Programme of MS OB/GYN

Rawalpindi Medical University (RMU)

Rawalpindi

“IF ANYONE SAVED A LIFE IT WOULD BE AS IF HE SAVED THE LIFE OF THE WHOLE HUMANITY.” QURAN 5:32

Revised & Updated on: **11 June**, 2021

Name of contributions

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SECTION – I

Mission Statement

The mission of MS OB/GYN Residency Programme of Rawalpindi Obs / Gynae University is:

To provide competency based Obs / Gynae education with a structured training programme to prepare specialists in the discipline of obstetrics & gynecology who would be able to provide quality patient care comparable to international standards.

Statutes

1. ***Nomenclature:***

   The name of the proposed degree course will be MS Obstetrics and Gynaecology. This name is well recognized and established for the last many decades worldwide**.**

2. ***Course Title:***

   MS Obstetrics and Gynecology

3. ***Training Centers:***

   Departments of Obstetrics and gynecology, Rawalpindi Obs / Gynae University (RMU) and Allied hospitals (HFH, BBH, DHQ).

4. ***Duration of Course:*** The duration of MS Obstetrics and Gynaecology course will be four (4) with structured training in a recognized department under the guidance of an approved supervisor.

DURATION OF COURSE

The duration of course will be four (4) years with structured training in a recognized department under the guidance of an approved supervisor. The clinical training will be competency based to achieve the educational objective of the programmeme. There will be generic and specialty specific competencies assessed by Continuous Internal Assessment. (Appendix F&G).

The Research Component and thesis writing will be completed over the four years duration of the Programmeme.

5. ***Course structure:*** The course is structured in two parts: After admission in M.S. Obs / Gynae Programmeme, the resident will spend first 6 Months in the relevant Department of Obs / Gynaeas Induction period during which resident will get orientation about the chosen discipline and will also undertake the mandatory workshops. The research project will be designed and the synopsis will be prepared in first year of trainee.

On completion of Induction period the resident will start formal training in the Obs/Gynae for 18 Months, during this period the resident will complete her two rotations (three months of each) and get the research synopsis approved by AS & RB of the university. Al; the end of 2 years, the candidate will take up Mid Term Assessment (MTA).

During the 3rd "& 4"years of the programme, there are two components of the training: -

1. Clinical Training in Obs / Gynae.
2. Research and Thesis writing.

The candidate will undergo clinical training to achieve educational objectives of M.S Obs / Gynae (knowledge and skills) along with rotations in the relevant fields. The clinical training will be competency based. There will be generic

and specialty specific competencies and will be assessed by continuous Internal Assessment. Research Component and thesis writing will be completed over the four years duration of the course. Candidates will spend sufficient time for research during the training. Research will be done in the form of regular periodic rotation over four years.

Candidate will do the Research Methodology and Bio Stat workshop in six months of training, complete the synopsis writing and submit to internal review board (IRB).

During the second year of training, the trainee will start collecting the data after approval from BSAR.

During the third year thesis writing should be complete.

During the fourth year it should ready for submission.

Nomenclature of the Proposed Course

Admission Criteria

Applications for admission to MS Training Programme will be invited through advertisement in print and electronic media mentioning closing date of applications and date of Entry Examination.

Eligibility:

i. The applicant on the last date of submission of applications for admission must possess the: Basic Qualification of MBBS or equivalent qualification recognized by Pakistan Medical Commission (PMC).

ii. Certificate of one year's House Job experience in institutions recognized by Pakistan Medical Commission (PMC) is essential at the time of interview. The applicant is required to submit House Job Certificate from the concerned Medical Superintendent that the House Job will be completed before the training.

iii. Valid certificate of permanent or provisional registration with Pakistan Medical Commission (PMC).

Registration and Enrolment

- As per policy of Pakistan Medical Commission the number of PG Trainees/ MS trainee per supervisor will be maximum O5 per annum for all PG programme including minor programme (if any).
- Beds to trainee ratio at the approved teaching site will be at least 5 beds per trainee.
- The University will approve supervisors for MS courses.
- Candidates selected for the courses: after their enrollment at the relevant institutions will be registered with Rawalpindi Medical University as per prescribed Registration Regulations.

AIMS AND OBJECTIVES OF THE COURSE

AIM

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

GENERAL OBJECTIVES

1. To provide a broad experience in Obs / Gynae, including its interrelationship with other disciplines.

2. To enhance Obs / Gynae knowledge, clinical skills, and competence in bedside diagnostic and therapeutic procedures.

3. To achieve the professional requirements, to prepare the consultants for the sub specialty in Obs / Gynae.

4. To cultivate the correct professional attitude and enhance communication skill towards patients, their families and other healthcare professionals.

5. To enhance sensitivity and responsiveness to community needs and the economics of health care delivery.

6. To enhance critical thinking, self-learning, and interest in research and development of patient service.

7. To cultivate the practice of evidence-based practice and critical appraisal skills.

8. To inculcate a commitment to continuous medical education and professional development.

9. To provide a broad training and in-depth experience at a level for trainees to acquire competence and professionalism of a specialist in Obs / Gynae especially in the diagnosis, investigation and treatment of obstetrical and gynaecological problems towards the delivery of holistic patient care.

10. To acquire competence in managing acute Obs / Gynae emergencies and identifying Obs / Gynae problems in patients referred by primary care and other doctors, and in selecting patients for timely referral to other specialty appropriate tertiary care or the expertise of another specialty.

11. To develop competence in the inpatient and outpatient management and in selecting patients for referral to tertiary care facilities and treatment modalities requiring high technology and/or the expertise of another specialty.

12. To manage patients in general Obs / Gynae units in regional/District hospitals; to be a leader in the health care delivery team and to work closely with networking units which provide convalescence, rehabilitation and long term care.

13. To encourage the development of skills in communication and collaboration with the community towards health care delivery.

14. To foster the development of skills in the critical appraisal of new methods of investigation and/or treatment.

15. To reinforce self-learning and commitment to continued updating in all aspects of Obs / Gynae.

16. To encourage contributions aiming at advancement of knowledge and innovation in Obs / Gynae through basic and/or clinical research and teaching of junior trainees and other health related professionals.

17. To acquire professional competence in training future trainees in Obs / Gynae at Rawalpindi Medical University.

SPECIFIC OBJECTIVES

(A) Obs / Gynae Knowledge

1. The development of a basic understanding of core Obs / Gynae concepts.

2. Etiology, clinical manifestation, disease course and prognosis, investigation and management of common Obs / Gynae diseases.

3. Scientific basis and recent advances in diagnosis and management of complicated Obs / Gynae diseases.

4. Spectrum of clinical manifestations and interaction of multiple problems diseases in the same patient.

5. Psychological and social aspects of Obstetrical and gynaecological complications.

6. Effective use and interpretation of investigation and special diagnostic procedures.

7. Critical analysis of the efficacy, cost-effectiveness and cost-utility of treatment modalities.

8. Patient safety and risk management

9. Audit and quality assurance

10. Ethical principles and medico legal issues related to concerned specialty.

11. Updated knowledge on evidenced-based practice and its implications for diagnosis and treatment of patients.

12. Familiarity with different care approaches and types of sub specialties in Obs / Gynae, including urogynaecology, fetal medicine, gynaecological oncology and subfertility.

13. Knowledge on patient safety and clinical risk management.

14. Awareness and concern for the cost-effectiveness and risk-benefits of various advanced treatment modalities.

15. Familiarity with the concepts of administration and management of overall running of Obs / Gynae unit.

(B) Skills

1. Ability to take a detailed history, gathers relevant data from patients, and assimilates the information to develop detailed management plan.

2. MS trainee are expected to effectively record an initial history and physical examination and follow-up notes. She should be capable to present case in an elaborative and comprehensive manner to her seniors on round and to guide their team members regarding case management.

3. Competence in eliciting abnormal physical signs and interpreting their significance.

4. Ability to select appropriate investigation and diagnostic procedures for confirmation of diagnosis and patient management.

5. Residents should be able to interpret all laboratory data relevant to basic antenatal care.

6. Basic understanding of routine baseline investigations for subfertility biochemistry, hormonal profile, pelvic ultrasound and semen analysis. In addition MS trainee should be capable of judicially advising all these laboratory investigations based on patient history and examination.

7. The Trainee should be capable enough to advise and interpret basics radiological investigations including trans abdominal ultrasound, trans vaginal ultrasound, CT and MRI.

8. The formulation of a differential diagnosis based on patient history and investigation and with up-to—date scientific evidence and the development of list of risk factors to make therapeutic decisions.

9. Assessing the risks, benefits, and costs of varying effective treatment options.

10. Residents must be able to perform competently all Obs / Gynae procedures and skills required in their allocated time interval during the training of Obs / Gynae. This includes efficiency in taking consent based on appropriate indications.

11. Residents should be instructed in additional procedural skills that will be determined by the training environment, trainees expectations and availability of skilled teaching faculty.

12. Skills in performing important bedside diagnostic and therapeutic procedures will be marked by supervisor or mentors as desired competency level achieved / not achieved by trainee. The required number of DOPS and MiniCEX during four year training will be enlisted in Log Book.

13. Ability to present clinical cases in ward rounds and teaching classes.

14. Good communication skills and interpersonal relationship with patients, families, colleagues, paramedics, nursing and allied health professionals.

15. Ability to mobilize appropriate resources for management of patients at different stages of Obs / Gynae illnesses, including critical care, consultation of Obs / Gynae specialties and other disciplines, ambulatory and rehabilitative services, and community resources.

16. Competence in the diagnosis and management of obstetrics emergencies particularly postpartum haemorrhage, eclampsia, septic induced abortion, ruptured ectopic and rupture uterus.

17. Competence in the diagnosis and management of benign and malignant gynaecological tumor and treatment modalities available around vicinity.

18. Diagnostic skills to effectively manage complex cases with unusual presentations.

19. Ability to implement strategies to prevent antenatal complication and early detection of diseases.

20. Ability to understand and critically appraise published work and clinical research on disease presentations and

treatment outcomes. Experience in basic and/or clinical research within the training programme should lead to publications and/or presentation in seminars or conferences.

21. Practice based learning with reference to research and scientific knowledge pertaining to their discipline through comprehensive training in Research Methodology.

22. Ability to recognize and appreciate the importance of cost-effectiveness of treatment modalities.

23. The identification of key information resources and the utilization of literature to expand one's knowledge base and to search for answer to problems.

(C) Attitudes

1. The well-being and restoration of health of patients must be the top priority.
2. Empathy and good rapport with patient and relatives are essential attributes.
3. An aspiration to be the team-leader in total patient care involving nursing and allied Obs / Gynae professionals should be developed.
4. The cost-effectiveness of various investigations and treatments in patient care should be recognized.
5. The privacy and confidentiality of patients and the sanctity of life must be respected.
6. The development of a functional understanding of informed consent, and the physician-patient relationship.
7. Ability to appreciate the importance of the effect of disease on the psychological aspects and socio-economic burden of individual.
8. Understand patients' psycho-social needs and rights, as well as the professional ethics involved in patient management.
9. Willingness to keep up with advances in Obs / Gynae and concerned specialties.
10. Understand the need of timely referral of patients to the appropriate specialty.
10. Aspiration to be the team leader in patient care involving paramedics nursing and allied Obs / Gynae professionals.

11. The promotion of women health via awareness programmes regarding contraception immunizations, periodic health screening, and risk factor assessment and modification.

12. Recognition that teaching and research are important activities for the advancement of the profession.

(D) Other required core competencies:

1. **PATIENT CARE**

- Residents are expected to provide patient care that is compassionate, appropriate and effective for the promotion of health, prevention of illness, treatment of disease and at the end of life.

- Gather accurate, essential information from all sources, including history, physical examinations, investigations, clinical record and diagnostic/therapeutic procedures.

- Make informed recommendations about preventive, diagnostic and therapeutic options and interventions based on clinical judgment, scientific evidence, and patient preference.

- Develop, negotiate and implement effective patient management plans and integration of patient care.

- Perform competently the diagnostic and therapeutic procedures considered essential to the practice of internal medicine.

2. INTERPERSONAL AND COMMUNICATION SKILLS

- Residents are expected to demonstrate interpersonal and communication skills that enable them to establish and maintain professional relationships with patients, families, and other members of health care teams.
- Provide effective and professional consultation to other physicians and health care professionals and sustain therapeutic and ethically sound professional relationships with patients, their families, and colleagues.
- Use effective listening, nonverbal, questioning, and narrative skills to communicate with patients and families. · Interact with consultants in a respectful, appropriate manner.
- Maintain comprehensive, timely, and legible Obs / Gynae records.

