   - Be accountable for the management of their patients.
8. Prof essionalism by:
   - Employing a critically reflective approach to Neurosurgery
   - Adhering with current regulations concerning workplace harassment
   - Regularly carrying out self and peer reviewed audit
   - Acknowledging and have insight into their own limitations
   - Acknowledging and learning from mistakes
9. Work in collaboration with m embers of an interdisciplinary team where appropriate

- Collaborate with other professionals in the selection and use of various types of treatments assessing and weighing the indications and contraindications associated with each type
- Develop a care plan for a patient in collaboration with members of an interdisciplinary team
- Employ a consultative approach with colleagues and other prof essionals
- Recognize the need to refer patients to other professionals.

10. Management and Leadership
    - Effective use of resources to balance patient care and system resources
    - Identify and differentiate between system resources and patient needs
    - Prioritize needs and demands dealing with limited system resources.
    - Manage and lead clinical teams
    - Recognize the importance of different types of expertise which contribute to the effective functioning of clinical team.
    - Maintain clinically relevant and accurate contemporaneous records
11. Health advocacy:
    - Promote health maintenance of patients
    - Advocate for appropriate health resource allocation
    - Promote health maintenance of colleagues and self scholar and teacher

SPECIFIC LEARNING OUTCOMES

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

1. Neuroanatomy:

To have a working knowledge of the structure and development of the centraland peripheral nervous system together with the related parts of the head and spine and associated structures of neurosurgical importance.

2. Neurophysiology:

To be familiar with the normal and abnormal physiology and metabolism of the body and central nervous system.

To be familiar with the basic principles of neuropharmacology and Neurochemistry with special reference to the actions, interactions and to xic effects o f drugs currently used in neurosurgery.

To be familiar with the basic principles and interpretation of EEG, EMG and other techniques of applied neurophysiology, particularly those used intra-

operatively and in neurointensive care.

3. Neuropathology:

To be familiar with the pathological changes and cellular organization of the central and peripheral nervous system during disease process.
To have a working knowledge of the gross and microscopic pathology of diseases affecting the nervous system
To recognize gross and microscopic preparations
To be familiar with the various pathogenic organisms responsible for infections of the nervous system.

4. Neuroradiology:

To be able to recognize and comment on abnormalities present on plain X-Rays of the skull, spine and other regions of neurosurgical interest and to interpret special investigations such as myelograms, angiograms, CT and MRI scans
To be familiar with the principles of radiobiology and radio therapy
To be familiar with the application of radionuclide studies to the diagnosis of neurological disorders.

5. Neurosurgery Related Clinical Competence

The ability to construct a diff erential diagnosis, interpret investigations and
construct a management plan for common conditions in practice of neurosurgery in the following specialties:

i. Clinical Neurology:

To be able to take a neurological history and to assess the value of different symptom patterns in indicating involvement of specific neurological systems and functio ns and/or particular disease processes

To be able to conduct and to demonstrate a reliable clinical examination relating to the nervous system and to elicit and interpret signs of dysfunction of different systems and their components
To be able to arrive at a well reasoned diagnosis and to recognize the common neurological disorders and differentiate those amenable to surgical treatment
To be conversant with all common neurosurgical disorders
To be able to describe in detail and to discuss the choice of the appropriate conventional neurosurgical procedures available
To be conversant with safety in the operating theatre, the use of instruments and infection control procedures
To demonstrate competence in all aspects of the care of the patient during diagnostic tests, at operations, in the postoperative period anddduring rehabilitation

To be familiar with the principles of psychiatry, neuro-psychology, neuro-opthalmology, neuro-otology and neuro-anaesthesia
To be able to demonstrate tho se attitudes that ref lect awareness of, and respect for, individuality and autonomy of patients and careers at all stages of management, including counseling and providing explanations of the nature of disease and potential methods of treatment .

ii. Paediatric Neurosurgery:

The resident shall be proficient in the management of developmental disorders of the neuraxis including craniofacial anomalies and spinal

dysraphism; all forms of hydrocephalus; intrinsic tumours of the brain and spine and a wide range of rarer pathologies. Paediatric neurosurgeons often contribute to the management o f related disorders such as hydrocephalus, spinal dysraphism and epilepsy presenting in young adults.

iii. Neuro-oncology:

The training is based on advances in basic oncological science and the so phisticated delivery of intra-lesional therapies for the management of malignant intrinsic tumours of the nervous system with refinement of surgical techniques using radiological and functional guidance; improvements in adjuvant chemotherapy and radiotherapy; greater understanding of the molecular biology of CNS tumours and better organization of oncology services.

iv. Functional Neurosurgery:

Functional neuro surgery involves the surgical management of a wide range of neurological problems including intractable pain, epilepsy, spasticity and movement disorders. Traditional ablative surgery is being replaced by deep brain and spinal cord stimulation. Research into neuromodulation using gene therapy, biological vectors and pharmacological agents offers the prospect of effective treatment for neurodegenerative and disabling psychiatric diseases

v. Neurovascular Surgery:

Residents should be proficient in working closely with their interventional co lleagues dealing with complex aneurysms, vascular malformations and occlusive cerebrovascular diseases.

vi. Skull-base surgery

Residents are expected to flourish in technical advances in microsurgery, surgical approaches and reconstructions in the routine practice of dealing with disorders of the skull-base including common tumours such as meningiomas, acoustic neuromas and pituitary adenomas. Skull-base surgery is often undertaken jointly with neuro-otological, plastic and maxillofacial surgeons. The resident should also be aware of the adjuvant treatments with so phisticated radiosurgery and fractionated stereotactic radiotherapy for patients with skull-base tumours

vii. **Spinal surgery**

Spinal surgery is now the largest subspecialty in neurosurgery and accounts for more than 50% of the operative workload of some departments in European hospitals. The resident should demonstrate a comprehensive service delivery for primary and secondary spinal malignancy, spinal trauma, spinal pain and degenerative spinal disorders.

viii. Traumatology:

The resident must be able to provide a prompt neurosurgical intervention and neurointensive care and management in patients with head injury which remains a major cause of death and disability in children and young adults.

6. Research Experience:

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

REGULATIONS

1.Scheme of the course

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

	Components	Examination
Part-I	**Fundamental concepts in Surgery** The candidate will spend the first 06 months of induction period in the chosen specialty. Training in basic clinical techniques of Surgery with compulsory rotation s for 12 months starting after completing 06 months **Rotations in Surgery & Allied specialities:** 3 elective rotations, of two months each in any of the following: • Urology • Orthopaedic Surgery • Plastic Surgery • Paediatric Surgery **Mandatory Workshops:** • Basic Surgical Skills • Communication skills • Computer skills and SPSS • Biostatistics & Research Methodology	Part-1 examination at the end of 02nd year of MS Neurosurgery programme. • **Written** Paper 1 & 2 basic principle of Surgery • **Oral & Practical/clinical examination** OSCE Clinical examination (long case, Short Case • **Log Book**
Part-II	**Clinical component of Part II** Professional Education in Neurosurgery :	Part-II examination in specialized components of Neurosurgery at th e en d of 5th year of MS Neurosurgery programme. • **Written**.

Training in Neurosurgery during 3rd, 4th & 5th year of MS Neurosurgery programme.

compulsory rotations in relevant fields,:-
2 month in neurology
1 month in neuroradiology
1 month in neuroradiology
Research component of Part III
Research and Thesis Writing:
Research work/Thesis writing project must be completed and thesis be submitted before the end of training

Papers 1 & 2: Problem-based questions in the subject

- **Oral &Practical/Clinical Examination**

I. OSCE
II. Clinical Examination (Long Case, Short Cases

- **Log Book**

Part-II thesis examination with defense at the end of fifth year of MS Neurosurgery Programme.

Total training period 5 years (60months)
Total time period spent in neurosurgery 3years -2months(38months)
Total 7 rotations 1 year and 10months (22months)

2. Examinations

Part-I Examination

1. All candidates admitted in MS Neurosurgery course shall appear in Part-I examination at the end of second calendar year.
2. The examination shall be held on biannual basis.
3. The examination shall have the following components:
a. Written 200 Marks
b. OSCE 100 Marks
c. Clinical examination 100 Marks
4. There shall be one writtenpaper of 100 marks and one paper of MCQs containing 100 MCQs of 100 marks.
Papers 1 & 2: Principles of General Surgery
5. The types of questions shall be of Short/Modified essay type and MCQs (single best).
6. Oral & practical/clinical examination shall be held in clinical techniques in General Surgery.
7. To be declared successful in Part-II examination the candidate must secure 60% marks in each component.
8. Only those candidates, who pass in theory papers, will be eligible to appear in the Oral & Practical/clinical Examination.
9. The candidates, who have passed written examination but failed in oral

& practical/ clinical examination, will re-appear only in oral & practical/clinical examination.

10. The maximum number of attempts to re-appear in oral & practical /clinical Examination alone shall be three, after which the candidate shall have to appear in both written and oral & practical/clinical examinations as a whole.

11. To be eligible to appear in Part-II examination the candidate must submit;

i. duly filled, prescribed Admission Form to the Controller of Examinations duly recommended by the Principal/Head of the Institution in which he/she is enrolled;

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

iii. Examination fee as prescribed by the University.

Part-II Examination

1. All candidates admitted in MS Neurosurgery course shall appear in Part-II (clinical) examination at the end of structured training programme (end of 5th calendar year), and having passed the part I examinations. However, a candidate holding FCPS / MRCS / Diplomate / equivalent qualification in General Surgery shall be exempted from Part-I Examinations and shall be directly admitted to Part-II Examinations, subject to fulfillment of requirements for the examination.

2. The examination shall be held on biannual basis.

3. To be eligible to appear in Part-II examination the candidate must submit; =i. duly filled, prescribed Admission Form to the Controller of Examinations duly recommended by the Principal/Head of the Institution in which he/she is enrolled;

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

iii. Original Log Book complete in all respect and duly signed by the Supervisor (for Oral & practical/clinical Examination);

iv. certificates of having passed the Part-I examinations;

v. Examination fee as prescribed by the University.

4. The Part-II clinical examination shall have the following components:

- Written 200 marks
- Oral & practical/clinical examination 300 marks

5. There shall be one written paper of 100 marks and one MCQs paper containing 100 MCQs of 100 marks.

6. One paper shall have problem-based Short/Modified essay questions, one paper shall have MCQs.

7. Oral & practical/clinical examination shall have 300 marks for:

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

8. To be declared successful in Part-III examination the candidate must secure 60% marks in each component.

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

10. The candidates, who have passed written examination but failed in Oral & Practical/ Clinical Examination, will re-appear only in Oral & Practical / Clinical examination.

11. The maximum number of attempts to re-appear in oral & practical /clinical Examination alone shall be three, after which the candidate shall have to appear in both written and oral & practical/clinical examinations as a whole.

12. The candidate with 80% or above marks shall be deemed to have passed with distinction.

13. Log Book/Assignments: Through out the length of the course, the performance of the candidate shall be recorded on the Log Book.

14. The Supervisor shall certify every year that the Log Book is being maintained and signed regularly.

15. The Log Book will be developed & approved by the Advanced Studies & Research Board.

16. The evaluation will be maintained by the Supervisor (in consultation with the Co- Supervisor, if appointed).

17. The candidate shall be allowed to sit in the Part I examination only after submitting certificates of attendance for all four mandatory workshops and also the rotation certificates.

18. The candidate shall be allowed to sit in the Part II examination only after submitting the mandatory rotation certificates.

3. Submission / Evaluation of Synopsis:

1. The candidates shall prepare their synopsis as per guidelines provided by the Advanced Studies & Research Board, available on UHS website.

2. The research topic in clinical subject should have 30% component related to basic sciences and 70% component related to applied clinical sciences. The research topic must consist of a reasonable sample size and sufficient numbers of variables to give training to the candidate to conduct research, to collect & analyze the data.

3. Synopsis of research project shall be submitted by the end of the 3rd year of MS program. The synopsis after review by an Institutional Review Committee shall be submitted to the University for consideration by the Advanced Studies & Research Board, through the Principal / Dean /Head of the institution.

4. Submission of Thesis:

1. Thesis shall be submitted by the candidate duly recommended by the Supervisor.

2. The minimum duration between approval of synopsis and submission of thesis shall be one year, but the thesis cannot be submitted later than 8 years of enrolment.

3. The research thesis must be compiled and bound in accordance with the Thesis Format Guidelines approved by the University and available on website.

4. The research thesis will be submitted along with the fee prescribed by the University.

6. Award of MS Neurosurgery Degree

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

CONTENT OUTLINE:

Part I MS Neurosurgery

Fundamental Principles of Surgery

1. History of surgery
2. Preparing a patient for surgery
3. Principles of operative surgery: asepsis, sterilization and antiseptics
4. Surgical infections and antibiotics
5. Basic principles of anaesthesia and pain management
6. Acute life support and critical care:
7. Pathophysiology and management of shock
8. Fluids and electrolyte balance/ acid base metabolism
9. Haemostasis, blood transfusion
10. Trauma: assessment of polytrauma, triage, basic and advanced trauma
11. Accident and emergency surgery
12. Wound healing and wound management
13. Nutrition and metabolism
14. Principles of burn management
15. Principles of surgical oncology
16. Principles of laparoscopy and endoscopy
17. Organ transplantation
18. Informed consent and medicolegal issues
19. Molecular biology and genetics
20. Operative procedures for common surgical manifestations e.g cysts, sinuses, fistula, abscess, nodules, basic plastic and reconstructive surgery
21. Principles of basic diagnostic and interventional radiography
22. Principles and interpretation of conventional and advanced radiographic procedures

Common Surgical Skills

Incision of skin and subcutaneous tissue:

i. Langer's lines
ii. Healing mechanism
iii. Choice of instrument
iv. Safe practice

Closure of skin and subcutaneous tissue:

i. Options for closure
ii. Suture and needle choice
iii. Safe practice

Knot tying:
i. Choice of material
ii. Single handed
iii. Double handed
iv. Superficial
v. Deep

Tissue retraction:
i. Choice of instruments
ii. Placement of wound retractors
iii. Tissue forceps

Use of drains:
i. Indications
ii. Types
iii. Insertion
iv. Fixation
v. Management/removal

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

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

Haemostasis:
i. Control of bleeding vessel (superficial)
ii. Diathermy o Suture ligation
iii. Tie ligation
iv. Clip application

Plan investigations

Clinical decision making

Case work up and evaluation; risk management

Pre-operative assessment and management:
i. Cardiorespiratory physiology

ii. Diabetes mellitus
iii. Renal failure
iv. Pathophysiology of blood loss
v. Pathophysiology of sepsis
vi. Risk factors for surgery
vii. Principles of day surgery

Management of comorbidity Intraoperative care:

i. Safety in theatre
ii. Sharps safety
iii. Diathermy, laser use
iv. Infection risks
v. Radiation use and risks
vi. Tourniquets
vii. Principles of local, regional and general anaesthesia

Post-operative care:

i. Monitoring of postoperative patient
ii. Postoperative analgesia
iii. Fluid and electrolyte management
iv. Detection of impending organ failure
v. Initial management of organ failure
vi. Complications specific to particular operation
vii. Critical care

Blood products:

i. Components of blood
ii. Alternatives to use of blood products
iii. Management of the complications of blood product transfusion including children

Antibiotics:

i. Common pathogens in surgical patients
ii. Antibiotic sensitivities
iii. Antibiotic side-effects
iv. Principles of prophylaxis and treatment

Safely assess the multiply injured patient:

i. History and examination
ii. Investigation

iii. Resuscitation and early management
iv. Referral to appropriate surgical subspecialties

Technical Skills

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

Diagnosis and Management of Common Paediatric Surgical Conditions:

i. Child with abdominal pain
ii. Vomiting child
iii. Trauma
iv. Groin conditions
    a. Hernia
    b. Hydrocoele
    c. Penile inflammatory conditions
    d. Undescended testis
    e. Acute scrotum
v. Abdominal wall pathologies
vi. Urological conditions
vii. Constipation
viii. Head / neck swellings
ix. Intussusception
x. Abscess
xi. In growing toenail

In terms of general experience it is expected that trainees would have gained exposure to the following procedures and to be able to perform those marked

(*) under direct supervision.

Elective Procedures

- Inguinal hernia
- (not neo-natal)
    - Orchidopexy
    - Circumcision*
    - Lymph node biopsy*
    - Abdominal wall herniae
    - Insertion of CV lines
    - Management of in growing toenails*
    - EUA rectum*
    - Manual evacuation*
    - Open rectal biopsy
    - Excision of skin lesions*

Emergency Procedures

- Appendicectomy
- Incision and drainage of abscess*
- Pyloromyotomy
- Operation for testicular torsion*
- Insertion of pleural drain*
- Insertion of suprapubic catheter*
- Reduction of intussusception
-

Part II- MS Neurosurgery Clinical Component:

1. Common Neurosurgical Disorders

Congenital and Paediatric Neurosurgery

Neurological evaluation of the neonate and infant

Developmental malformations of the CNS and its coverings

Spina bifida and its variants; aetiology

Encephalocoele

Craniosynostosis; principles of craniofacial reconstruction

Paediatric head injury

Prevention and treatment of secondary insults relating to transfer and emergency surgery in head-injured children

Subdural effusions of infancy

Intracranial and spinal tumours in children
Phakomatoses (neurofibromatoses; tuberous sclerosis)
Craniovertebral anomalies
Vascular lesions in the paediatric age-group
Epidemiology, natural history, pathophysiology and clinical features of subarachnoid haemorrhage, haemorrhagic stroke and ischaemia stroke in children secondary to intracranial aneurysms, arteriovenous malformations and fistulae, cavernomas, arterial dissection, moya-moya disease and venous sinus thrombosis
Surgical and endovascular strategies for the management of acute intracranial vascular disorders in children
Ethical considerations
Hydrocephalus and CSF disturbances
CSF physiology
Pathophysiology, investigation and classification of hydrocephalus and its complications
Benign intracranial hypertension
Medical and surgical methods of treatment of hydrocephalus and long term complications