3. PROFESSIONALISM

- Residents are expected to demonstrate behaviors that reflect a commitment to continuous professional developmental, ethical practice, an understanding and sensitivity to diversity and a responsible attitude toward their patients, their profession, and society.
- Demonstrate respect, compassion, integrity, and altruism in relationships with patients, families, and colleagues.
- Demonstrate sensitivity and responsiveness to the gender, age, culture, religion, sexual preference, socioeconomic status, beliefs, behavior and disabilities of patients and professional colleagues.
- Adhere to principles of confidentiality, scientific/academic integrity, and informed consent.
- Recognize and identify deficiencies in peer performance.

- Understand and demonstrate the skill and art of end of life care.

4. **PRACTICE-BASED LEARNING AND IMPROVEMENT**

- Residents are expected to be able to use scientific evidence and methods to investigate, evaluate, and improve patient care practices.
- Identify areas for improvement and implement strategies to enhance knowledge, skills, attitudes and processes of care.
- Analyze and evaluate practice experiences and implement strategies to continually improve the quality of patient practice.
- Develop and maintain a willingness to learn from errors and use errors to improve the system or processes of care.
- Use information of technology or other available methodologies to access and manage information, support patient care decisions and enhance both patient and physician education.

5. SYSTEMS-BASED PRACTICE

- Residents are expected to demonstrate both an understanding of the contexts and systems in which health care is provided, and the ability to apply this knowledge to improve and optimize health care.
- Understands accesses and utilizes the resources, providers and systems necessary to provide optimal care.
- Understand the limitations and opportunities inherent in various practice types and delivery systems, and develop strategies to optimize care for the individual patient.
- Apply evidence-based, cost-conscious strategies to prevention, diagnosis, and disease management.
- Collaborate with other members of the health care team to assist patients in dealing effectively with complex systems and to improve systematic processes of care.

SPECIFIC LEARNING OUTCOMES

On completion of the training programme, Obstetrics and Gynaecology trainees pursuing an academic pathway will be expected to have demonstrated competence in all aspects of the published syllabus. The specific training component would be targeted for establishing clearly defined standards of knowledge, skills and attitude required to practice Obstetrics and Gynaecology at secondary and tertiary care level with proficiency.

1. Describe embryology, applied anatomy, physiology, pathology, clinical features, diagnostic procedures and the therapeutics including preventive methods, (medical/surgical) pertaining to Obstetrics and Gynaecology.

2. Perform medical interview and physical examination in both obstetrical and gynecological patient.

3. Counsel about nutrition to patients from childhood through puberty, reproductive life, pre-pregnancy, preparation during pregnancy, lactation and post menopause including the role of Vitamin D.

4. Describe the physiological, physical and psychological change during pregnancy, labour and puerperium.

5. Describe the development of the fetus from conception to term.

6. Describe the needs of the mother during antenatal, intrapartum and post natal period and promote positive health in normal and high risk cases.

7. Conduct normal labour and identify any major deviations from normal.

8. Provide care to the high-risk neonates, small for date & premature infants.

9. Counsel families about maternal and child health.

10. Differentiate causes of "acute abdomen" including conditions such as pelvic infection, ectopic pregnancy, adnexal torsion, appendicitis, diverticulitis, urinary calculi.

11. Demonstrate awareness of population health; recognize social and health policy aspects of women's health, ethical issues, sterilization, abortion, domestic violence, adolescent pregnancy, and assess to health care.
12. Demonstrate newer knowledge about gynaecological or obstetric diseases in general, including technological (laser) and pharmacologic advances (medicines) and newer method of therapy for certain conditions

13. Interpret different imaging reports in Obstetrics and Gynaecology. There should be collaboration with Radiology department for such activities

14. Provide Antenatal care including assessment, general and obstetrical examination, pelvic examination and counseling about nutrition, antenatal exercises, mother craft and preventive obstetrics

15. Manage normal labour

    - Onset, physiological changes & psychological aspects of labour
    - Mechanism, induction and augmentation of labour
    - Monitoring & use of partogram
    - Observation and clinical diagnosis of patient in different stages of labour.
    - Episiotomy care
    - Analgesics and anaesthesia in labour

16. Manage normal puerperium

    - Physiological changes during puerperium
    - Care during puerperium – mother, neonate and family
    - Physiology of lactation and establishment of lactation and breast feeding

- Post-natal-care – post natal exercises, follow up care.
- Customs and beliefs in relation to confinement and puerperium

17. Provide care to New Born

- Resuscitation &, immediate care of new born.
- Normal characteristics and care of the new born
- Asphyxia neonatorum, respiratory distress
- Jaundice in new born
- Haemorrhagic diseases of the newborn
- Convulsions in new born
- Birth injuries, congenital anomalies, infection of the newborn, vomiting in new born.
- Still birth – incidence, causes and prevention
- Care of Low birth weight babies in labour room and nursery

18. Manage common ailments of pregnancy
19. Manage high risk pregnancy

- Hyperemesis gravidarum
- Hydramnios
- Multiple pregnancy
- Prelabour rupture of membrane and preterm labour
- Intrauterine growth retardation

- Post-date pregnancy
- Abnormal Uterine Action
- Medical conditions associated with pregnancy:
- Anaemia in pregnancy
- Heart disease in pregnancy
- Pregnancy induced hypertension
- Venous thromboembolism
- Rh Incompatibility and amniocentesis
- Diabetes in pregnancy
- Pyelonephritis
- Infections, sexually transmitted diseases in pregnancy
- General surgery during pregnancy
- Pregnancy with previous history of Caesarean section
- Elderly primigravida
- Grand multipara
- Bad obstetric history
- Contracted pelvis

20. Manage gynaecological conditions in pregnancy :
    - Ca cervix with pregnancy
    - Fibroid with pregnancy
    - Ovarian tumour in pregnancy

- Retroverted gravid uterus

21. Genital prolapse in pregnancyManage complications in pregnancy
    - Bleeding in early pregnancy
    - Abortion, types, complication and management
    - Ectopic pregnancy
    - Trophoblastic tumours
    - Ante partum haemorrhage
    - Placenta praevia
    - Abruption placenta
    - Hydatidiform mole
    - Pregnancy induced hypertension (Pre eclampsia and eclampsia)
    - Intrauterine death
    - Induction of labour – Medical, surgical, combined
    - Post maturity

22. Diagnose and manage Malposition, Malpresentation and Cord prolapse
    - Occipito-posterior position – causes, diagnosis, antenatal care, course of labour and management
    - Breech presentation – causes, diagnosis, types, antenatal care, course of labour and management
    - Face and brow presentation – causes diagnosis, antenatal care, course of labour, and management
    - Transverse lie, unstable lie

- Compound presentations
- Cord prolapse
- Prolonged labour, obstructed labour, dystocia caused by foetal anomalies
- Destructive operations

23. Diagnose and manage abnormalities of Puerperium

- Puerperal pyrexia and puerperal sepsis
- Puerperal venous thrombosis, thrombophlebitis, pulmonary embolism
- Urinary complications in puerperium
- Post partum haemorrhage
- Subinvolution, obstetric palsies
- Breast complications – Breast engorgement, breast abscess, acute mastitis cracked & retracted nipples, suppression of lactation
- Psychiatric disturbances in puerperium

24. Diagnose and manage obstetrical emergencies

- Uterine rupture, cervical tear, inversion of uterus, retained placenta

25. Perform operative obstetrics

- Obstetrical hysterectomy
- Dilatation and evacuation
- Suction evacuation

- Use of instruments – forceps, ventouse, Versions
- Caesarean section

26. Describe pharmacotherapeutics

- Oxytocics and prostaglandins used in obstetrics
- Indications and contraindications and rationale of drugs in pregnancy

27. Demonstrate gynaecological history taking and examination

28. Diagnose and manage menstrual disorders

- Amenorrhoeas
- Cryptomenorrhoea, oligomenorrhoeas
- Hypomenorrhoea, dysmenorrhoea
- Metrorrhagia, menorhagia
- Dysfunctional uterine bleeding

29. Menopause

- Manage sign and symptoms of menopause
- Prevention of osteoporosis
- Hormonal replacement therapy (HRT)

30. Diagnose and manage common genital infection

- Fungal infections – Vaginal discharges
- Acute and chronic infections of genitalia

- Pelvic inflammatory disease

31. Diagnose causes of and manage

    - Low back ache

32. Diagnose and manage endometriosis / adenomyosis

33. Gynaecological oncology:

    - Diagnose and manage tumours of the genital tract
    - Proliferative lesions and benign tumours; uterine lieomyoma, cervical polyp, ovarian cyst and tumours
    - Malignant tumours – vulval, vaginal, cervical, ovarian, endometrial and trophoblastic carcinomas
    - Basics of radio therapy and chemotherapy

34. Diagnose and manage uterine displacements

    - Uterovaginal prolapse
    - Retroverted uterus
    - Anteverted uterus

35. Diagnose and Manage subfertility

    - Primary and secondary subfertility

36. Diagnose and manage gynaecological emergencies

    - Acute salpingo-oophoritis
    - Twisted ovarian cyst, pedunculated fibroma of the uterus

- Ectopic pregnancy

37. Perform and interpret results of special diagnostic tests
    - Pap smear
    - Ovulation tests, semen analysis
    - Hysterosalpingography
    - Culdoscopy, colposcopy,Laparoscopy
    - Biopsy –cervical and endometrial
    - 3 swab test
38. Perform gynaecological procedures
    - D&C
    - Abdominal hysterectomy
    - Vaginal hysterectomy
    - Laparotomy

39. Provide Pre and post operative care of patients undergoing gynaecological operations

40. Diagnose and manage patients with urinary complaints
41. Urogynaecology
    - Diagnose and manage patients with urinary complaints
    - Interpret the results of urodyanamics

Research Experience:

All residents in the programme 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 will 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