Cerebrovascular Neurosurgery
Pathophysiology and clinical diagnosis of cerebral ischaemia
Extracranial carotid/vertebral disease; carotid endarterectomy; brain revascularisation
Medical prevention of occlusive cerebrovascular disease
Spontaneous intracranial/spinal haemorrhage especially SAH and intracerebralhaemorrhage
Pathology, classification and natural history of cerebral aneurysms and AVM's
Surgery of and perioperative management of aneurysms, AVM's, cavernomas and haematomas
Miscellaneous cerebrovascular lesions e.g. Caroticocavernous fistulae, venous thrombosis.
Role of interventional radiology
Trauma - Head and Spine
(For neurointensive care and rehabilitation - see relevant sections)

i. Mechanisms and patterns of traumatic brain and spinal cord damage
ii. Pathophysiology of CNS trauma
    a. Cerebral perfusion and oxygenation
    b. Raised intracranial pressure
    c. Impaired intracranial compliance
iii. Intracranial herniation
iv. Epidemiology and prevention of head and spinal injury
v. Pathophysiology of spinal cord injury
vi. Classification of cervical spinal fracture dislocations

vii. Biomechanics of spinal instability
viii. Indications for halo traction and external stabilization
ix. Indications for and principles of open reduction and stabilization
x. Transport, retrieval and pre-hospital care
xi. Initial resuscitation and triage
xii. Clinical Assessment
xiii. Natural history of recovery from head injury including neurological,
xiv. cognitive and behavioural disability and post- traumatic epilepsy
xv. Management including operation for 'surgical' complications (eg. acute and chronic haematoma, open injury, CSF fistula, traumatic vascular injuries, spinal instability, late hydrocephalus).
xvi. 'Medical' management of persisting unconsciousness
xvii. Assessment of outcome, factors affecting prognosis and late sequelae
xviii. Perioperative and neuro-intensive care
xix. Respiratory functions and ventilation
xx. Management of disorders of fluid balance; nutrition and feeding
xxi. Blood coagulation and transfusion
xxii. DVT and pulmonary embolism
xxiii. Fever in neurosurgical patients
xxiv. Confusion, restlessness and agitation in neurosurgery
xxv. Informed consent and medicolegal aspects
xxvi. Postoperative seizures
xxvii. Diagnosis of brainstem death
xxviii. Monitoring techniques in Neurointensive care and Theatre
xxix. Principles of prophylactic drug treatment
xxx. Other post-operative complications
xxxi. The neurogenic bladder

Infections

i. The pathophysiology of intracranial and spinal sepsis
ii. Infective complications of neurosurgical procedures – treatment and prophylaxis
iii. Intracranial and spinal abscess/ empyema-clinical features, investigation and management
iv. The aetiology and pathophysiology of spinal sepsis
v. Indications for drainage of spinal epidural abscess by laminectomy and multiple laminotomies
vi. Bacterial, viral, fungal and parasitic infections of the CNS and spine

vii. Opportunistic infections, HIV and AIDS
viii. The aetiology and pathophysiology of vertebral osteomyelitis and discitis, including pyogenic, tuberculous and atypical infections
ix. Indications for percutaneous and open biopsy
x. Principles of anti-microbial chemotherapy
xi. Indications for operative intervention
xii. Principles of peri-operative care
xiii. Surgical complications and their management

Neuro-oncology

i. Presenting features and investigations of tumours involving the central nervous and peripheral nervous system
ii. Classification, natural history and pathology of benign and malignant intracranial neoplasia
iii. Pathophysiology of raised intracranial pressure associated with space occupying tumours
iv. Diagnostic imaging of intracranial tumours including the interpretation of CT and MRI scans and the role of MRS
v. Principles and techniques of tumour biopsy
vi. Stereotaxy, robotics/ endoscopic techniques in CNS tumour management
vii. Operative management of intracranial and spinal tumours.
viii. Principles of fractionated radiotherapy, stereotactic radiotherapy and radiosurgery Role of adjuvant chemotherapy
ix. Principles of clinical trials and their application to neuro-oncology
x. Specific management of tumours of the brain, skull base and orbit including glioma, meningioma, pituitary and parasellartumours, cerebellar pontine angle tumours, metastases, tumours of the ventricular system and pineal region, lymphoma, medulloblastoma, epidermoid, dermoid, haemangioblastoma and chordoma
xi. Specific management of primary and secondary tumours involving the spinal column, intramedullary, intra and extra duraltumours of the spinal canal and tumours of the nerve roots and peripheral nerves
xii. Prognosis of CNS and peripheral nerve tumours
xiii. Principles of palliative care

Spinal disorders (for congenital, trauma, tumour and vascular disorders, see relevant sections)

i. Differential diagnosis of spinal cord compression and root dysfunction – investigation and management
ii. Biomechanics of the spine and principles of spinal stabilization/fusion; approaches to the spine
iii. Conservative management of spinal disorders
iv. Degenerative and inflammatory spinal disease - e.g. rheumatoid arthritis, cervical spondylotic myelopathy/radiculopathy, thoracic discs, lumbar disc disease, spinal stenosis and spondylolisthesis
v. Syringomyelia; arachnoiditis
vi. Management of spasticity

Pain

Pathophysiology of pain; differential diagnosis
General and psychological factors in pain management
Analgesics and pain relief
Craniofacial pain syndromes
Trigeminal and glossopharyngeal neuralgia - history, drug treatment, percutaneous and posterior fossa approaches
Nerve blocks, electrical stimulation and RF lesions for pain relief; implants; cordotomy
DREZ lesions; Dorsalrhizotomy

Peripheral nerves

The diagnosis and treatment of common peripheral nerve problems
including entrapment neuropathies, thoracic outlet and brachial plexus, causalgia and sympathetic dystrophy
Theory and practice of nerve repair and cranial nerve reconstruction

Functional and Stereotactic Neurosurgery

i. Principles and techniques of stereotactic and computer-assisted imageguided surgery
ii. Stereotactic radiosurgery
iii. Movement disorders and their surgical treatment
iv. Investigation, medical and surgical management of epilepsy and other functional disorders
v. Classification, causes and presentations of dysphasias, speech dyspraxia and dyslexia
vi. Classification, causes and presentations of dysarthria
vii. Role of speech and language therapists in assessment and treatment
viii. Neurological causes of dysphagia
ix. Indications for laryngoscopy, videofluoroscopy, nasogastric and percutaneous gastric feeding
x. Aaetiology, differential diagnosis, investigation and initial management of patients presenting with sphincteric disorders
xi. Interpretation of urodynamic studies
xii. Aetiology, differential diagnosis, investigation and initial management of patients presenting with movement disorders
    a. Parkinson's disease
    b. Iatrogenic movement disorders
    c. Dystonic syndromes
    d. Choreiform syndromes
xiii. Disorders of memory and cognition associated with head injury, subarachnoid haemorrhage, hydrocephalus, structural lesions of the frontal and temporal lobes and disorders of the limbic system

Neuro-ophthalmology / Neuro-otology

i. Visual acuity and visual fields; fundal examination

ii. Patterns of visual loss in relation to common bulbar, retrobulbar, sellar, parasellar and optic pathway disorders
iii. Analysis of diplopia and nystagmus in relation to common cranial nerve and brainstem disorders
iv. Significance of abnormalities of the pupils, fundi, external ocular movements and the visual fields
v. Significance of abnormalities of hearing and of the vestibular system
vi. Common causes of conductive and sensorineural hearing loss
vii. Principles of audiological assessment

Rehabilitation of the Neurosurgical Patient

i. Distinction between, and relevance of, concepts of limitation, disability and handicap
ii. Methods of assessment
iii. Patterns of natural history of recovery after Neurosurgical treatment, outcome and confounding factors
iv. Use of components of rehabilitation provided by specific medical and paramedical disciplines and interdisciplinary approaches, including community and family reintegration

Evidence based Neurosurgery; Audit and Trial design

i. To understand the provisional nature of knowledge
ii. To be able to acknowledge and identify failure of current treatments
iii. To cope with uncertainty and biological variability
iv. To be able to critically assess the neurosurgical literature
v. To be aware of the relevant rational and quantitative methods to resolve uncertainty

Relevant topics

i. Principles of audit and randomized controlled trials
ii. Outcome assessment
iii. Design and appraisal of clinical studies - evaluation of published reports
iv. Clinical trials: design, randomization, patient numbers, end points and power; statistical analysis, confidence intervals and clinical significance.
v. Drug studies : phases 1 - 4
vi. Informed consent
vii. Issues of organization and delivery of neurosurgical care

2. Common Neurosurgical Presentations

1. Impaired consciousness and non-traumatic coma due to:

- Meningitis
- Encephalitis
- Intracranial haemorrhage
- Acutely raised ICP
- Hydrocephalus
- Hypoxaemia and ischaemia
- Cardiogenic shock
- Hypoglycaemia
- Epilepsy
- Metabolic encephalopathies
- Drugs and toxins

2. Traumatic coma
3. Weakness and paralysis
    - Ocular, cranial nerve, limb, trunk and respiratory muscle weakness
4. Headache - acute and chronic- associated with
    - Benign headache syndromes
    - Migraine, cluster headache and related syndromes
    - Space occupying lesions
    - Meningitic disorders
    - Intracranial haemorrhage
    - Trigeminal neuralgia
    - Atypical craniofacial pain syndrome
5. Dizziness, unsteadiness and falls
    - Cerebellar, vestibular, extrapyramidal and autonomic dysfunction
6. Pain and sensory loss
    - Musculoskeletal, neurogenic and neuropathic pain and sensory loss
7. Movement disorder associated with;
    - Parkinson's disease
    - Iatrogenic movement disorders
    - Dystonic syndromes
    - Choreiform syndromes
8. Hearing disorder

- Conductive and sensorineural hearing loss

9. Visual disorder
    - Common bulbar, retrobulbar, sellar, parasellar and optic pathway disorders
    - Nystagmus and diplopia
10. Language and speech disturbance presentations;
    - Dysphasias
    - Speech dyspraxia
    - Dyslexia
    - Dysarthria
11. Swallowing disorders with neurological causes of dysphagia
12. Disorders of the Sphincteric and sexual function
    - Neurological enuresis
    - Constipation
    - Diarrhea
    - Urgency of micturition/dribbling
13. Memory and cognitive disorders associated with;
    - Head injury
    - Subarachnoid haemorrhage
    - Hydrocephalus
    - Structural lesions of the frontal and temporal lobes
    - Disorders of the limbic system
14. Acute and chronic presentations of organic and psychiatric behavioural disorders relating to;
    - Alcohol and drug abuse
    - Encephalitis
    - Organic dementia
    - Psychosis
15. Ill child with hydrocephalus, impaired consciousness and sepsis

3. Common Neurosurgical Skills and Procedures

On completion of the initial training in Part I, the trainees will be competent in

all aspects of the basic, operative and non operative care of surgical patients

During Part II training, they will understand the importance of neurosurgical care and management with particular reference to common neurosurgical presentations recognizing and preventing secondary insults to the central nervous system. They will be capable of resuscitating, assessing and initiating the surgical management of patients deteriorating as a result of intracranial and systemic complications. They will demonstrate sound judgment when seeking more senior support, prioritizing medical interventions and escalating the level of medical care.

Neuro-Traumatology:

General Management of the Head Injured Patient:

1. Medical management of acutely raised intracranial pressure
2. Indications for operation intervention including the use of pressure monitoring
3. Principles, diagnosis and confirmation of brain death
4. Principles of intensive care of head injured patients
5. Principles of spinal stabilization and radiological assessment in head injury patients
6. Role of neurological rehabilitation
7. Clinical assessment of the multiply-injured patient.
8. Neurological assessment of the head-injured patient including:
    - Assessment and categorization of impaired consciousness
    - Recognition and interpretation of focal neurological deficits
9. Prioritization of clinical risk
10. Interpretation of CT scans and plain radiology
11. Accurate documentation
12. Indications for ICP monitoring
13. Insertion of ICP monitor
14. Insertion of frontal subdural and intraparenchymal ICP monitors using a standard frontal burr hole and/or twist drill craniostomy
15. Calibration, zeroing and interpretation of ICP traces
16. Potential complications of the procedure
17. Burr hole evacuation of chronic subdural haematoma
18. Management of anti-platelet and anti-coagulant medication
19. Neurological assessment of patients with a CSDH

20. Interpretation of CT scans
21. Post-operative assessment and management
22. Performance of single and multiple frontal and parietal burr hole
23. Craniotomy for supratentorial traumatic haematoma, in particular:
    I. Planning and siting of craniotomies for evacuation of extradural and subdural haematomas
    II. Handling the "tight" brain
    III. Achieving haemostasis in the coagulopathic patient
    IV. Achieving haemostasis from the skull base and venous sinuses
    V. Elevation of compound depressed skull fracture with dural repair
24. Delayed cranioplasty of skull vault
25. Management of soft tissue trauma
26. Indications for primary and secondary closure of wounds
27. Indications for antibiotic prophylaxis
28. Assessment of tissue perfusion and viability
29. Wound exploration under local and general anaesthesia
30. Wound debridement
31. Arrest of scalp haemorrhage
32. Layered closure of the scalp without tension
33. Suturing technique
34. Wound drainage and head bandaging
35. Use of external mobilization including cervical collars and spinal Boards
36. Application of halo traction
37. Application of a halo-body jacket
38. The role of posttraumatic neurological rehabilitation

General Management of Hydrocephalus:

1. The assessment and operative management of adult patients with communicating and non communicating hydrocephalus
2. The assessment of children with hydrocephalus; emergency external ventricular drainage in children with acute hydrocephalus
3. The insertion and revision of ventriculo-peritoneal, ventriculo-atrial andlumbo-peritoneal shunts; endoscopic third ventriculostomy

4. Image-guided placement of ventricular catheters
5. Management of neonatal post-haemorrhagic hydrocephalus

General Management of Subarachnoid Haemorrhage:

1. Principles of resuscitation and timing of interventions.
2. Indications for CT scanning, diagnostic lumbar punctuure, CT angiography and digital subtraction angiography.
3. Principles of management of post-haemorrhagic hydrocephalus
4. Indications for endovascular and surgical intervention
5. Interpretation of CT scans including assessment of intracranial blood load, haematomas and hydrocephalus
6. Basic interpretation of cerebral angiography
7. Diagnostic & therapeutic lumbar puncture
8. To undertake an atraumatic lumbar puncture
9. Interpretation of basic microscopy and biochemistry
10. Principles of spectrophotometry
11. Management of delayed secondary ischaemia
12. Principles governing the augmentation of cerebral blood flow
13. Assessment of a deteriorating patient
14. Recognition and management of secondary insults
15. Interpretation of CT scans
16. Management of hypervolaemic hypertension
17. Insertion of central venous catheter
18. Insertion of lumbar drain
19. Insertion of external ventricular drain
20. Management of post-haemorrhagic hydrocephalus
21. Indications for external ventricular drainage and lumbar subarachnoid drainage
22. Assessment of the unconscious and deteriorating SAH patient
23. Interpretation of CT scans
24. The management of hydrocephalus complicating intracranial haemorrhage, head injury and intracranial space occupying lesions;
25. Insertion and taping of CSF reservoirs; insertion and maintenance of lumbar and ventricular drains
26. External ventricular drainage, ventriculoperitoneal shunting, lumbar

CSF drainage and shunting, ventriculo-cisternostomy
27. Insertion of ventricular drain/access device

Neuro-Oncology:

All trainees will be competent to manage patients with high grade intrinsic tumours, metastases and convexity meningiomas. Trainees with a special interest in neuro-oncology will participate fully in the multidisciplinary management of neuro-oncology patients and will be familiar with current developments in molecular neuro-oncology, emerging surgical techniques and the ethical, regulatory and practical considerations governing clinical trials in neurooncology.

Assessment and Peri-Operative Management of Patients with SpaceOccupying Intracranial Lesions:

1. Craniotomy for superficial, lobar supratentorial intrinsic tumour. In particular:
a. Safe patient positioning
b. Planning and siting of craniotomy with and without image-guidance
c. Intra-operative management of raised ICP
d. Appropriate exposure of the tumour, using operating microscope as necessary
e. Safe use of fixed retractors
f. Precise use of suction, electro-coagulation and ultrasonic aspiration
g. Intracranial haemostasis
2. Advanced surgical techniques including awake craniotomy; stereotactic craniotomy, intraoperative neurophysiological monitoring
3. Advanced image guidance with integration of functional data; Intraoperative imaging techniques
4. Use of intraoperative chemotherapy wafers
5. Third ventriculostomy
6. The management of low grade intrinsic tumours using advanced techniques
7. The surgical approaches to tumours of the ventricular system and pineal gland including the transfrontaltransventricular excision of intraventriculartumours and cysts
8. Transcallosaltransventricular excision of lesions of the third ventricle and foramen of Munro
9. Indications for biopsy of intracranial tumours
10. Risks of biopsy
11. Principles of image-guided surgery
12. Principles of radiosurgery and stereotactic radiotherapy and the indications for their use as adjunctive and/or primary treatment modalities.
13. Indications for neuroimaging

14. Image-guided frameless and/or frame-based stereotactic biopsy including Setting up a computer workstation and importing and interrogating image data
    - Positioning the patient and applying a cranial fixator
    - Obtaining and confirming accurate patient registration
    - Positioning and performing a suitable burr hole
    - Passage of biopsy probe and biopsy
    - Preparation of smear histology (when available)
15. Management of raised intracranial pressure
16. Principles of operative management
17. Detection and management of post-operative complications e.g. cerebral swelling, intracranial haematomas and intracranial sepsis; the management of post-operative seizures
18. Basic interpretation of CT and MRI scans
19. Interpretation of CT and MRI scans and selection of biopsy targets

Assessment and perioperative management of patients presenting with Space occupying intra spinal lesions:

1. Assessment and perioperative management of patients presenting with acute spinal disorders e.g. caudaequina and spinal root compression
2. General and basic surgical management of patients with malignant spinal cord compression
3. The surgical management of degenerative spinal disorders e.g. lumbar compressive radiculopathies by lumbar microdiscectomy and associated microsurgical decompressions
4. The surgical management of compressive cervical myeloradiculopathies
5. Including the multi-disciplinary management of patients with intracranial neoplasia
6. Extradural spinal biopsy and decompression by laminectomy in selected patients without segmental instability
7. Instrumented posterior spinal stabilization
8. The management of spinal shock
9. The ward management of patients with spinal instability
10. The detection and initial management of postoperative complications including compressing haematomas, CSF fistula and spinal sepsis

11. The operative management of supra-tentorial intrinsic tumours
12. The operative management of convexity meningiomas e.g. use of duraplasty and cranioplasty

CNS Sepsis:

1. General management of CNS infections e.g. ventriculitis, cerebral abscess, subdural empyema and spinal epidural abscess
2. The operative management of cerebral abscess by burr hole aspiration

Paediatric Neurosurgery:

All trainees will undertake at least a six month placement in a paediatric neurosurgery service under the direct supervision of paediatric neurosurgeons with a full-time or major commitment to paediatric surgery. The service must provide a comprehensive range of paediatric neurosurgical care. On completion of general paediatric training trainees will be competent to assess and undertake the emergency neurosurgical management of the critically-ill child with raised intracranial pressure. On completion of a special interest fellowship in paediatricneurosurgery trainees will be competent in all aspects of the non-operative neurosurgical management of children presenting with disorders of the nervous system. They will have detailed knowledge of the statutory framework governing the care of children, paediatricneurointensive care, the principles of paediatricneuro-rehabilitation and of the management of non-accidental injury. They will be competent to undertake all aspects of the emergency neurosurgical operative care of children and to undertake a range of elective procedures in the following fields with appropriate supervision:

PaediatricNeuro-oncology:

- Stereotactic and image guided biopsy of paediatrictumours
- Endoscopic biopsy of third ventricular tumours
- Resection of supratentorial and infratentorial intrinsic tumours
- Approaches to suprasellar, third ventricular and pineal tumours
- Management of spinal cord tumours

Paediatric Head Injury:

- Decompressivecraniectomy
- Cranioplasty
- Management of growing fractures

- Craniofacial reconstruction including the management of simple craniosynostosis, syndromiccraniosynostosis, post-traumatic deformity
- Management of CSF fistulae

Paediatric Hydrocephalus:

- Assessment of the ill child with hydrocephalus, impaired consciousness and sepsis
- Differential diagnosis of shunt malfunction
- Interpretation of CT scans in shunted children
- Taping and draining from an Ommaya reservoir
- Taping a shunt
- External ventricular drainage

Spinal Dysraphism:

- Management of neonatal spina bifida, meningoceles and encephaloceles
- Spinal cord tethering syndromes
- Management of congenital and acquired spinal deformity e.g. syndromic spinal deformity and post-operative spinal deformity

Functional Neurosurgery:

Trainees with a special interest in functional neurosurgery will develop additional expertise as follows:

Surgical Management of Pain:

- Implantation of spinal cord stimulators
- Insertion of intrathecal drug delivery systems
- Ablative surgical treatment for pain including DREZ lesioning, cordotomy andmyelotomy
- Neuromodulatory techniques including peripheral nerve, motor cortex and deep brain stimulation.
- Neurovascular compression syndromes: including microvascular decompression of the trigeminal nerve; microvascular decompression of

the facial nerve; percutaneous trigeminal rhizotomy

Surgical Management of Spasticity:

- Medical and surgical treatments for spasticity
- Implantation of intrathecal drug delivery systems
- Other surgical treatments for spasticity including phenol blocks, neurectomies and rhizotomy.

Surgical Management of Epilepsy:

- Multidisciplinary assessment and preparation of patients for epilepsy surgery
- Stereotactic placement of depth electrodes and placement of subdural
- Electrode grids
- Temporal lobectomy
- Selective amygdalohippocampectomy
- Callosotomy
- Insertion of vagal nerve stimulators
- Hemispherectomy
- Multiple subpial transections

Surgical Management of Movement Disorders:

- Multidisciplinary assessment and management of patients with movement disorders e.g. Parkinson's disease and dystonia
- Selection, targeting and placement of deep brain stimulation electrodes
- Management of neuro-stimulators; radiofrequency lesioning

Neurovascular Surgery:

Special interest training will take place in units with extensive experience in the multi-disciplinary management of all common intracranial vascular disorders. Trainees with a special interest in neurovascular surgery will develop additional expertise in:

Intracranial Aneurysms:

- Surgical and endovascular strategies for the management of ruptured and un-ruptured intracranial aneurysms
- Surgical treatment of ruptured aneurysms of the anterior circulation
- Principles of microvascular reconstruction and bypass for complex aneurysms.

Intracranial Vascular Malformations:

- Surgical, endovascular and radiosurgical strategies for the management ofarteriovenous malformations
- Surgical treatment of superficial cortical arteriovenous malformations

Other Vascular Disorders:

- Surgical and endovascular treatment of duralarteriovenous fistulae
- Image-guided resection of cavernomas
- Management of primary intracerebralhaematomas
- The management of venous occlusive disorders
- Medical, surgical and endovascular management of extracranial arterial occlusive disease

Skull-Base Surgery

Special interest training in skull base surgery will take place in units with extensive multi-disciplinary experience in the management of all common skull-base disorders. Trainees with a special interest in skull base surgery will develop additional expertise as follows:

Skull-Base and Craniofacial Surgical Access:

- Standard variations of fronto-basal, fronto-orbital, transzygomaticinfratemporal, transtemporal, far-lateral, transphenoidal and transmaxillary approaches

Cranial Base Meningiomas:

- Resection of anterior fossa (olfactory groove and suprasellar) meningiomas; tentorial and petrous temporal meningiomas; petroclival meningiomas

Pituitary and SellarTumours:

- Microsurgical and endoscopic transphenoidal resection of pituitary tumours
- Pterional, subfrontal, interhemispheric and transventricular approaches tosuprasellartumours

Acoustic Neuromas:

- Retrosigmoid, translabyrinthine and middle fossa resection of acoustic neuromas

Other skull-base tumours:

- Management of other cranial nerve schwannomas, glomustumours and malignant primary and secondary tumours of the skull-base

Management of cranio-facial trauma:

- Management of fronto-orbital disruption

Repair of CSF Fistulae:

- Management of postoperative CSF fistulae
- Indications for endoscopic repair of basal CSF fistula
- Techniques for open repair and skull-base reconstruction

Spinal Surgery:

- On completion of a special interest fellowship in spinal surgery trainees will be competent in all aspects of the emergency and urgent operativecare of patients with spinal disorders. They will develop additional expertise as follows:

Spinal trauma:

- Reduction and internal stabilization of atlanto-axial, sub-axial and thoraco-lumbar fractures and dislocations

Metastatic Disease of the Spine:

- Posterior decompression and stabilization using pedicle screw, hook and sub-laminar wire constructs
- Corporectomy and instrumented reconstruction of the anterior column
- Primary tumours of the spine
- Techniques for local ablation of benign lesions and en bloc resections of malignant tumours
- Transpedicular and open vertebral and disc biopsy in vertebral osteomyelitis and discitis

IntraduralTumours:

- The radical resection of intradural, extra-medullary tumours; biopsy and optimal resection of intramedullary tumours

Syringomyelia and Hind Brain Anomalies:

- Foramen magnum decompression, syringostomy, syringopleural

shunting, detethering and duroplasty

Advanced Surgery of the Ageing and Degenerative Spine:

- Management of osteoporotic collapse, vertebroplasty, kyphoplasty
- Stabilization of the osteoporotic spine
- Operative management degenerative spondylolisthesis and scoliosis
- The assessment, counseling and pre-operative preparation of patients

with lumbar radiculopathies

- Interpretation of plain radiographs, CT scan, MRI scans and CT

myelograms

- Primary lumbar microdiscectomy
- Primary posterior decompression (laminotomy, hemilaminectomyetc):

including

- Identification of spinal level by pre and intra-operative fluoroscopy
- Achieving safe access to the spinal canal by micro-surgical

fenestration

- Achieving full decompression of the spinal canal, lateral recess and

foramen by appropriate bone and soft tissue resection

- Protection and safe retraction of neural tissues

- The assessment, counseling and pre-operative preparation of patients

with cervical myeloradiculopathies

- Interpretation of plain radiographs, CT scan, MRI scans and CT myelograms

- Single level anterior cervical discectomy with and without fusion
- Standard anterolateral approach to the cervical spine
- Use of fluoroscopy or plain radiographs to confirm spinal level
- Radical and subtotal excision of cervical disc, PLL, and central and onco vertebral osteophytes.
- Protection and full decompression of the spinal cord and spinal nerve

roots

- Interbody fusion using autologous bone with or without interbody cages

The Rheumatoid and Ankylosed Spine:

- Management of atlanto-axial subluxation
- Cranial settling and odontoid migration

- Sub-axial degeneration; cervico-dorsal kyphosis

Spinal Deformity:

- Multidisciplinary management of patients with spinal dysraphism, diastematomyeliaetc

METHODS OF INSTRUCTION/COURSE CONDUCTION:

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

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

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

1. Clinical Case Conference

Each resident will be responsible for at least one clinical case conference

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

2. Monthly Student Meetings

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

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

a. Journal Club Meeting

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

b. Core Curriculum Meetings

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

c. Skill Development

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

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

1. Residents must develop a comprehensive understanding of the indications, contraindications, limitations, complications, techniques, and interpretation of results of those technical procedures integral to the discipline
2. Residents must acquire knowledge of and skill in educating patients about the technique, rationale and ramifications of procedures and in obtaining procedure-specific informed consent. Faculty supervision of residents in their performance is required, and each resident's experience in such procedures must be documented by the program director.

3. Residents must have instruction in the evaluation of medical literature, clinical epidemiology, clinical study design, relative and absolute risks of disease medical statistics and medical decision making.

4. Training must include cultural, social, family, behavioral and economic issues, such as confidentiality of information, indications for life support systems, and allocation of limited resources.