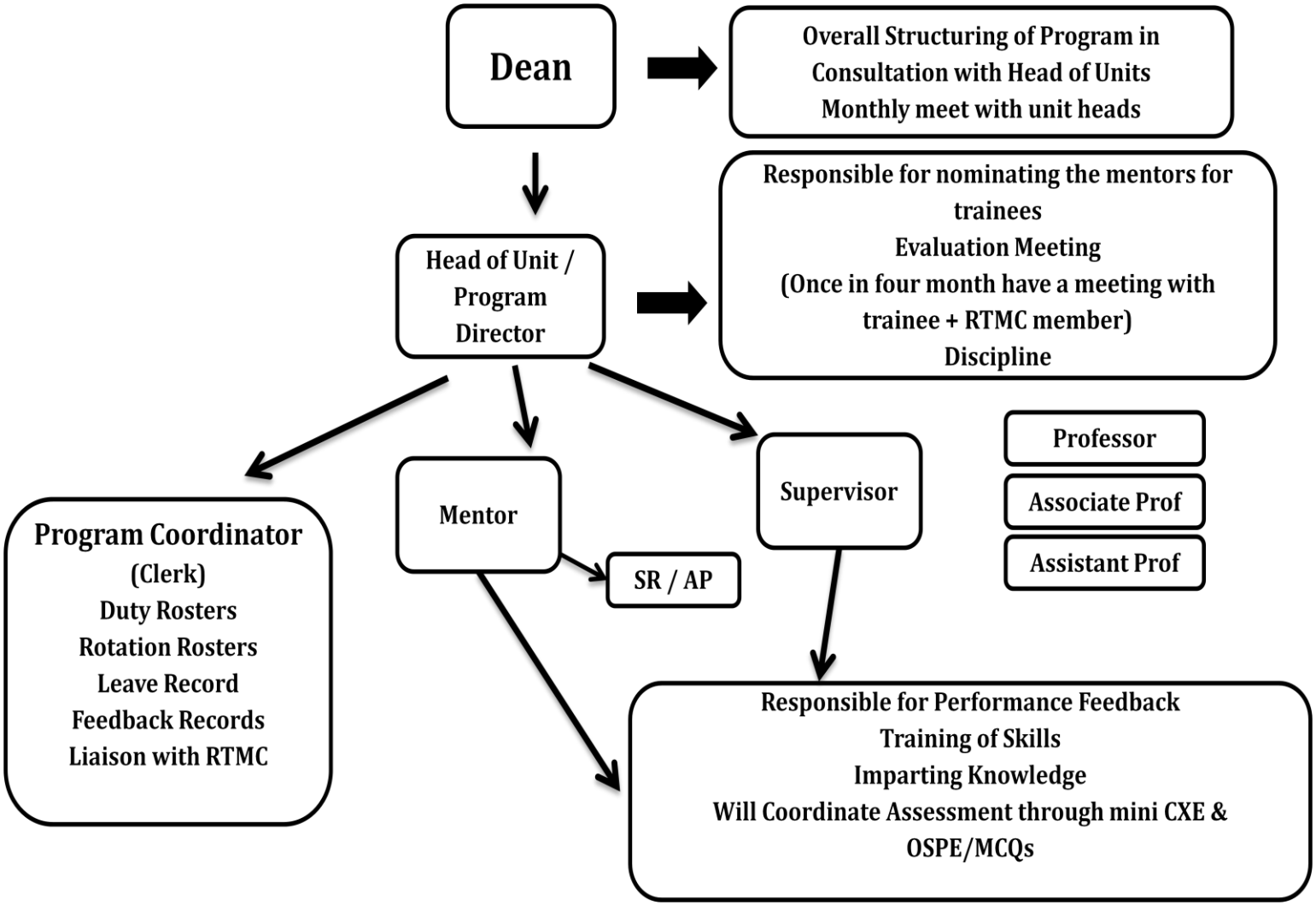
SCHEME OF THE COURSE

A summary of four years course in MS Obstetrics and Gynaecology is presented as

COURSE STRUCTURE	COMPONENTS	EXAMINATION
FIRST YEAR	06 Months in Obs/Gynae 02 Elective Rotations (03 months / each) 02 Mandatory workshops Research Project designed and synopsis prepared and approved by IRB	Continuous internal assessment, (appendix G)
SECOND YEAR	09 Months Obs/Gynae Elective Rotation (03 months) 02 Mandatory workshops Data collection and research work	Mid term assessment • Relevant Basic Sciences (Anatomy Physiology, Pharmacology, Pathology) • Obstetrics ,Neonatology , Research , Basic Surgical skills Continuous internal assessment, (appendix G)
THIRD YEAR	12 Months Obs/Gynae Skills Workshops (Neonatology, Obstetrics Emergencies, surgical Skills) Research Work	Continuous internal assessment, (appendix G)
FOURTH YEAR	12 Months and Obs/Gynae Thesis Work Thesis writing must be completed and thesis be submitted at least 6 months before the end of final year of the programme.	Final Examination ▪ Obstetrics and Gynaecology Continuous internal assessment, (appendix G) Defense of thesis will be at the end of fourth year

ROAD MAP OF UNIVERSITY TRAINING PROGRAMME

GYNAE / OBS



ELECTIVES/ROTATIONS

A significant amount of time during residency is devoted to electives, which allows our residents the flexibility to gain a concentrated experience in an area of interest. Residents can choose electives for three month each after her six months of Gynae and Obs training. Resident can opt following departments for electives:

- Surgery / Urology
- Anesthesia / Critical Care
- Neonatology

These specialties are selected for rotation on basis of their importance related to Gynae/Obs specialty Neonatology is closely linked with obstetrics. Medical knowledge regarding different medical complications of obstetrics will improve overall outcome of patient. Surgery is the part and parcel of Gynae / Obs so the basic knowledge of surgical skill required to gain competency in Gynae / Obs.

GENERAL SURGERY/ UROLOGY

Principles of General Surgery

- History of surgical patient
- Preparing a patient for surgery
- Principles of operative surgery: asepsis, sterilization and antiseptics
- Surgical infections and antibiotics
- Basic principles of anaesthesia and pain management
- Acute life support and critical care:
  - Pathophysiology and management of shock
  - Fluids and electrolyte balance/ acid base metabolism
  - Haemostasis, blood transfusion
- Wound healing and wound management
- Nutrition and metabolism
- Principles of laparoscopy and endoscopy
- Informed consent and medicolegal issues
- Identification of ureteric and bladder injury
- Principles of bladder and ureteric repair
- VVF identification and repair

Common Surgical Skills

- **Incision of skin and subcutaneous tissue**:
  - Langer's lines
  - Healing mechanism

- Choice of instrument
- Safe practice

- **Closure of skin and subcutaneous tissue:**
  Knot tying:
  - Choice of material
  - Single handed
  - Double handed
  - Superficial
  - Deep

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

- **Use of drains:**
  - Indications Types
  - Insertion
  - Fixation
  - Management/removal
- **Incision of skin and subcutaneous tissue:**
  - Ability to use scalpel, diathermy and scissors
-
- **Closure of skin and subcutaneous tissue:**
-
  - Accurate and tension free apposition of wound edges

Haemostasis:

- Control of bleeding vessel (superficial)
- Diathermy
- Suture ligation
- Tie ligation
- Clip application
-

Pre-operative assessment and management:

- Cardio-respiratory physiology
- Diabetes mellitus
- Renal failure
- Pathophysiology of blood loss
- Pathophysiology of sepsis
- Risk factors for surgery
- Principles of day surgery
- Management of comorbidity

Intraoperative care:

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

Post-operative care:

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

Blood products:

- Components of blood
- Alternatives to use of blood products
- Management of the complications of blood product transfusion

Antibiotics:

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

Technical Skills:

  - Central venous line insertion
  - Bleeding diathesis & corrective measures, e.g. warming, packing
  - Clotting mechanism;
- Effect of surgery and trauma on coagulation

- Tests for thrombophilia and other disorders of coagulation
  - Methods of investigation for suspected thromboembolic disease
  - Anticoagulation, heparin and warfarin
  - Role of V/Q scanning, CT angiography and thrombolysis
  - Awareness of symptoms and signs associated with pulmonary embolism and DVT
  - Role of duplex scanning, venography and d-dimer measurement
  - Initiate and monitor treatment

Topic to be covered in surgery rotation

SNO	Topic	Content
	Common Surgical Skills	▪ **Incision of skin and subcutaneous tissue**: o Langer's lines o Healing mechanism o Choice of instrument o Safe practice ▪ **Closure of skin and subcutaneous tissue:** **Knot tying:** o Choice of material o Single handed o Double handed o Superficial and deep ▪ **Tissue retraction:** o Choice of instruments o Placement of wound retractors ▪ **Use of drains:** o Indications Types o Insertion o Fixation o Management/removal ▪ **Incision of skin and subcutaneous tissue:** ▪ o Ability to use scalpel, diathermy and scissors ▪ **Closure of skin and subcutaneous tissue:** o Accurate and tension free apposition of wound edges
	Haemostasis	▪ Control of bleeding vessel (superficial) ▪ Diathermy ▪ Suture ligation ▪ Tie ligation ▪ Clip application
	Pre-operative assessment and management	▪ Cardio-respiratory physiology ▪ Diabetes mellitus ▪ Renal failure ▪ Pathophysiology of blood loss ▪ Pathophysiology of sepsis ▪ Risk factors for surgery ▪ Principles of day surgery ▪ Management of comorbidity
	Intraoperative care	▪ Safety in theatre ▪ Sharps safety ▪ Diathermy, laser use

		▪ Infection risks ▪ Tourniquets ▪ Principles of local, regional and general anaesthesia
	Post-operative care	▪ Monitoring of postoperative patient ▪ Postoperative analgesia ▪ Fluid and electrolyte management ▪ Detection of impending organ failure ▪ Initial management of organ failure ▪ Complications specific to particular operation ▪ Critical care
	Blood products	▪ Components of blood ▪ Alternatives to use of blood products ▪ Management of the complications of blood product transfusion
	Antibiotics	▪ Common pathogens in surgical patients ▪ Antibiotic sensitivities ▪ Antibiotic side-effects ▪ Principles of prophylaxis and treatment
	Technical Skills	o Central venous line insertion o Bleeding diathesis & corrective measures, e.g. warming, packing o Clotting mechanism; o Effect of surgery and trauma on coagulation O Tests for thrombophilia and other disorders of coagulation o Methods of investigation for suspected thromboembolic disease o Anticoagulation, heparin and warfarin o Role of V/Q scanning, CT angiography and thrombolysis o Awareness of symptoms and signs associated with pulmonary embolism and DVT o Role of duplex scanning, venography and d-dimer measurement o Initiate and monitor treatment

Neonatology:

In their elective rotation of Neonatology residents are supposed to gain sufficient capabilities in the following topics

- Care of newborn
- Care of preterm
- Infants of diabetic mother
- Asphyxia & neonatal resuscitation.
- Neonatal sepsis - prevention, early detection & management
- Neonatal hyperbilirubinemia, investigation and management
- Birth trauma - prevention, early detection & management
- Detection of congenital malformations in new born and referrals for surgical corrections
- Management of the common problems in neonatal period
- Care of growth restricted babies

Anesthesia / Critical Care

AIMS AND OBJECTIVES OF ANESTHESIA ROTATION

AIM

The aim of three months rotation in Anaesthesiology is to produce a trainee/ resident that demonstrate basic competencies in required speciality:

GENERAL OBJECTIVES

1. To provide a broad experience in anesthesia, including its interrelationship with other disciplines.
2. To enhance medical knowledge, clinical skills, and competence in anesthetic procedures.
3. To cultivate the correct professional attitude and enhance communication skill towards patients, their families and other healthcare professionals.
4. To enhance sensitivity and responsiveness to community needs and the economics of health care delivery.
5. To enhance critical thinking, self-learning, and interest in research and development of patient service.
6. To cultivate the practice of evidence-based practice and critical appraisal skills.
7. To inculcate a commitment to continuous medical education and professional development.
8. To inculcate a commitment to continuous medical education and professional development.
9. To acquire competence in managing acute anesthetic emergencies and identifying problems in patients.
10. To encourage the development of skills in communication and collaboration with the community towards health care delivery.
11. To encourage contributions aiming at advancement of knowledge and innovation in anesthesia through basic and/or clinical research and teaching of junior trainees and other health related professionals.

(A) Specific learning objectives:

At the end of elective rotation trainee must be able to

- Evaluate patient prior to elective surgical procedures.

1. Perform following procedures under considered essential for the area of practice. This includes technical proficiency in taking informed consent, performing by using appropriate indications, contraindications, interpretations of findings and evaluating the results and identifying the complications of the related procedures mentioned in the syllabus.

    a. Cardiopulmonary resuscitation
    b. Central venous cannulation
    c. Epidural Catheter insertion
    d. Abdominal paracentesis
    e. Endotracheal intubation
    f. Lumbar puncture & Spinal Anesthesia
    g. Arterial Blood gases sampling and Arterial cannulation.
    h. Intravenous Cannulation.
    i. Nasogastric and orogastric tube insertion

2. Interpret basic laboratory data as related to the disorder / disease.
3. Have Basic understanding of routine laboratory and ancillary tests including complete blood count, chemistry panels, ECG, chest x-rays, pulmonary function tests, and body fluid cell counts.
5. Recognize and appreciate the importance of cost-effectiveness of treatment modalities.

- Evaluate patients for management of acute, chronic, or cancer-related pain disorders.
- Get familiar with the breadth of pain management, including clinical experience with interventional pain procedures.
- Manage patients immediately after anesthesia, including direct care of patients in the post-anesthesia-care unit, and responsibilities for management of pain, hemodynamic changes, and emergencies related to the post-anesthesia care unit and critically-ill patients.
- Achieve competence in the delivery of anesthetic care to:

    - Patients undergoing vaginal delivery.
    - Patients undergoing cesarean sections.
    - Patients undergoing cardiac surgery.
- Asses patients for whom epidural anesthetics are used as part of the anesthetic technique or epidural catheters are placed for peri-operative analgesia.
- Evaluated patients with acute post-operative pain, including those with patient-controlled intravenous techniques, neuraxial blockade, and other pain-control modalities.
- Asses patients whose peri-operative care requires specialized techniques, including:
    - Broad spectrum of airway management techniques, to include laryngeal masks, endotracheal tube placement and endobronchial blockers;
    - Central vein catheter placement,

Methods of Teaching & Learning during course conduction

1. Inpatient Serices: All residents will have two monthly rotations in

- General antenatal wards
- Postnatal wards
- Daycare clinic
- Pre-op Gynae ward
- Posts of Obs ward
- Elective OT
- High risk antenatal
- High dependency unit
- Filter clinic
- Post-op Gynae ward
- Gynae Emergency
- Emergency OT

The required knowledge and skills pertaining to the ambulatory based training in following areas will be demonstrated;

- Normal labour
- Normal puerperium
- Care to New Born
- Common ailments of pregnancy
- High risk pregnancy
- Gynaecological conditions in pregnancy :
- Genital prolapse in pregnancy
- Complications in pregnancy
- Malposition, Malpresentation and Cord prolapse
- Abnormalities of Puerperium
- Obstetrical emergencies
- Operative obstetrics
- Gynaecological history taking and examination
- Menstrual disorders
- Menopause
- Common genital infection
- Endometriosis / adenomyosis
- Gynaecological oncology:

- Uterine displacements
- Subfertility
- Gynaecological emergencies
- Interpretation of diagnostic tests
- Gynaecological procedures
- Provide Pre and post operative care of patients undergoing gynaecological operations
- Diagnose and manage patients with urinary complaints
- Urogynaecology
- Prenatal diagnosis

2. Outpatient Experiences: Residents should demonstrate expertise in diagnosis and management of patients in outdoor clinic including general antenatal, high risk antenatal, patients with common gynaecological complains, oncology clinic, subfertility clinic and contraception clinic.

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 emergency patients including initial resuscitation (ABC), double IV line, blood and blood products arrangement and definite decision making for further management.

4. ***Electives/ Specialty Rotations:*** In addition, the resident will elect rotations in

    - Surgery
    - Neonatology
    - Medicine

Residents may also select electives at other institutions if the parent department does not offer the experiences they want.

5. ***Interdisciplinary Practice:*** Resident will have enough time for Interdisciplinary interaction and communication. Resident will have laison with Medicine, Neonatology, Radiology, Dermatology, Emergency Medicine, General Surgery, Neurology, Ophthalmology, Nephrology, Urology.

6. ***Community Practice:*** The Residents should be encourage to participate in the free camp providing antenatal, family planning services in the periphery area. This will give the experience of Obs / Gynae practice in a non-academic, non-teaching hospital setting, this will make them more confident and community oriented. They learn the needs of referring physicians or to decide on a future career path.

7. ***Mandatory Workshops:*** Residents achieve hands on training while participating in mandatory workshops of
   - Communication Skills,
   - Computer Skills and IT
   - Research Methodology and Bio Stat
   - Synopsis writing

   Specific objectives are given in detail in the relevant section of Mandatory Workshops.

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

9. ***Introductory Lecture Series (ILS):*** Various introductory topics will be presented by subspecialty and general Obs / Gynae faculty to introduce basic, essential and emerging topics in Obs / Gynae.

10. ***Long and short case presentations:*** Giving an oral presentation on ward rounds is an important skill for Obs / Gynae MS trainee to learn. It is Obs / Gynae 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 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.

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

12. 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 discuss any current article or topic introduced or assigned by senior faculty member. The article will be critically evaluated and its recommended results should be highlighted and reinforced for implementation in routine Gynae and obstetrics care and in clinical practice. Record of all such articles should be maintained in the relevant department.

13. 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 MS trainee prefer small group learning to other instructional methods. From the study of a problem MS trainee 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 MS trainee determine what and how they learn. Case studies help learners identify problems and solutions, compare options and decide how to handle a real situation.

14. 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 MS trainee 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.

15. 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.

16. ***Grand Rounds (GR)*:** The Department of Obs / Gynae hosts Grand Rounds on weekly basis. Speakers from local, regional and national Obs / Gynae training programmes are invited to present topics from the broad spectrum of Obs / Gynae. All residents on inpatient floor teams.

17. **Weekly hand on skill workshop:** On the dummy pelvis for mechanism of labour, malpresentations and obstetric complications.

***18. Professionalism Curriculum (PC)*:** This is an organized series of recurring large and small group discussions focusing upon current issues and dilemmas in Obs / Gynae professionalism and ethics presented primarily by an

associate programme director. Lectures are usually presented in a noon conference format.

19. ***Evening Teaching Rounds:*** The evening rounds are conducted by senior registrar to discuss and revise all the high risk cases. Residents are suppose to prepare short and brief history of all cases, salient feature of their management and will have detailed discussion with senior registrar on call. The evening teaching round are meant to ensure continues 24/7.

20. ***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.

21. ***Evidence Based Obs / Gynae(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 programme director.

22. ***Clinical Audit meeting:*** Clinical audit is a quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteri. In OB/Gynae monthly clinical audit meeting is held and data of latest month is presented on pre design proforma's. It is attended by all senior faculty members, senior registrar and all residents. Discussion to reduce maternal and neonatal morbidity and mortality is generated and instruction are given to implement further changes in clinical practices based on fact and figures.

23. ***Peer Assisted Learning:*** Any situation where people learn from, or within the colleague of similar level of training,

background and shared characteristic. PAL 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.

24. ***Maternal Mortality Meeting***: The maternal mortality meetings are held regularly in department throughout the year. A case, with an adverse outcome, that resulting in death of mother, is discussed and thoroughly reviewed. Faculty members from various disciplines are invited to attend, especially if they were involved in the care of the mother. The discussion focuses on how we can reduce maternal mortality and morbidity.

25. 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 consultant on the Consultation Service, will prepare and present the case(s) and review the relevant literature.

26. *Perinatal Mortality Meeting* The meetings are held regularly in department throughout the year. A case, with an adverse outcome, that resulting in death of new born, is discussed and thoroughly reviewed. Faculty members from various disciplines are invited to attend, especially if they were involved in the care of new born. The discussion focuses on how we can reduce perinatal and morbidity.

27. Skill teaching in emergency / Labour room & in skill workshop:

A) Indoor monthly rotation in emergency and labour room will provide good opportunity to residents to learn different obstetrical and Gynae 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)

OBSTETRICS

- Obstetric abdominal examination
- Bishops scoring
- Cusco's speculum examination
- Artificial rupture of membranes
- Vaginal examination in labour
- Conduct of spontaneous vertex delivery
- Repair of episiotomy
- Elective caesarean section
- Emergency caesarean section
- Peripartum hysterectomy
- Application of B-lynch and other haemostatic sutures
- Uterine packing and balloon tamponade for PPH
- Manual reduction of uterine inversion
- Manual removal of retained placenta
- Repair torn bladder
- Repair third degree tear
- Repair of 4^{th} degree tear
- Repair lacerated cervix
- Repair of lacerated vagina and perineum
- Application and removal of cervical suture
- Elective breech delivery

- Twin delivery (including principles of internal version)
- Operative vaginal delivery
- Manual rotation
- Mid-cavity non-rotation forceps
- Ventouse rotation
- Obstetric ultrasound for dating, placental localization, viability and multiple pregnancy
- CTG
- Amnio reduction

GYNAECOLOGY

- Laparotomy
- Gynaecological Endoscopies (laparoscopy, hysteroscopy)
- Evacuation of retained products of conception (ERPC) / MVA
- Suction termination of pregnancy
- Polypectomy
- Staging laparotomy
- Hysterosalpingography (HSG)
- Dilatation and curettage
- Fractional curettage
- Hysterotomy
- Hysterectomy; Abdominal & vaginal
- Salpingo oophorectomy (unilateral and bilateral)
- Oophorectomy / ovarian biopsy
- Myomectomy
- Sling’s operation for prolapse

- Anterior and posterior repair
- Cystectomy, cystostomy, salpingostomy, salpingectomy
- Management of ruptured/torsion ovarian cyst
- Ligation of Fallopian tubes
- Treatment of non-CIN cervical lesions
- Pap smear
- Cervical Biopsy
- Endometrial pipelle biopsy
- Marsupialization of Bartholin cyst/abscess
- Management of pruritis vulvae
- Management of benign vulval disease
- Vulval biopsy
- Insertion and retrieval of lost intrauterine IUCD
- Ring Pessary

Optional additional training

- Training in laparoscopy to assist in diagnosis of acute pelvic pain, to offer female sterilization and to perform tubal studies for investigation of infertility

- Basic training in colposcopic techniques might also be offered to trainees caring for women in remote areas without reasonable Assess to specialist care.

B) Skill Workshops: Resident will be given and opportunity to attend skill workshops that are meant to enhance trainees skill in followings areas

1. One Week. Neonatology (Hands On)
2. One Day. Basic Surgical Technique
3. Four Days Obs emergencies

28. <u>Bedside teaching rounds in ward:</u> "To study the phenomenon of disease without books 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 history taking, physical examination and discussion of particular diseases, its psychosocial and ethical themes, and management issues

29. <u>Directly *Supervised Procedures - (DSP)</u>*: Residents learn procedures under the direct supervision of an attending consultant or fellow during some rotations. For example, in the Obs / Gynae all the high risk gynaecological and antenatal and postnatal cases are in continuous discussion and require regular management. The resident will be the part of that team who is dealing with patients so will directly learn from senior consultant and senior registrar.

30. *<u>Self-directed learning:</u>* 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 programme, 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.

31.*<u>Follow up clinics:</u>* There are four main categories of follow up clinic in Gynae and obstetrics.

(a) **Follow up of patients with gynaecological malignancies:** Patients with gynaecological malignancies are commonly presented in outdoor department. Their detailed evaluation, management and decision making of these patients is time taking process. These patients are kept in follow up pre operatively and post operatively. The main purpose of pre operative follow up is to complete work up, investigations and to look for new sign and

symptom of disease. These patient are discussed among faculty members and treatment option are offer to the patient. Post operatively these patient are in regular follow up with histopathology report and further referred for next step of management

(b) **Contraceptive counseling and follow up advice:** We discuss with patients regarding contraception options and they are helped to choose suitable method. These patients are called for regular follow up in daycare clinic.

(c) **Follow up of high risk antenatal ward:** Some of our patients who are in high risk antenatal categories and need periodic checkup are called on regular basis if they live in vicinity of hospital. They are registered and their follow up visits are mentioned on it. The advice regarding their further management and treatment is taken from attending consultant.

(d) **Follow up of sub-fertility patients**: Patient with sub-fertility need regular check up and follow up in sub-fertility clinic. Resident under supervision of consultants will be rotated in these clinics to have understanding of such patients.

32. ***Core curriculum meeting:*** All the core topics of Obs / Gynae 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

33. ***Annual Grand Meeting:*** Once a year all residents enrolled for MS Obs / Gynae 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 MS trainee and the faculty.

34. ***Learning through maintaining log book:*** It is used to list the core clinical problems to be seen during the attachment and to document the MS trainee activity and learning achieved with each patient contact.

35. ***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 MS trainee 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.

36 .*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.

37. ***Teaching in the ambulatory care setting:*** A wide range of clinical conditions may be seen. There are large numbers of new and return patients. MS trainee have the opportunity to experience a multi-professional approach to patient care. Unlike ward teaching, increased numbers of MS trainee can be accommodated without exhausting the limited No. of suitable patients.

38. ***Community Based Obs / Gynae Education:*** CBME refers to Obs / Gynae 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.

39. ***Audio visual laboratory:*** audio visual material for teaching skills to the residents is used specifically in teaching laparoscopic procedures skill.

40. ***E-learning/web-based:*** 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.

41. ***Research based learning:*** All residents 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 will 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.

42. ***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 Obs / Gynae are given along with relevant modules.

A crisp detail about modern Tools of Assessment intended to be used for the course

- **360-DEGREE EVALUATION INSTRUMENT-MULTI-SOURCE FEEDBACK (MSF):**
  360-degree evaluations consist of measurement tools completed by multiple people in a person's sphere of influence. Evaluators completing rating forms in a 360-degree evaluation usually are superiors, peers, subordinates, and patients and families. Most 360-degree evaluation processes use a survey or questionnaire to gather information about an individual's performance on several topics (e.g., teamwork, communication, management skills & decision-making). Most 360-degree evaluations use rating scales to assess how frequently a behavior is performed (e.g., a scale of 1 to 5, with 5 meaning "all the time" and 1 meaning "never"). The ratings are summarized for all evaluators by topic and overall to provide feedback.Evaluators provide more accurate and less lenient ratings when the evaluation is intended to give formative feedback rather than summative evaluations. A 360-degree evaluation can be used to assess interpersonal and communication skills, professional behaviors, and some aspects of patient care and systems-based practice.