5. Residents must be taught the social and economic impact of their decisions on patients, the primary care physician and society. This can be achieved by attending the bioethics lectures
6. Residents should have instruction and experience with patient counseling skills and community education.
7. This training should emphasize effective communication techniques for diverse populations, as well as organizational resources useful for patient and community education.
8. Residents should have experience in the performance of neurosurgery related clinical laboratory and radionuclide studies and basic laboratory techniques, including quality control, quality assurance and proficiency standards
9. Each resident will manage at least the following essential neurosurgical cases and observe and participate in each of the following procedures, preferably done on patients under supervision initially and then independently;

Essential Neurosurgical Conditions:

- Cranial trauma
- Spontaneous intracranial haemorrhage
- Hydrocephalus
- Intracranial tumours
- CNS infections
- Spinal trauma

- Benign intraduraltumours
- Malignant spinal cord compression
- Degenerative spinal disorders
- Emergency paediatric care

Essential Operative Competencies:

Initial Surgical Approaches

- Burr hole
- Craniotomy - convexity
- Craniotomy - pterional
- Craniotomy - midline supratentorial
- Craniotomy - midline posterior fossa
- Lateral posterior fossa
- Lumbar fenestration
- Laminectomy

General Procedures

- Insertion of lumbar drain
- Tapping/draining of CSF reservoir
- Application of skull traction
- Image Guidance/Stereotaxy set up

Management of Cranial Trauma

- Insertion of Intracranial (ICP) monitor
- Burr hole evacuation of CSDH
- Elevation of depressed skull fracture
- Craniotomy for traumatic haematoma (ICH)

Management of Spontaneous Intracranial Haemorrhage

- Craniotomy for spontaneous intracerebral
- Haematoma (ICH supratentorial)

- Craniotomy for spontaneous intracerebellar
- Haematoma (ICH infratentorial)
- Management of Hydrocephalus
- Insertion of ventricular drain/access device
- Insertion of VP shunt
- Revision of VP shunt

Management of Intracranial Tumours

- Supratentorialtumour biopsy
- Craniotomy for supratentorial intrinsic tumour& metastasis
- Craniotomy for posterior fossa intrinsic tumour& metastasis
- Craniotomy for convexity meningioma

Management of Intradural Spinal Tumours

- Excision of intraduralextramedullarytumour
- Management of degenerative spinal disorders
- Lumbar microdiscectomy
- Anterior cervical discectomy

Emergency Paediatric Care

- Insertion of EVD
- Evacuation of intracranial haematoma (ICH)

3. Annual Grand Meeting

Once a year all residents enrolled for MS Neurosurgery should be invited to the annual meeting at UHS Lahore.

One full day will be allocated to this event. All the chief residents from affiliated institutes will present their annual reports. Issues and concerns related to their relevant courses will be discussed. Feedback should be collected and suggestions should be sought in order to involve residents in decision making.

The research work done by residents and their literary work may be displayed.

In the evening an informal gathering and dinner can be arranged. This will help in creating a sense of belonging and ownership among

students and the faculty.

SECTION-1

MORNING REPORT PRESENTATION/ CASE PRESENTATION SEEN IN LAST EMERGENCY OR INDOOR

SR#	DATE	REG# OF PATIENT	BRIEF DESCRIPTION//HISTORY, DIAGNOSIS,TREATMENT, PROCEDURE & OUTCOME IF ANY	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

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SR#	DATE	REG# OF PATIENT	BRIEF DESCRIPTION//HISTORY, DIAGNOSIS,TREATMENT, PROCEDURE & OUTCOME IF ANY	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR#	DATE	REG# OF PATIENT	BRIEF DESCRIPTION//HISTORY, DIAGNOSIS,TREATMENT, PROCEDURE & OUTCOME IF ANY	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR#	DATE	REG# OF PATIENT	BRIEF DESCRIPTION//HISTORY, DIAGNOSIS,TREATMENT, PROCEDURE & OUTCOME IF ANY	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SECTION-2

TOPIC PRESENTATION/SEMINAR

SR#	DATE	NAME OF THE TOPIC & BRIEF DETAILS OF THE ASPECTS COVERED	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR#	DATE	NAME OF THE TOPIC & BRIEF DETAILS OF THE ASPECTS COVERED	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SECTION-3

JOURNAL CLUB

SR#	DATE	TITLE OF THE ARTICLE	NAME OF JOURNAL	DATE OF PUBLICATION	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR#	DATE	TITLE OF THE ARTICLE	NAME OF JOURNAL	DATE OF PUBLICATION	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SECTION-4

PROBLEM CASE DISCUSSION

SR #	DATE	REG.# OF THE PATIENT DISCUSSED	BRIEF DESCRIPTION//HISTORY, DIAGNOSIS,TREATMENT, PROCEDURE & OUTCOME IF ANY	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR #	DATE	REG.# OF THE PATIENT DISCUSSED	BRIEF DESCRIPTION//HISTORY, DIAGNOSIS,TREATMENT & OUTCOME IF ANY	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SECTION-5

DIDACTIC LECTURES/INTERACTIVE LECTURES

SR #	DATE	TOPIC & BRIEF DESCRIPTION	NAME OF THE TEACHER	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR #	DATE	TOPIC & BRIEF DESCRIPTION	NAME OF THE TEACHER	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR #	DATE	TOPIC & BRIEF DESCRIPTION	NAME OF THE TEACHER	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SECTION-6

EMERGENCY CASES (Repetition of Cases Should Be Avoided)

(Estimated 50 cases to be documented/Year)

(8 cases/month)

SR#	DATE	REG # OF THE PATIENT	BRIEF DESCRIPTION//HISTORY, DIAGNOSIS,TREATMENT & OUTCOME IF ANY	PROCEDURES PERFORMED	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR#	DATE	REG # OF THE PATIENT	BRIEF DESCRIPTION//HISTORY, DIAGNOSIS,TREATMENT & OUTCOME IF ANY	PROCEDURES PERFORMED	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR#	DATE	REG # OF THE PATIENT	BRIEF DESCRIPTION//HISTORY, DIAGNOSIS,TREATMENT & OUTCOME IF ANY	PROCEDURES PERFORMED	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR#	DATE	REG # OF THE PATIENT	BRIEF DESCRIPTION//HISTORY, DIAGNOSIS,TREATMENT & OUTCOME IF ANY	PROCEDURES PERFORMED	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR#	DATE	REG # OF THE PATIENT	BRIEF DESCRIPTION//HISTORY, DIAGNOSIS,TREATMENT & OUTCOME IF ANY	PROCEDURES PERFORMED	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SECTION-7

INDOOR PATIENTS (repetition of cases should be avoided)

(Estimated cases to be attended are 50 patients per year)

SR#	DATE	REG # OF THE PATIENT	DIAGNOSIS	MANAGEMENT	PROCEDURES PERFORMED	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR#	DATE	REG # OF THE PATIENT	DIAGNOSIS	MANAGEMENT	PROCEDURES PERFORMED	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR#	DATE	REG # OF THE PATIENT	DIAGNOSIS	MANAGEMENT	PROCEDURES PERFORMED	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR#	DATE	REG # OF THE PATIENT	DIAGNOSIS	MANAGEMENT	PROCEDURES PERFORMED	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

R#	DATE	REG # OF THE PATIENT	DIAGNOSIS	MANAGEMENT	PROCEDURES PERFORMED	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SECTION-8

OPD AND CLINICS (repetition of cases should be avoided)

(Estimated cases to be attended are 100 patients per month)

SR#	DATE	REG # OF THE PATIENT	BRIEF DESCRIPTION//HISTORY, DIAGNOSIS,TREATMENT & OUTCOME IF ANY	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR#	DATE	REG # OF THE PATIENT	BRIEF DESCRIPTION//HISTORY, DIAGNOSIS,TREATMENT & OUTCOME IF ANY	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR#	DATE	REG # OF THE PATIENT	BRIEF DESCRIPTION//HISTORY, DIAGNOSIS,TREATMENT & OUTCOME IF ANY	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

R#	DATE	REG # OF THE PATIENT	BRIEF DESCRIPTION//HISTORY, DIAGNOSIS,TREATMENT & OUTCOME IF ANY	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR#	DATE	REG # OF THE PATIENT	BRIEF DESCRIPTION//HISTORY, DIAGNOSIS,TREATMENT & OUTCOME IF ANY	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

R#	DATE	REG # OF THE PATIENT	BRIEF DESCRIPTION//HISTORY, DIAGNOSIS,TREATMENT & OUTCOME IF ANY	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SECTION-9

NEUROSURGICAL PROCEDURES

OBSERVED (O)/ASSISTED (A)/ PERFORMED UNDER SUPERVISION (PUS)/PERFORMED INDEPENDENTLY (PI)

SR.#	DATE	REGNO. OF PATIENT	NAME OF PROCEDURE	(O)/(A)/(PUS)/ (PI)	DETAIL OF PROCEDURE	PLACE OF PROCEDURE	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR.#	DATE	REG NO. OF PATIENT	NAME OF PROCEDURE	(O)/(A)/(PUS)/ (PI)	DETAIL OF PROCEDURE	PLACE OF PROCEDURE	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR.#	DATE	REG NO. OF PATIENT	NAME OF PROCEDURE	(O)/(A)/(PUS)/ (PI)	DETAIL OF PROCEDURE	PLACE OF PROCEDURE	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR.#	DATE	REG NO. OF PATIENT	NAME OF PROCEDURE	(O)/(A)/(PUS) / (PI)	DETAIL OF PROCEDURE	PLACE OF PROCEDURE	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR.#	DATE	REG NO. OF PATIENT	NAME OF PROCEDURE	(O)/(A)/(PUS) / (PI)	DETAIL OF PROCEDURE	PLACE OF PROCEDURE	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SECTION-10