- **CHART STIMULATED RECALL ORAL EXAMINATION (CSR)**
  In a chart stimulated recall (CSR) examination patient cases of the examinee (resident) are assessed in a standardized oral examination. A trained and experienced physician examiner questions the examinee about the care provided probing for reasons behind the work-up, diagnoses, interpretation of clinical findings, and treatment plans. The examiners rate the examinee using a well-established protocol and scoring procedure. In efficiently designed CSR oral exams each patient case (test item) takes 5 to 10 minutes. A typical CSR exam is two hours with one or two physicians as examiners per separate 30 or 60-minute session.These exams assess clinical decision-making and the application or use of Obs / Gynaeknowledge with actual patients.

- **CHECKLIST EVALUATION**
  Checklists consist of essential or desired specific behaviors, activities, or steps that make up a more complex competency or competency component. Typical response options on these forms are a check ( ) or "yes" to indicate that the behavior occurred or options to indicate the completeness (complete, partial, or absent) or correctness (total, partial, or incorrect) of the action. The forms provide information about behaviors but for the purpose of making a judgment about the adequacy of the overall performance, standards need to be set that indicate, for example,

pass/fail or excellent, good, fair, or poor performance. Checklists are useful for evaluating any competency and competency component that can be broken down into specific behaviors or actions. Documented evidence for the usefulness of checklists exists for the evaluation of patient care skills (history and physical examination, procedural skills) and for interpersonal and communication skills. Checklists have also been used for self-assessment of practice-based learning skills (evidence-based medicine). Checklists are most useful to provide feedback on performance because checklists can be tailored to assess detailed actions in performing a task.

- **GLOBAL RATING OF LIVE OR RECORDED PERFORMANCE**

Global rating forms are distinguished from other rating forms in that (a) a rater judges general categories of ability (e.g. patient care skills, Obs / Gynae knowledge, interpersonal and communication skills) instead of specific

skills, tasks or behaviors; and (b) the ratings are completed retrospectively based on general impressions collected over a period of time (e.g., end of a clinical rotation) derived from multiple sources of information (e.g., direct observations or interactions; input from other faculty, residents, or patients; review of work products or written materials). All rating forms contain scales that the evaluator uses to judge knowledge, skills, and behaviors listed on the form. Typical rating scales consist of qualitative indicators and often include numeric values for each indicator, for example, (a) very good = 1, good =2, fair = 3, poor =4; or (b) superior =1, satisfactory =2, unsatisfactory =3. Written comments are important to allow evaluators to explain the ratings. Global rating forms are most often used for making end of rotation and summary assessments about performance observed over days or weeks. Scoring rating forms entails combining numeric ratings with comments to obtain a useful judgment about performance based upon more than one rater.

- **OBJECTIVE STRUCTURED CLINICAL EXAMINATION (OSCE)**

In an objective structured clinical examination (OSCE) one or more assessment tools are administered at 12 to 20 separate standardized patient encounter stations, each station lasting 10-15 minutes. Between stations candidates may complete patient notes or a brief written examination about the previous patient encounter. All candidates move from station to station in sequence on the same schedule. Standardized patients are the primary assessment tool used in OSCEs, but OSCEs have included other assessment tools such as data interpretation exercises using clinical cases and clinical scenarios with mannequins, to assess technical skills.OSCEs have been administered in most of the Obs / Gynae schools worldwide, many residency programmes, and by the licensure board

examinations. The OSCE format provides a standardized means to assess: physical examination and history taking skills; communication skills with patients and family members, breadth and depth of knowledge; ability to summarize and document findings; ability to make a differential diagnosis, or plan treatment; and clinical judgment based upon patient notes.

- **PROCEDURE, OPERATIVE, OR CASE LOGS**

  Procedure, operative, or case logs document each patient encounter by Obs / Gynae conditions seen, surgical operation or procedures performed. The logs may or may not include counts of cases, operations, or procedures. Patient case logs currently in use involve recording of some number of consecutive cases in a designated time frame. Operative logs in current use vary; some entail comprehensive recording of operative data by CPT code while others require recording of operations or procedures for a small number of defined categories. Logs of types of cases seen or procedures performed are useful for determining the scope of patient care experience. Regular review of logs can be used to help the resident track what cases or procedures must be sought out in order to meet residency requirements or specific learning objectives. Patient logs documenting clinical experience for the entire residency can serve as a summative report of that experience; as noted below, the numbers reported do not necessarily indicate competence.

- **PORTFOLIOS**

  A portfolio is a collection of products prepared by the resident that provides evidence of learning and achievement related to a learning plan. A portfolio typically contains written documents but can include video- or audio-recordings, photographs, and other forms of information. Reflecting upon what has been learned is an important part of constructing a portfolio. In addition to products of learning, the portfolio can include statements about what has been learned, its application, remaining learning needs, and how they can be met. In graduate Obs / Gynaeeducation, a portfolio might include a log of clinical procedures performed; a summary of the research literature reviewed when selecting a treatment option; a quality improvement project plan and report of results; ethical dilemmas faced and how they were handled; a computer programme that tracks patient care outcomes; or a recording or transcript of counseling provided to patients. Portfolios can be used for both formative and summative evaluation of residents. Portfolios are most useful for evaluating mastery of competencies that are difficult to evaluate in other ways such as practice-based improvement, use of scientific evidence in patient care, professional behaviors, and patient advocacy. Teaching experiences, morning report, patient rounds, individualized study or research projects are examples of learning experiences that lend themselves to using portfolios to assess residents.

- **RECORD REVIEW**

  Trained staff in an institution's Obs / Gynae records department or clinical department perform a review of patients' paper or electronic records. The staff uses a protocol and coding form based upon predefined criteria to abstract information from the records, such as medications, tests ordered, procedures performed, and patient outcomes. The patient record findings are summarized and compared to accepted patient care standards. Standards of care are available for more than 1600 diseases on the Website of the Agency for HealthCare Research and Quality (http://www.ahrq.gov/).Record review can provide evidence about clinical decision making, follow-through in patient management and preventive health services, and appropriate use of clinical facilities and resources (e.g., appropriate laboratory tests and consultations). Often residents will confer with other clinical team members before documenting patient decisions and therefore, the documented care may not be directly attributed to a single resident but to the clinical team.

- **SIMULATIONS AND MODELS**

  Simulations used for assessment of clinical performance closely resemble reality and attempt to imitate but not duplicate real clinical problems. Key attributes of simulations are that: they incorporate a wide array of options resembling reality, allow examinees to reason through a clinical problem with little or no cueing, permit examinees to make life-threatening errors without hurting a real patient, provide instant feedback so examinees can correct a mistaken action, and rate examinees' performance on clinical problems that are difficult or impossible to evaluate effectively in other circumstances. Simulation formats have been developed as paper-and pencil branching problems (patient management problems or PMPs), computerized versions of PMPs called clinical case simulations (CCX®), role-playing situations (e.g., standardized patients (SPs), clinical team simulations), anatomical models or mannequins, and combinations of all three formats. Mannequins are imitations of body organs or anatomical body regions frequently using pathological findings to simulate patient disease. The models are constructed of vinyl or plastic sculpted to resemble human tissue with imbedded electronic circuitry to allow the mannequin to respond realistically to actions by the examinee. Virtual reality simulations or environments (VR) use computers sometimes combined with anatomical models to mimic as much as feasible realistic organ and surface images and the touch sensations (computer generated haptic responses) a physician would expect in a real patient. The VR environments allow assessment of procedural skills and other complex clinical tasks that are difficult to assess consistently by other assessment methods. Simulations using VR environments have been developed to train and assess surgeons performing arthroscopy of the knee and other large joints, anesthesiologists managing life-threatening critical incidents during surgery, surgeons performing wound debridement and minor surgery, and Obs / Gynae MS trainee

and residents responding to cardio-pulmonary incidents on a full-size human mannequin. Written and computerized simulations have been used to assess clinical reasoning, diagnostic plans and treatment for a variety of clinical disciplines as part of licensure and certification examinations. Standardized patients as simulations are described elsewhere.

- **STANDARDIZED ORAL EXAMINATION**

  The standardized oral examination is a type of performance assessment using realistic patient cases with a trained physician examiner questioning the examinee. The examiner begins by presenting to the examinee a clinical problem in the form of a patient case scenario and asks the examinee to manage the case. Questions probe the reasoning for requesting clinical findings, interpretation of findings, and treatment plans. In efficiently designed exams each case scenario takes three to five minutes. Exams last approximately 90 minutes to two and one-half hours with two to four separate 30 or 60-minute sessions. One or two physicians serve as examiners per session. An examinee can be tested on 18 to 60 different clinical cases. These exams assess clinical decision making and the application or use of Obs / Gynae knowledge with realistic patients. Multiple-choice questions are better at assessing recall or understanding of Obs / Gynae knowledge.

- **STANDARDIZED PATIENT EXAMINATION (SP/ Role Player)**

  Standardized patients (SPs) are well persons trained to simulate a Obs / Gynae condition in a standardized way or actual patients who are trained to present their condition in a standardized way. A standardized patient exam consists of multiple SPs each presenting a different condition in a 10-12 minute patient encounter. The resident being evaluated examines the SP as if (s) he were a real patient, (i.e., the resident might perform a history and physical exam, order tests, provide a diagnosis, develop a treatment plan, or counsel the patient). Using a checklist or a rating form, a physician observer or the SPs evaluate the resident's performance on appropriateness, correctness, and completeness of specific patient care tasks and expected behaviors (See description of Checklist Evaluation…). Performance criteria are set in advance. Alternatively or in addition to evaluation using a multiple SP exam, individual SPs can be used to assess specific patient care skills. SPs are also included as stations in Objective Structured Clinical Examinations (See description of OSCE).SPs have been used to assess history-taking skills, physical examination skills, communication skills, differential diagnosis, laboratory utilization, and treatment. Reproducible scores are more readily obtained for history-taking, physical examination, and communication skills. Standardized patient exams are most frequently used as summative performance exams for clinical skills. A single SP can assess targeted skills and knowledge.

- **WRITTEN EXAMINATION (MCQ)**

  A written or computer-based MCQ examination is composed of multiple-choice questions (MCQ) selected to sample Obs / Gynae knowledge and understanding of a defined body of knowledge, not just factual or easily recalled information. Each question or test item contains an introductory statement followed by four or five options in outline format. The examinee selects one of the options as the presumed correct answer by marking the option on a coded answer sheet. Only one option is keyed as the correct response. The introductory statement often presents a patient case, clinical findings, or displays data graphically. A separate booklet can be used to display pictures, and other relevant clinical information. In computer-based examinations the test items are displayed on a computer monitor one at a time with pictures and graphical images also displayed directly on the monitor. In a computer-adaptive test fewer test questions are needed because test items are selected based upon statistical rules programmemed into the computer to quickly measure the examinee's ability.Obs / Gynaeknowledge and understanding can be measured by MCQ examinations. Comparing the test scores on in-training examinations with national statistics can serve to identify strengths and limitations of individual residents to help them improve. Comparing test results aggregated for residents in each year of a programme can be helpful to identify residency training experiences that might be improved.

- **Mini-Clinical Evaluation Exercise (mini-CEX)**

  This tool evaluates a clinical encounter with a patient to provide an indication of competence in skills essential for good clinical care such as history taking, examination and clinical reasoning. The trainee receives immediate feedback to aid learning. The can be used at any time and in any setting when there is a trainee and patient interaction and an assessor is available.

- **Direct Observation of Procedural Skills (DOPS)**

  A DOPS is an assessment tool designed to evaluate the performance of a trainee in undertaking a practical procedure, against a structured checklist. The trainee receives immediate feedback to identify strengths and areas for development.

- **Case-based Discussion (CbD)**

  The CbD assesses the performance of a trainee in their management of a patient to provide an indication of

competence in areas such as clinical reasoning, decision-making and application of Obs / Gynae knowledge in relation to patient care. It also serves as a method to document conversations about, and presentations of, cases by trainees. The CbD should focus on a written record (such as written case notes, out-patient letter, and discharge summary). A typical encounter might be when presenting newly referred patients in the out patient department.

- **Acute Care Assessment Tool (ACAT)**
  The ACAT is designed to assess and facilitate feedback on a doctor's performance during their practice on the Acute Obs / Gynae Take. Any doctor who has been responsible for the supervision of the Acute Obs / Gynae Take can be the assessor for an ACAT.

- **Audit Assessment (AA)**
  The Audit Assessment tool is designed to assess a trainee's competence in completing an audit. The Audit Assessment can be based on review of audit documentation OR on a presentation of the audit at a meeting. If possible the trainee should be assessed on the same audit by more than one assessor.

- **Teaching Observation (TO)**
  The Teaching Observation form is designed to provide structured, formative feedback to trainees on their competence at teaching. The Teaching Observation can be based on any instance of formalized teaching by the trainee who has been observed by the assessor. The process should be trainee-led (identifying appropriate teaching sessions and assessors).

- **Decisions on progress (ARCP)**
  The Annual Review of Competence Progression (ARCP) is the formal method by which a trainee's progression through her/his training programmeme is monitored and recorded. ARCP is not an assessment – it is the review of evidence of training and assessment. The ARCP process is described in A Reference Guide for Postgraduate Specialty Training in the UK (the "Gold Guide" – available from www.mmc.nhs.uk). Deaneries are responsible for organising and conducting ARCPs. The evidence to be reviewed by ARCP panels should be collected in the trainee's ePortfolio.

Assessment schedule of all clinical years

1st YEAR ASSESSMENT (End of 1st Year)	MID TERM ASSESSMENT (End of 2nd year)	3rd YEAR ASSESSMENT (End of 3rd year)	FINAL ASSESSMENT (End of 4th year)
Formative Assessment	**Formative Assessment**	**Formative Assessment**	**Formative Assessment**
Log Book (30% cases) **Obstetrics 05** **Gynaecology 04** **WPBA** Multisource feedback, 360º performa **DOPS** (Obstetrics 05, Gynae 04) (list attached) **MiniCEX** (Obstetrics 05, Gynae 04) (list attached)	**Log Book (30% cases)** Obstetrics 04 Gynaecology 05 **WPBA** Multisource feedback, 360º performa **DOPS** (Obstetrics 04, Gynae 04) **MiniCEX** (Obstetrics 05, Gynae 05)	**Log Book (40% cases)** **Obstetrics 06** **Gynaecology 06** **WPBA** Multisource feedback, 360º performa **DOPS** (Obstetrics 05, Gynae 06) (list attached) **MiniCEX** **(**Obstetrics 04, Gynae 04) (list attached)	**WPBA** Multisource feedback, 360º performa **DOPS** (Obstetrics 05, Gynae 06) (list attached) **MiniCEX** (Obstetrics 05, Gynae 05) (list attached)
	Summative Assessment TOTAL MARKS 200		**Summative Assessment TOTAL MARKS 800**
	Written & Clinical- Written: 150 marks A) **MCQs** 100 marks (Obs 50 , Gynae 50) B) **SAQs** 05 (50 marks) **Clinical: 50 marks** TOACS- 50		**Written & Clinical** **Written: 400 marks** A) **MCQs** (100 marks) Obs 40 Gynae 60 B**) SAQs** 10 (100 marks) 05 Gynae SAQs 05 Obs SAQs C) **Defense of thesis** (200 marks) **Clinical: 400 marks** **A) Long Cases** – 200 marks Obs case 100 marks Gynae case 100 marks B) **TOACS**- 200 marks
Total Marks 1000 (Including summative assessment of second year and fourth year)			

Submission / Evaluation of Synopsis

1. The candidates will prepare their synopsis as per guidelines provided by the Advanced Studies & Research Board, available on university 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 will be submitted by the end of the 1st year of MS programme. The synopsis after review by an Institutional Review Committee will be submitted to the University for consideration by the Advanced Studies & Research Board, through the Principal / Dean /Head of the institution.

Submission of Thesis

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

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

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

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

Thesis Examination

a) The candidate will submit his/her thesis at least 06 months prior to completion of training.

b) The Thesis along with a certificate of approval from the supervisor will be submitted to the Registrar's office, who would record the date / time etc. and get received from the Controller of Examinations within 05 working days of receiving.

c) The Controller of Examinations will submit a panel of eight examiners within 07 days for selection of four examiners by the Vice Chancellor. The Vice Chancellor will return the final panel within 05 working days to the Controller of Examinations for processing and assessment. In case of any delay the Controller of Examinations would bring the case personally to the Vice Chancellor.

d) The Supervisor will not act as an examiner of the candidate and will not take part in evaluation of thesis.

e) The Controller of Examinations will make sure that the Thesis is submitted to examiners in appropriate fashion and a reminder is sent after every ten days.

f) The thesis will be evaluated by the examiners within a period of 06 weeks.

g) In case the examiners fail to complete the task within 06 weeks with 02 fortnightly reminders by the Controller of Examinations, the Controller of Examinations will bring it to the notice of Vice Chancellor in person.

h) In case of difficulty in find an internal examiner for thesis evaluation, the Vice Chancellor would, in consultation with the concerned Deans, appoint any relevant person as examiner in supersession of the relevant Clause of the University Regulations.

i) There will be two internal and two external examiners. In case of difficulty in finding examiners, the Vice Chancellor would, in consultation with the concerned Deans, appoint minimum of three, one internal and two external examiners.

j) The total marks of thesis evaluation will be 400 and 60% marks will be required to pass the evaluation.

   i) The thesis will be considered / accepted, if the cumulative score of all the examiners is 60%.

ii) The clinical training will end at completion of stipulated training period but the candidate will become eligible to appear in the Final

iii) Examination at completion of clinical training and after acceptance of thesis. In case clinical training ends earlier, the slot will fall vacant after stipulated training period.

AWARD OF MS OBSTETRICS AND GYNAECOLOGY DEGREE

After successful completion of the structured courses of MS Obstetrics and Gynaecology and qualifying Abridged & Final Examinations and acceptance of thesis the degree with title MS Obstetrics and Gynaecology will be awarded.

SECTION – II

Details of curriculum of MS Obs / Gynae Programme

RAWALPINDI OBS / GYNAE UNIVERSITY

RAWALPINDI

A) Curriculum of all clinical training years

B) Learning objectives (General and specific)

A) CURRICULUM OF ALL CLINICAL TRAINING YEARS

1. Curriculum of first year MS Obs / Gynae

2. Curriculum of second year MS Obs / Gynae

3. Curriculum of third year MS Obs / Gynae

4. Curriculum of fourth year MS Obs / Gynae

CURRICULUM OF FIRST YEAR MS OBS / GYNAE

Table of contents of first year clinical component

OBSTETRICS

S No	Topic	Content
1.	**NORMAL OBSTETRICS**	• **Prenatal** (obstetric anatomy, perineum, embryology of fetal development, physiological changes in pregnancy) • **Antenatal** (concepts and objectives , history taking and obstetrical examination, recommended visits, dietary advice, antenatal screening, minor symptoms of pregnancy) • **Intrapartum** (diagnosis of labour, physiology of labour, fetal and pelvic dimension, mechanism of labour, management of labour, fetal monitoring, ability to differentiate between normal and abnormal fidings) • **Postnatal Care** (normal puerperium, breast feeding) • **Neonatolog**y (apgor score neonatal resuscitation, neonatal care, behavior of new born, immunization) • **Breast feeding** (breast feeding protocol, maternal and neonatal benefits of breast feeding)
2.	**OBSTETRICS COMPLICATION**	• **Antenatal** (APH, PROM, PPROM, preterm labour, prolong pregnancy, induction of labour), IUD, IUGR, fetal abnormality, fetal abnormality, oligohydramnios, polyhydramnios, twin and higher order gestation,social (domestic violence, nutritional deficiencies) • **Intrapartum** (abnormal labour, malposition, malpresentation, fetal distress, cord prolapse, instrumental delivery, still birth • **Postnatal Care** (PPH (primary and secondary), puerperial pyrexia, thromboprophylaxis, psychological disorder, DVT, early neonatal problem, problems with breast feeding)
3.	**MEDICAL COMPLICATIONS**	• Hematological disorders, (anemia, thrombocytopenia, DIC • Hypertensive disorder (PIH, preeclampsia, eclampsia) • Diabetes in pregnancy (type-I, II and GDM) • Thyroid disorders (hypo and hyperthyroidism) • Liver disease (jaundice in pregnancy, cholostasis in pregnancy, AFLP) • Connective tissue disorders (APLS, SLE) • Neurological disorders, respiratory problems, • Drug abuse, medication in pregnancy • Renal disorder and skin disorder)
4.	**OBSTETRICS PROCEDURES**	• SVD, SVD with epi, instrumental delivery**,** • LSCS, • CVS, • Amniocentesis, • Craniocentesis, • ECV/ IPV, • Breach delivery, • Shoulder dystochia, • PPH exploration (vaginal and cervical tear repair, • Ballon tymponade, uterine artery ligation, B-lynch))

GYNAECOLOGY

S No	Topic	Content
1.	**BASIC GYNAECOLOGICAL CONCEPTS**	• Embryology of genital tract (normal and abnormal development) • Anatomy of pelvic and pelvic floor • Physiology of normal menstrual cycle • Sexual dysfunction, rape and sexual assault • History taking, examination, investigations • Professionalism, ethics and statistic
2.	**PUBERTY AND MENSTRUAL DISORDERS**	• Puberty and its disorders • Menarche, primary amenorrhea • Secondary amenorrhea, PCOD, endometrial and cervical causes of menstrual problems, medical conditions causing menstrual problems, • Menopause, HRT)
3.	**EARLY PREGNANCY COMPLICATIONS**	• Miscarriages • Ectopic • GTD
4.	**GENITAL TRACT INFECTIONS**	PID, STDs, chronic pelvic pain,)
5.	**SUBFERTILITY AND CONTRACEPTION**	• Primary and secondary subfertility (endometriosis) • Treatment of subfertility, assisted reproduction • Contraception
6.	**PELVIC FLOOR DYSFUNCTION**	• Pelvic organ prolaps • Urinary incontinence UV fistula) • Female genital mutilation
7.	**GYNAECOLOGICAL TUMORS**	• Pelvic masses • Benign conditions of ovary, uterus, cervix, vulva and vagina • Malignant conditions of ovary, • Uterus, cervix, vulva and vagina
8.	**GYNAECOLOGICAL PROCEDURES**	• Papsmear, • HVS, • ERPC, • MVA, • PPIUCD insertion and removal, • implanon insertion and removal, • IUI, Ring pessary insertion, Wound care and debridement, • Diagnostic dilatation and curettage, • Colposcopy, • Pipelle / Mirena insertion, • EUA/ Polypectomy, • TAH/Laparotomy, • Diagnostic laparoscopy ,

		• Vaginal hysterectomy , • Hysteroscopic guided biopsy, • Perineal repair , • Suction evacuation , • Marsuplization, • Hymenctomy Myomectomy as assistant

CURRICULUM OF SECOND YEAR MS OBS / GYNAE

Table of contents of Second year clinical component

OBSTETRIC

SNO	Topic	Content
1	**NORMAL OBSTETRICS**	**Intrapartum** (diagnosis of labour, physiology of labour, fetal and pelvic dimension, mechanism of labour, management of labour, fetal monitoring, ability to differentiate between normal and abnormal fidings) **Postnatal Care** (normal puerperium, breast feeding) **Neonatolog**y (apgor score neonatal resuscitation, neonatal care, behavior of new born, immunization) **Breast feeding** (breast feeding protocol, maternal and neonatal benefits of breast feeding)
2	**OBSTETRICS COMPLICATION**	**Antenatal** (prolong pregnancy, induction of labour), IUD, IUGR, fetal abnormality, fetal abnormality, oligohydramnios, polyhydramnios, twin and higher order gestation, social, previous I scar **Intrapartum** (abnormal labour, malposition, malpresentation, **Postnatal Care** (PPH (puerperial pyrexia, thromboprophylaxis, early neonatal problem, problems with breast feeding)
3	**MEDICAL COMPLICATIONS**	Hypertensive disorder (PIH, preeclampsia, eclampsia) Diabetes in pregnancy (type-I, II and GDM) Thyroid disorders (hypo and hyperthyroidism) Liver disease (jaundice in pregnancy, cholostasis in pregnancy, AFLP) Drug abuse, medication in pregnancy
4	**OBSTETRICS PROCEDURE**	PPIUD**,** LSCS, CVS, Amniocentesis, Craniocentesis