MULTI DICIPLINARY MEETINGS

SR#	DATE	BRIEF DESCRIPTION	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR#	DATE	BRIEF DESCRIPTION	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SECTION-11

CLINICOPATHOLOGICAL CONFERENCE (CPC)

(50% attendance of CPC is mandatory for the resident every year)

SR#	DATE	BRIEF DESCRIPTION OF THE TOPIC/CASE DISCUSSED	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR#	DATE	BRIEF DESCRIPTION OF THE TOPIC/CASE DISCUSSED	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR#	DATE	BRIEF DESCRIPTION OF THE TOPIC/CASE DISCUSSED	SUPERVISOR'S SIGNATURE (Name/Stamp)

SECTION-12

MORBIDITY/MORTALITY MEETINGS

(Total Morbidity/Mortality Meetings to be attended ONE Morbidity/Mortality Meetings per month)

SR#	DATE	REG. # OF THE PATIENT DISCUSSED	BRIEF DESCRIPTION OF THE CASE	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR#	DATE	REG. # OF THE PATIENT DISCUSSED	BRIEF DESCRIPTION OF THE CASE	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SECTION-13

HANDS ON TRAINING/WORKSHOPS

SR#	DATE	TITLE	VENUE	FACILITATOR	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR#	DATE	TITLE	VENUE	FACILITATOR	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SECTION-14

PUBLICATIONS

SNO.	NAME OF PUBLICATION	TYPE OF PUBLICATION ORIGINAL ARTICLE /EDITORIAL/CASE REPORT ETC	NAME OF JOURANL	DATE OF PUBLICATION	PAGE NO.	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SNO.	NAME OF PUBLICATION	TYPE OF PUBLICATION ORIGINAL ARTICLE /EDITORIAL/CASE REPORT ETC	NAME OF JOURANL	DATE OF PUBLICATION	PAGE NO.	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SECTION-15

MAJOR RESEARCH PROJECT DURING MD TRAINING/ANY OTHER MAJOR RESEARCH PROJECT

SNO.	RESEARCH TOPIC	PLACE OF RESEARCH	NAME AND DESIGNATION OF SUPERVISOR	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SNO.	RESEARCH TOPIC	PLACE OF RESEARCH	NAME AND DESIGNATION OF SUPERVISOR	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SECTION-1

WRITTEN ASSESSMENT RECORD (FORMATIVE)

S.NO	TOPIC OF WRITTEN TEST/EXAMINATION	TYPE OF THE TEST MCQS OR SEQS OR BOTH	TOTAL MARKS	MARKS OBTAINED	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

S.NO	TOPIC OF WRITTEN TEST/EXAMINATION	TYPE OF THE TEST MCQS OR SEQS OR BOTH	TOTAL MARKS	MARKS OBTAINED	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SECTION-17

CLINICAL ASSESSMENT RECORD

SR.#	DATE	TOPIC OF CLINICAL TEST/ EXAMINATION	TYPE OF THE TEST& VENUE (OSPE, MINICEX, CHART STIMULATED RECALL, DOPS, SIMULATED PATIENT, SKILL LAB e.t.c)	TOTAL MARKS	MARKS OBTAINED	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR.#	DATE	TOPIC OF CLINICAL TEST/ EXAMINATION	TYPE OF THE TEST& VENUE OSPE, MINICEX, CHART STIMULATED RECALL, DOPS, SIMULATED PATIENT, SKILL LAB e.t.c	TOTAL MARKS	MARKS OBTAINED	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SECTION-18

Evaluation records

To Be Filled At the End of 1st Year of Training

RAWALPINDI MEDICAL UNIVERSITY

SUPERVISOR APPRAISAL FORM

Resident'sName:_____ **HospitalName:**_____

Evaluator'sName(s): _____ **Department:**_____ **Unit:**_____

1.Use one of the following ratings to describe the performance of the individual in each of the categories.

1	**Unsatisfactory**	Performance does not meet expectations forthe job
2	**Needs Improvement**	Performance sometimes meets expectations for the job
3	**Good**	Performance often exceeds expectations for the job
4	**Merit**	Performance consistently meets expectations for the job
5	**Special Merit**	Performance consistently exceeds expectations for the job

I. CLINICAL KNOWLEDGE / TECHNICAL SKILLS	5	4	3	2	1
a) Clinical Knowledge is up to the mark					
b) Follows procedures and clinical methods according to SOPs					
c) Uses techniques, materials, tools & equipment skillfully					
d) Stays current with technology and job-related expertise					
e) Works efficiently in various workshops					
f) Has interest in learning new skills and procedures					
g) Understands & performs assigned duties and job requirements					
II. QUALITY / QUANTITY OF WORK	5	4	3	2	1
a) Sets and adheres to protocols and improving the skills					
b) Exihibts system based learning methods smartly					
c) Exihibts practice based learning methods efficaciously					
d) Actively participates in large group interactive sessions for postgraduate trainees					
e) Actively takes part in morning& evening teaching and learning sessions & noon conferences					
f) Actively takes part in Multidisciplinary Clinic O Pathological Conferences (CPC)					
g)Actively participates in Journal clubs					
h) Uses resources sensibly and economically					

i) Accomplishes accurate management of different medical cases with minimal assistance or supervision					
j) Provides best possible patient care					
III. INITIATIVE / JUDGMENT	5	4	3	2	1
a) Takes effective action without being told					
b) Analyzes different emergency cases and suggests effective solutions					
c) Develops realistic plans to accomplish assignments					
IV. DEPENDABILITY / SELF-MANAGEMENT	5	4	3	2	1
a) Demonstrates punctuality and regularly begins work as scheduled					
b) Contacts supervisor concerning absences on a timely basis					
c) Contacts supervisor without any delay regarding any difficulty in managing any patient					
d) Can be depended upon to be available for work independently					
e) Manages own time effectively					
f) Manages Outdoor Patient Department (OPD) efficiently					
g) Accepts responsibility for own actions and ensuing results					
h) Demonstrates commitment to service					
i) Shows Professionalism in handling patients					
j) Offers assistance, is courteous and works well with colleagues					
k) Is respectful with the seniors					
OVERALL RATINGS/SUGGESTIONS/REMARKS REGARDING PERFORMANCE OF THE TRAINEE					

Total Score_____/155

Date Resident'sName&Signatures Date Evaluator's Signature &Stamp

RAWALPINDI MEDICAL UNIVERSITY
SUPERVISOR APPRAISAL FORM

To Be Filled At The End Of 2nd Year Of Training

Resident'sName: _____ **HospitalName:** _____

Evaluator'sName(s): _____ **Department:** _____ **Unit:** _____

1.Use one of the following ratings to describe the performance of the individual in each of the categories.

1	**Unsatisfactory**	Performance does not meet expectations for thejob
2	**Needs Improvement**	Performance sometimes meets expectations for the job
3	**Good**	Performance often exceeds expectations for the job
4	**Merit**	Performance consistently meets expectations for the job
5	**Special Merit**	Performance consistently exceeds expectations for the job

I. CLINICAL KNOWLEDGE / TECHNICAL SKILLS	5	4	3	2	1
a) Clinical Knowledge is up to the mark					
b) Follows procedures and clinical methods according to SOPs					
c) Uses techniques, materials, tools & equipment skillfully					
d) Stays current with technology and job-related expertise					
e) Works efficiently in various workshops					
f) Has interest in learning new skills and procedures					
g) Understands & performs assigned duties and job requirements					
II. QUALITY / QUANTITY OF WORK	5	4	3	2	1
a) Sets and adheres to protocols and improving the skills					
b) Exihibts system based learning methods smartly					
c) Exihibts practice based learning methods efficaciously					
d) Actively participates in large group interactive sessions for postgraduate trainees					
e) Actively takes part in morning& evening teaching and learning sessions & noon conferences					
f) Actively takes part in Multidisciplinary Clinic O Pathological Conferences (CPC)					
g)Actively participates in Journal clubs					
h) Uses resources sensibly and economically					
i) Accomplishes accurate management of different medical cases with minimal assistance or					

supervision					
j) Provides best possible patient care					
III. INITIATIVE / JUDGMENT	5	4	3	2	1
a) Takes effective action without being told					
b) Analyzes different emergency cases and suggests effective solutions					
c) Develops realistic plans to accomplish assignments					
IV. DEPENDABILITY / SELF-MANAGEMENT	5	4	3	2	1
a) Demonstrates punctuality and regularly begins work as scheduled					
b) Contacts supervisor concerning absences on a timely basis					
c) Contacts supervisor without any delay regarding any difficulty in managing any patient					
d) Can be depended upon to be available for work independently					
e) Manages own time effectively					
f) Manages Outdoor Patient Department (OPD) efficiently					
g) Accepts responsibility for own actions and ensuing results					
h) Demonstrates commitment to service					
i) Shows Professionalism in handling patients					
j) Offers assistance, is courteous and works well with colleagues					
k) Is respectful with the seniors					
OVERALL RATINGS/SUGGESTIONS/REMARKS REGARDING PERFORMANCE OF THE TRAINEE					

TotalScore_____/155

Date Resident'sName&Signatures Date Evaluator's Signature &Stamp

RAWALPINDI MEDICAL UNIVERSITY
SUPERVISOR APPRAISAL FORM

To Be Filled At the End Of 3rd Year Of Training

Resident'sName: _____ **HospitalName:** _____

Evaluator'sName(s): _____ **Department:** _____ **Unit:** _____

1.Use one of the following ratings to describe the performance of the individual in each of the categories.