GYNAECOLOGY

SNO	Topic	Content
1	**BASIC GYNAECOLOGICAL**	• Sexual dysfunction, rape and sexual assault • Professionalism, ethics and statistic
2	**PUBERTY AND MENSTRUAL**	• Puberty and its disorders • Menarche, primary amenorrhea • Secondary amenorrhea, PCOD, endometrial and cervical causes of menstrual problems, medical conditions causing menstrual problems,
3	**EARLY PREGNANCY COMPLICATIONS**	• GTD • Ectopic
4	**GENITAL TRACT INFECTIONS**	• PID, STDs, chronic pelvic pain,)
5	**SUBFERTILITY AND CONTRACEPTION**	• **Subfertility** • Contraception
6	**PELVIC FLOOR DYSFUNCTION**	• Female genital mutilation
7	**GYNAECOLOGICAL MALIGNANCY**	• Pelvic masses • Benign conditions of ovary, uterus, cervix, vulva and vagina
8	**GYNAECOLOGICAL PROCEDURE**	• PPIUCD, implanon, • Wound care and debridement, • Diagnostic dilatation and curettage, • Pipelle / Mirena insertion, • Pap smear

CURRICULUM OF THIRD YEAR MS OBS / GYNAE

Table of contents of Third year clinical component

OBSTETRIC

SNO	Topic	Content
1	**NORMAL OBSTETRICS**	(content of first and second year)
2	**OBSTETRICS COMPLICATION**	• **Antenatal** (pregnancy with fibroid, pregnancy with placenta previa, content of first and second year included) • **Intrapartum** (Fetal distress, cord prolapse, instrumental delivery, still birth • **Postnatal Care** (PPH (Puerperial pyrexia, thromboprophylaxis, psychological disorder, DVT, early neonatal problem, problems with breast feeding)
3	**MEDICAL COMPLICATIONS**	• Diabetes in pregnancy (type-I, II and GDM) • Thyroid disorders (hypo and hyperthyroidism) • Liver disease (jaundice in pregnancy, cholostasis in pregnancy, AFLP) • Connective tissue disorders (APLS, SLE) • Neurological disorders, respiratory problems, • Renal disorder and skin disorder)
4	**OBSTETRICS PROCEDURES**	• Instrumental delivery**,** • LSCS, • CVS, amniocentesis, craniocentesis, • ECV/ IPV, breach delivery, • Shoulder dystochia, • PPH exploration (vaginal and cervical tear repair, • Ballon tymponade, uterine artery ligation, B-lynch))

GYNAECOLOGY

SNO	Topic	Content
1	**BASIC GYNAECOLOGICAL CONCEPTS** **PUBERTY AND MENSTRUAL DISORDERS**	• Sexual dysfunction, rape and sexual assault • Professionalism, ethics and statistic • Primary amenorrhea • Secondary amenorrhea, PCOD, endometrial and cervical causes of menstrual problems, medical conditions causing menstrual problems, Menopause, HRT)
2	**EARLY PREGNANCY COMPLICATIONS** **GENITAL TRACT INFECTIONS**	• GTD • PID, STDs, chronic pelvic pain,)
3	**SUBFERTILITY AND CONTRACEPTION** **PELVIC FLOOR DYSFUNCTION**	• Primary and secondary subfertility (endometriosis) • Treatment of subfertility, assisted reproduction • Urinary incontinence UV fistula) • Female genital mutilation
4	**GYNAECOLOGICAL TUMORS**	• Benign conditions of ovary, uterus, cervix, vulva and vagina • Malignant conditions of ovary, uterus, cervix, vulva and vagina
5	**GYNAECOLOGICAL PROCEDURES**	• Diagnostic dilatation and curettage, • Colposcopy, • Pipelle / Mirena insertion, • EUA/ Polypectomy, • TAH/Laparotomy, • Diagnostic laparoscopy, • Vaginal hysterectomy, • Hysteroscopic guided biopsy, • Perineal repair, • Suction evacuation, • Marsuplization, hymenctomy, • Myomectomy as assistant

CURRICULUM OF FOURTH YEAR MS OBS / GYNAE

Table of contents of Fourth year clinical component

OBSTETRIC

SNO	Topic	Content
1	**PUBERTY AND MENSTRUAL DISORDERS**	• Menarche, primary and amenorrhea • Menopause, HRT)
2	**SUBFERTILITY AND CONTRACEPTION**	• Primary and secondary subfertility (endometriosis) Treatment of subfertility, assisted reproduction
3	**PELVIC FLOOR DYSFUNCTION**	• Pelvic organ prolaps Urinary incontinence UV fistula)
4	**GYNAECOLOGICAL TUMORS**	Malignant conditions of ovary, uterus, cervix, vulva and vagina
5	**GYNAECOLOGICAL PROCEDURES**	• IUI, ring pessary insertion, • Diagnostic dilatation and curettage, • Mirena insertion, • EUA/ Polypectomy, • TAH / Laparotomy, • Diagnostic laparoscopy, • Vaginal hysterectomy, • Hysteroscopic guided biopsy, • Perineal repair, • Marsuplization, • Hymenctomy • Myomectomy as assistant

GYNAECOLOGY

SNO	Topic	Content
1	**NORMAL OBSTETRICS**	(content of first, second and third year included)
2	**OBSTETRICS COMPLICATION**	• **Antenatal** (content of first, second and third year included, pregnancy with placenta previa, Rh incompatibilty) • **Intrapartum** (Fetal distress, instrumental delivery, still birth • **Postnatal Care** (Thromboprophylaxis, psychological disorder, DVT, problem, problems)
3	**MEDICAL COMPLICATIONS**	• Cardiac disease in pregnancy • Connective tissue disorders (APLS, SLE) • Neurological disorders, respiratory problems, • Renal disorder and skin disorder)
4	**OBSTETRICS PROCEDURES**	• ECV/ IPV, breach delivery, • Shoulder dystochia, • PPH exploration (vaginal and cervical tear repair, • Ballon tymponade, uterine artery ligation, B-lynch

***B*) Learning objectives (General and specific)**

1. General learning objectives for all the training years

2. Specific learning objectives for all the training years

General Learning objectives for all training years

TOPICS TO BE TAUGHT	LEARNING OBJECTIVES MS trainee should be able to:	TEACHING METHOD	ASSESSMENT
1. History Taking **(Knowledge)**	• Progressively develop the ability to obtain a relevant focused history from increasingly complex patients and challenging circumstances • Record accurately and synthesize history with clinical examination and formulation of management plan according to likely clinical evolution • know the importance of different elements of history • Recognizes the importance of social, cultural and nutritional factors particularly those relating to ethnicity, race, cultural or religious beliefs and preferences, sexual orientation, gender and disability • Know likely causes and risk factors for conditions relevant to mode of presentation • Recognizes that history should inform examination, investigation and management	Bedside teaching in wards and outpatient departments	mini-CEX MCQs
2. History Taking **(Skills)**	• Recognize possible barriers (eg cognitive impairment) to effective communication • Manage time and draw consultation	Bedside teaching in wards and outpatient	mini-CEX

	• Supplement history with standardised instruments or questionnaires when relevant • Manage alternative and conflicting views from family, carers and friends • Assimilate history from the available information from patient and other sources • Recognise and interpret the use of non verbal communication from patients and carers • Focus on relevant aspects of history	departments	
3. History Taking **(Behaviors)**	• Show respect and behave in accordance with Good Obs / Gynae Practice	Bedside teaching in wards and outpatient departments	ACAT mini-CEX
4. Clinical examination (knowledge)	• Progressively develop the ability to perform focused and accurate clinical examination in increasingly complex patients and challenging circumstances • Relate physical findings to history in order to establish diagnosis and formulate a management plan • Understand the need for a valid clinical examination • Understand the basis for clinical signs and the relevance of positive and negative physical signs • Recognize constraints to performing physical examination and strategies that may be used to overcome them • Recognize the limitations of physical examination and the need for adjunctive forms of assessment to confirm diagnosis	Bedside teaching in wards and outpatient departments	CbD mini-CEX ACAT
5. Clinical examination	• Perform an examination relevant to the presentation	Bedside teaching in	CbD

(skills)	and risk factors that is valid, targeted and time efficient • Recognize the possibility of deliberate harm in vulnerable patients and report to appropriate agencies • Interpret findings from the history, physical examination and mental state examination, • Appreciating the importance of clinical, psychological, religious, social and cultural factors • Actively elicit important clinical findings	wards and outpatient departments	mini-CEX ACAT
6. Clinical examination **(Behaviors)**	• Show respect and behaves in accordance with Good Obs / Gynae Practice	Bedside teaching in wards and outpatient departments	CbD, mini CEX, MSF
7. Time management and decision making	• To become increasingly able to prioritise and organise clinical and clerical duties in order to optimise patient care. • To become increasingly able to make appropriate clinical and clerical decisions in order to optimise the effectiveness of the clinical team resource	Bedside teaching in wards and outpatient departments	ACAT, CbD

8. Decision making and clinical reasoning	• Progressively develop the ability to formulate a diagnostic and therapeutic plan for a patient according to the clinical information available • Progressively develop the ability to prioritise the diagnostic and therapeutic plan • Communicate the diagnostic and therapeutic plan appropriately	Bedside teaching in wards	ACAT, CbD, mini-CEX

Specific leaning objective for first year

Obstetrics

S No	Content (Obs)	Learning Objectives
1	**NORMAL OBSTETRICS** • **Basics** (obstetric anatomy, perineum, embryology of fetal development, physiological changes in pregnancy) • **Antenatal** (concepts and objectives , history taking and obstetrical examination, recommended visits, dietary advice, antenatal screening, minor symptoms of pregnancy) • **Intrapartum** (diagnosis of labour, physiology of labour, fetal and pelvic dimension, mechanism of labour, management of labour, fetal monitoring, ability to differentiate between normal and abnormal findings) • **Postnatal Care** (normal puerperium, breast feeding) • **Neonatology** (apgor score neonatal resuscitation, neonatal care, behavior of new born, immunization) • **Breast feeding** (breast feeding protocol, maternal and neonatal benefits of breast feeding)	**Resident will be able to** • Describe basic anatomy, physiology of pregnancy and fetal embryology • Demonstrate anatomical land marks during clinical examination and surgery • Demonstrate the capabilities of taking care of antenatal intrapartum and postnatal patients • Interact with postnatal patients for breast feeding and neonatal care • Formulate the breast feeding plan of neonate
2	**OBSTETRICS COMPLICATION** • **Antenatal** (APH, PROM, PPROM, preterm labour, domestic violence, nutritional deficiencies • **Postnatal Care** (PPH (primary and secondary)	• Evaluate the patient in antenatal , intrapartum and postpartum period according to risk category • Manage the patient in antenatal , intrapartum and postpartum obstetrics complication
3	**MEDICAL COMPLICATIONS** • Hematological disorders, (anemia, thrombocytopenia, DIC • Hypertensive disorder (PIH, preeclampsia, eclampsia) • Diabetes in pregnancy (type-I, II and GDM) • Drug abuse, medication in pregnancy	• Demonstrate understanding of physiological concepts in interpretation of clinical situation (scenario) and investigation
4	**OBSTETRICS PROCEDURES** • SVD, SVD with epi (along with scrubbing gloving gowning)	• Perform obstetrics procedures as per directed and checklist

Gynaecology

S No	Content (Gynae)	Learning Objectives
	BASIC GYNAECOLOGICAL CONCEPTS • Embryology of genital tract (normal and abnormal development) • Anatomy of pelvic and pelvic floor • Physiology of normal menstrual cycle • History taking, examination, investigations	**Resident will be able to** • Describe anatomy of pelvic floor, physiology and embryology of reproductive tract • Interact with different gynaecological patient
2	**PUBERTY AND MENSTRUAL DISORDERS** • Puberty and its disorders • Menarche, primary amenorrhea	• Differentiate all types of developmental problems and menstrual irregularities • Demonstrate the capabilities of dealing with patients of puberty and its disorders • Formulate management plan of patients with developmental disorder and menstrual problems
3	**EARLY PREGNANCY COMPLICATIONS** • Miscarriages • Ectopic	• Evaluate patient with early pregnancy complications • Demonstrate the understanding of problem in early pregnancy in terms of dealing with patients as per guidelines
4	**SUBFERTILITY AND CONTRACEPTION** • Contraception	• Interpret basic pathology of subfertility • Arrange different contraception options with their suitable criteria
5	**GYNAECOLOGICAL TUMORS** • Pelvic masses	• Establish the diagnosis of gynaecological tumor base on history examination and investigations • Defend the management plan of different pelvic tumor
6	**GYNAECOLOGICAL PROCEDURES** • ERPC, MVA, perspeculum examination (Papsmear, HVS) , wound care	• Demonstrate Gynaecological procedures as per directed and checklist