1	**Unsatisfactory**	Performance does not meet expectations forthe job
2	**Needs Improvement**	Performance sometimes meets expectations for the job
3	**Good**	Performance often exceeds expectations for the job
4	**Merit**	Performance consistently meets expectations for the job
5	**Special Merit**	Performance consistently exceeds expectations for the job

I. CLINICAL KNOWLEDGE / TECHNICAL SKILLS	5	4	3	2	1
a) Clinical Knowledge is up to the mark					
b) Follows procedures and clinical methods according to SOPs					
c) Uses techniques, materials, tools & equipment skillfully					
d) Stays current with technology and job-related expertise					
e) Works efficiently in various workshops					
f) Has interest in learning new skills and procedures					
g) Understands & performs assigned duties and job requirements					
II. QUALITY / QUANTITY OF WORK	5	4	3	2	1
a) Sets and adheres to protocols and improving the skills					
b) Exihibts system based learning methods smartly					
c) Exihibts practice based learning methods efficaciously					
d) Actively participates in large group interactive sessions for postgraduate trainees					
e) Actively takes part in morning& evening teaching and learning sessions & noon conferences					
f) Actively takes part in Multidisciplinary Clinic O Pathological Conferences (CPC)					
g)Actively participates in Journal clubs					
h) Uses resources sensibly and economically					

i) Accomplishes accurate management of different medical cases with minimal assistance or supervision					

j) Provides best possible patient care					
III. INITIATIVE / JUDGMENT	5	4	3	2	1
a) Takes effective action without being told					
b) Analyzes different emergency cases and suggests effective solutions					
c) Develops realistic plans to accomplish assignments					
IV. DEPENDABILITY / SELF-MANAGEMENT	5	4	3	2	1
a) Demonstrates punctuality and regularly begins work as scheduled					
b) Contacts supervisor concerning absences on a timely basis					
c) Contacts supervisor without any delay regarding any difficulty in managing any patient					
d) Can be depended upon to be available for work independently					
e) Manages own time effectively					
f) Manages Outdoor Patient Department (OPD) efficiently					
g) Accepts responsibility for own actions and ensuing results					
h) Demonstrates commitment to service					
i) Shows Professionalism in handling patients					
j) Offers assistance, is courteous and works well with colleagues					
k) Is respectful with the seniors					
OVERALL RATINGS/SUGGESTIONS/REMARKS REGARDING PERFORMANCE OF THE TRAINEE					

TotalScore_____/155

Date Resident'sName&Signatures Date Evaluator's Signature &Stamp

RAWALPINDI MEDICAL UNIVERSITY
SUPERVISOR APPRAISAL FORM

To Be Filled At The End Of 4th Year Of Training

Resident'sName: _____ HospitalName: _____

Evaluator'sName(s): _____ **Department:** _____ **Unit:** _____

1.Use one of the following ratings to describe the performance of the individual in each of the categories.

1	**Unsatisfactory**	Performance does not meet expectations forthe job
2	**Needs Improvement**	Performance sometimes meets expectations for the job
3	**Good**	Performance often exceeds expectations for the job
4	**Merit**	Performance consistently meets expectations for the job
5	**Special Merit**	Performance consistently exceeds expectations for the job

I. CLINICAL KNOWLEDGE / TECHNICAL SKILLS	5	4	3	2	1
a) Clinical Knowledge is up to the mark					
b) Follows procedures and clinical methods according to SOPs					
c) Uses techniques, materials, tools & equipment skillfully					
d) Stays current with technology and job-related expertise					
e) Works efficiently in various workshops					
f) Has interest in learning new skills and procedures					
g) Understands & performs assigned duties and job requirements					
II. QUALITY / QUANTITY OF WORK	5	4	3	2	1
a) Sets and adheres to protocols and improving the skills					
b) Exihibts system based learning methods smartly					
c) Exihibts practice based learning methods efficaciously					
d) Actively participates in large group interactive sessions for postgraduate trainees					
e) Actively takes part in morning& evening teaching and learning sessions & noon conferences					
f) Actively takes part in Multidisciplinary Clinic O Pathological Conferences (CPC)					
g)Actively participates in Journal clubs					

h) Uses resources sensibly and economically					
i) Accomplishes accurate management of different medical cases with minimal assistance or					

supervision					
j) Provides best possible patient care					
III. INITIATIVE / JUDGMENT	5	4	3	2	1
a) Takes effective action without being told					
b) Analyzes different emergency cases and suggests effective solutions					
c) Develops realistic plans to accomplish assignments					
IV. DEPENDABILITY / SELF-MANAGEMENT	5	4	3	2	1
a) Demonstrates punctuality and regularly begins work as scheduled					
b) Contacts supervisor concerning absences on a timely basis					
c) Contacts supervisor without any delay regarding any difficulty in managing any patient					
d) Can be depended upon to be available for work independently					
e) Manages own time effectively					
f) Manages Outdoor Patient Department (OPD) efficiently					
g) Accepts responsibility for own actions and ensuing results					
h) Demonstrates commitment to service					
i) Shows Professionalism in handling patients					
j) Offers assistance, is courteous and works well with colleagues					
k) Is respectful with the seniors					
OVERALL RATINGS/SUGGESTIONS/REMARKS REGARDING PERFORMANCE OF THE TRAINEE					

TotalScore_____/155

Date Resident'sName&Signatures Date Evaluator's Signature &Stamp

SECTION-18

EVALUATION / REMARKS BY UNIVERSITY TRAINING MONITORING CELL (UTMC) WORKING UNDER DEPARTMENT OF MEDICAL EDUCATION (DME)

(AT THE END OF 1ST YEAR OF TRAINING)

EVALUATION / REMARKS BY UNIVERSITY TRAINING MONITORING CELL (UTMC) WORKING UNDER DEPARTMENT OF MEDICAL EDUCATION (DME)

(AT THE END OF 2ND YEAR OF TRAINING)

SECTION-18

EVALUATION / REMARKS BY UNIVERSITY TRAINING MONITORING CELL (UTMC) WORKING UNDER DEPARTMENT OF MEDICAL EDUCATION (DME)

(AT THE END OF 3RD YEAR OF TRAINING)

SECTION-18

EVALUATION / REMARKS BY UNIVERSITY TRAINING MONITORING CELL (UTMC) WORKING UNDER DEPARTMENT OF MEDICAL EDUCATION (DME)

(AT THE END OF 4th YEAR OF TRAINING)

SECTION=18

EVALUATION / REMARKS BY QUALITY ENHANCEMENT CELL (QEC) WORKING UNDER DEPARTMENT OF MEDICAL EDUCATION (DME) (AT THE END OF 1ST YEAR OF TRAINING)

SECTION=18

EVALUATION / REMARKS BY QUALITY ENHANCEMENT CELL (QEC) WORKING UNDER DEPARTMENT OF MEDICAL EDUCATION (DME) (AT THE END OF 2ND YEAR OF TRAINING)

SECTION-18

EVALUATION / REMARKS BY QUALITY ENHANCEMENT CELL (QEC) WORKING UNDER DEPARTMENT OF MEDICAL EDUCATION (DME) (AT THE END OF 3RD YEAR OF TRAINING)

SECTION-18

EVALUATION / REMARKS BY QUALITY ENHANCEMENT CELL (QEC) WORKING UNDER DEPARTMENT OF MEDICAL EDUCATION (DME) (AT THE END OF 4th YEAR OF TRAINING)

SECTION-19

LEAVE RECORD

(Signed & Approved Leave Application/Certificate to Be Kept In Record and To Be Brought In Meetings with URTMC & QEC)

SR.#	TYPE OF LEAVE(Casual Leave, Sick Leave, Ex –Pak Leave, Maternity Leave, Any Other Kind Of Leave)	YEAR	DATE		REASON	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)
			FROM	TO			

SECTION-20

Year - I

RECORD SHEET OF ATTENDANCE/COUNCELLING SESSION/DOCUMENTATION QUALITY PER YEAR

TO BE FILLED AT THE END OF FIRST YEAR OF TRAINING

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
January	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
February	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
March	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
April	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
May	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
June	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

Year - I

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
July	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
August	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
September	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

Year - I

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
October	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
November	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
December	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

Year - II

TO BE FILLED AT THE END OF SECOND YEAR OF TRAINING

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
January	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
February	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
March	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

Year - II

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
April	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
May	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MO	ATTENDANCE RECORD	DOCUMENTATION QUALITY	COUNCELLING SESSION	SUPERVISOR'S REMARKS

		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	SIGNATURE (Name/Stamp)
June	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

Year - II

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
July	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
August	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
September	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

Year - II

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
October	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
November	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
December	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

TO BE FILLED AT THE END OF THIRD YEAR OF TRAINING

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
January	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
February	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
March	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
April	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
May	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
June	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

Year - III

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
July	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
August	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
September	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

Year - III

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
October	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
November	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
December	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

Year - IV

TO BE FILLED AT THE END OF FOURTH YEAR OF TRAINING

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
January	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
February	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
March	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
April	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
May	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
June	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

Year - IV

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
July	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
August	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
September	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

Year - IV

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
October	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
November	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
December	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

SECTION-21

ANY OTHER IMPORTANT AND RELEVANT INFORMATION/DETAILS

SECTION-21

ANY OTHER IMPORTANT AND RELEVANT INFORMATION/DETAILS