Specific leaning objective for second year

Obstetrics

SNO	Content (Obs)	Learning Objectives
1	**NORMAL OBSTETRICS** (content of first year included) • **Intrapartum** (diagnosis of labour, physiology of labour, fetal and pelvic dimension, mechanism of labour, management of labour, fetal monitoring, ability to differentiate between normal and abnormal fidings) • **Postnatal Care** (normal puerperium, breast feeding) • **Neonatolog**y (apgor score neonatal resuscitation, neonatal care, behavior of new born, immunization) • **Breast feeding** (breast feeding protocol, maternal and neonatal benefits of breast feeding)	**Resident will be able to** • Describe basic anatomy, physiology of pregnancy and fetal embryology • Demonstrate anatomical land marks during clinical examination and surgery • Demonstrate the capabilities of taking care of antenatal intrapartum and postnatal patients • Interact with postnatal patients for breast feeding and neonatal care • Formulate the breast feeding plan of neonate
2	**OBSTETRICS COMPLICATION** (content of first year included) • **Antenatal** (prolong pregnancy, induction of labour), IUD, IUGR, fetal abnormality, fetal abnormality, oligohydramnios, polyhydramnios, twin and higher order gestation, social, previous I scar • **Intrapartum** (abnormal labour, malposition, malpresentation, • **Postnatal Care** (PPH (puerperial pyrexia, thromboprophylaxis, early neonatal problem, problems with breast feeding)	• Evaluate the patient in antenatal , intrapartum and postpartum period according to risk category • Manage the patient in antenatal , intrapartum and postpartum obstetrics complication
3	**MEDICAL COMPLICATIONS** (content of first year included) • Hypertensive disorder (PIH, preeclampsia, eclampsia) • Diabetes in pregnancy (type-I, II and GDM) • Thyroid disorders (hypo and hyperthyroidism) • Liver disease (jaundice in pregnancy, cholostasis in pregnancy, AFLP) • Drug abuse, medication in pregnancy	• Demonstrate understanding of physiological concepts in interpretation of clinical situation (scenario) and investigation
4	**OBSTETRICS PROCEDURES** (content of first year included) • PPIUD**,** LSCS, CVS, amniocentesis, craniocentesis	• Perform obstetrics procedures as per directed and checklist

Specific leaning objective for second year

Gynaecology

SNO	Content (Gynae)	Learning Objectives
1	**BASIC GYNAECOLOGICAL CONCEPTS** (content of previous year included) • Sexual dysfunction, rape and sexual assault • Professionalism, ethics and statistic	**Resident will be able to** • Describe anatomy of pelvic floor, physiology and embryology of reproductive tract • Interact with different gynaecological patient
2	**PUBERTY AND MENSTRUAL DISORDERS** (content of previous year included) • Puberty and its disorders • Menarche, primary amenorrhea • Secondary amenorrhea, PCOD, endometrial and cervical causes of menstrual problems, medical conditions causing menstrual problems,	• Differentiate all types of developmental problems and menstrual irregularities • Demonstrate the capabilities of dealing with patients of puberty and its disorders Formulate management plan of patients with developmental disorder and menstrual problems
3	**EARLY PREGNANCY COMPLICATIONS** (content of previous year included) • Ectopic • GTD	• Evaluate patient with early pregnancy complications • Demonstrate the understanding of problem in early pregnancy in terms of dealing with patients as per guidelines
4	**GENITAL TRACT INFECTIONS** (content of previous year included) PID, STDs, chronic pelvic pain,)	
5	**SUBFERTILITY AND CONTRACEPTION** (content of previous year included) • Contraception	• Interpret basic pathology of subfertility Arrange different contraception options with their suitable criteria
6	**PELVIC FLOOR DYSFUNCTION** (content of previous year included) • Female genital mutilation	
7	**GYNAECOLOGICAL TUMORS** (content of previous year included) • Pelvic masses • Benign conditions of ovary, uterus, cervix, vulva and vagina	• Establish the diagnosis of gynaecological tumor base on history examination and investigations Defend the management plan of different pelvic tumor
8	**GYNAECOLOGICAL PROCEDURES** (content of previous year included) • PPIUCD, implanon, wound care and debridement, diagnostic dilatation and curettage, Pipelle / Mirena insertion, Pap smear	• Demonstrate Gynaecological procedures as per directed and checklist

Specific leaning objective for third year

Obstetrics

S No	Content	Learning Objectives
1	**NORMAL OBSTETRICS** (content of first and second year)	**Resident will be able to** • Describe basic anatomy, physiology of pregnancy and fetal embryology • Demonstrate the capabilities of taking care of antenatal intrapartum and postnatal patients
2	**OBSTETRICS COMPLICATION** • **Antenatal** (pregnancy with fibroid, pregnancy with placenta previa, content of first and second year included) • **Intrapartum** (Fetal distress, cord prolapse, instrumental delivery, still birth • **Postnatal Care** (PPH (Puerperial pyrexia, thromboprophylaxis, psychological disorder, DVT, early neonatal problem, problems with breast feeding)	• Evaluate the patient in antenatal , intrapartum and postpartum period according to risk category • Manage the patient in antenatal , intrapartum and postpartum obstetrics complication • Interact with postnatal patients for breast feeding and neonatal care • Formulate the breast feeding plan of neonate
3	**MEDICAL COMPLICATIONS** (content of first and second year included) • Diabetes in pregnancy (type-I, II and GDM) • Thyroid disorders (hypo and hyperthyroidism) • Liver disease (jaundice in pregnancy, cholostasis in pregnancy, AFLP) • Connective tissue disorders (APLS, SLE) • Neurological disorders, respiratory problems, • Renal disorder and skin disorder)	• Demonstrate understanding of physiological concepts in interpretation of clinical situation (scenario) and investigation
4	**OBSTETRICS PROCEDURES** (content of first and second year included) • Instrumental delivery**,** LSCS, CVS, amniocentesis, craniocentesis, ECV/ IPV, breach delivery, shoulder dystochia, PPH exploration (vaginal and cervical tear repair, ballon tymponade, uterine artery ligation, B-lynch)	• Perform obstetrics procedures as per directed and checklist

Specific leaning objective for third year

Gynaecology

S No	Content	Learning Objectives
1	**BASIC GYNAECOLOGICAL CONCEPTS** • Sexual dysfunction, rape and sexual assault • Professionalism, ethics and statistic **PUBERTY AND MENSTRUAL DISORDERS** • Primary amenorrhea • Secondary amenorrhea, PCOD, endometrial and cervical causes of menstrual problems, medical conditions causing menstrual problems, Menopause, HRT)	**Resident will be able to** • Differentiate all types of developmental problems and menstrual irregularities • Demonstrate the capabilities of dealing with patients of puberty and its disorders • Formulate management plan of patients with developmental disorder and menstrual problems
2	**EARLY PREGNANCY COMPLICATIONS** • GTD **GENITAL TRACT INFECTIONS** • PID, STDs, chronic pelvic pain,)	• Evaluate patient with early pregnancy complications • Demonstrate the understanding of problem in early pregnancy in terms of dealing with patients as per guidelines
3	**SUBFERTILITY AND CONTRACEPTION** • Primary and secondary subfertility (endometriosis) • Treatment of subfertility, assisted reproduction **PELVIC FLOOR DYSFUNCTION** • Urinary incontinence UV fistula) • Female genital mutilation	• Interpret basic pathology of subfertility Arrange different contraception options with their suitable criteria
4	**GYNAECOLOGICAL TUMORS** • Benign conditions of ovary, uterus, cervix, vulva and vagina • Malignant conditions of ovary, uterus, cervix, vulva and vagina	• Establish the diagnosis of gynaecological tumor base on history examination and investigations • Defend the management plan of different pelvic tumor
5	**GYNAECOLOGICAL PROCEDURES** • Diagnostic dilatation and curettage, Colposcopy, Pipelle / Mirena insertion, EUA/ Polypectomy, TAH/Laparotomy, Diagnostic laparoscopy, Vaginal hysterectomy, Hysteroscopic guided biopsy, Perineal repair, Suction evacuation, Marsuplization, hymenctomy, Myomectomy as assistant	• Demonstrate Gynaecological procedures as per directed and checklist

Specific leaning objective for fourth year

Obstetrics

S No	Content	Learning Objectives
1	**NORMAL OBSTETRICS** (content of first, second and third year included)	**Resident will be able to** • Describe basic anatomy, physiology of pregnancy and fetal embryology • Demonstrate the capabilities of taking care of antenatal intrapartum and postnatal patients
2	**OBSTETRICS COMPLICATION** • **Antenatal** (content of first, second and third year included, pregnancy with placenta previa, Rh incompatibilty) • **Intrapartum** (Fetal distress, instrumental delivery, still birth • **Postnatal Care** (Thromboprophylaxis, psychological disorder, DVT, problem, problems)	• Evaluate the patient in antenatal , intrapartum and postpartum period according to risk category • Manage the patient in antenatal , intrapartum and postpartum obstetrics complication • Interact with postnatal patients for breast feeding and neonatal care • Formulate the breast feeding plan of neonate
3	**MEDICAL COMPLICATIONS** (content of first, second and third year included) • Cardiac disease in pregnancy • Connective tissue disorders (APLS, SLE) • Neurological disorders, respiratory problems, • Renal disorder and skin disorder)	• Demonstrate understanding of physiological concepts in interpretation of clinical situation (scenario) and investigation
4	**OBSTETRICS PROCEDURES** • ECV/ IPV, breach delivery, shoulder dystochia, PPH exploration (vaginal and cervical tear repair, ballon tymponade, uterine artery ligation, B-lynch))	• Perform obstetrics procedures as per directed and checklist

Specific leaning objective for fourth year

Gynaecology

S No	Content	Learning Objectives
1	**PUBERTY AND MENSTRUAL DISORDERS** • Menarche, primary and amenorrhea • Menopause, HRT) **SUBFERTILITY AND CONTRACEPTION** • Primary and secondary subfertility (endometriosis) Treatment of subfertility, assisted reproduction	**Resident will be able to** • Differentiate all types of developmental problems and menstrual irregularities • Demonstrate the capabilities of dealing with patients of puberty and its disorders Formulate management plan of patients with developmental disorder and menstrual problems
2	**PELVIC FLOOR DYSFUNCTION** • Pelvic organ prolaps • Urinary incontinence UV fistula)	• Evaluate the basics anatomical defects and pathological events leading to different pelvic floor dysfunctions • describe different treatment options based on their clinical findings and detailed evaluation
3	**GYNAECOLOGICAL TUMORS** • Malignant conditions of ovary, uterus, cervix, vulva and vagina	• Establish the diagnosis of gynaecological tumor base on history examination and investigations • Defend the management plan of different pelvic tumor
4	**GYNAECOLOGICAL PROCEDURES** • IUI, ring pessary insertion, diagnostic dilatation and curettage, Mirena insertion, EUA/ Polypectomy, TAH / Laparotomy, Diagnostic laparoscopy, Vaginal hysterectomy, Hysteroscopic guided biopsy, Perineal repair, Marsuplization, hymenctomy Myomectomy as assistant	• Demonstrate Gynaecological procedures as per directed and checklist

SECTION – III

RESEARCH & THESIS WRITING

Total of one year will be allocated for work on a research project with thesis writing. Project must be completed and thesis be submitted before the end of training. Research can be done as one block in 4th year of training or it can be stretched over four years of training in the form of regular periodic rotations during the course as long as total research time is equivalent to one calendar year.

Research Experience

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

Clinical Research

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

Research design
Research involving human subjects including informed consent and operations of the Institutional Review Board and ethics of human experimentation

Data collection and data analysis
Research ethics and honesty
Peer review process
This usually is done during the consultation and outpatient clinic rotations

Case Studies or Literature Reviews

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

Laboratory Research

Bench Research

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

SECTION – IV

CURRICULUM OF RESEARCH & MANDATORY WORKSHOPS

INTRODUCTION

With advent of Evidence Based Practice over last two to three decades in medical science, merging the best research **evidence** with good clinical expertise and patient values is inevitable in decision making process for patient care. Therefore apart from receiving per excellence knowledge of the essential principles of medicine and necessary skills of clinical procedures, the trainees should also be well versed and skillful in research methodologies. So the training in research being imperative is integrated longitudinally in all four year's training tenure of the trainees.

The purpose of the research training is to provide optimal knowledge and skills regarding research methods and critical appraisal. The expected outcome of this training is to make trainees dexterous and proficient to practically conduct quality research through amalgamation of their knowledge, skills and practice in research methodologies.

ORIENTATION SESSION FOR POST GRADUATE TRAINEES:

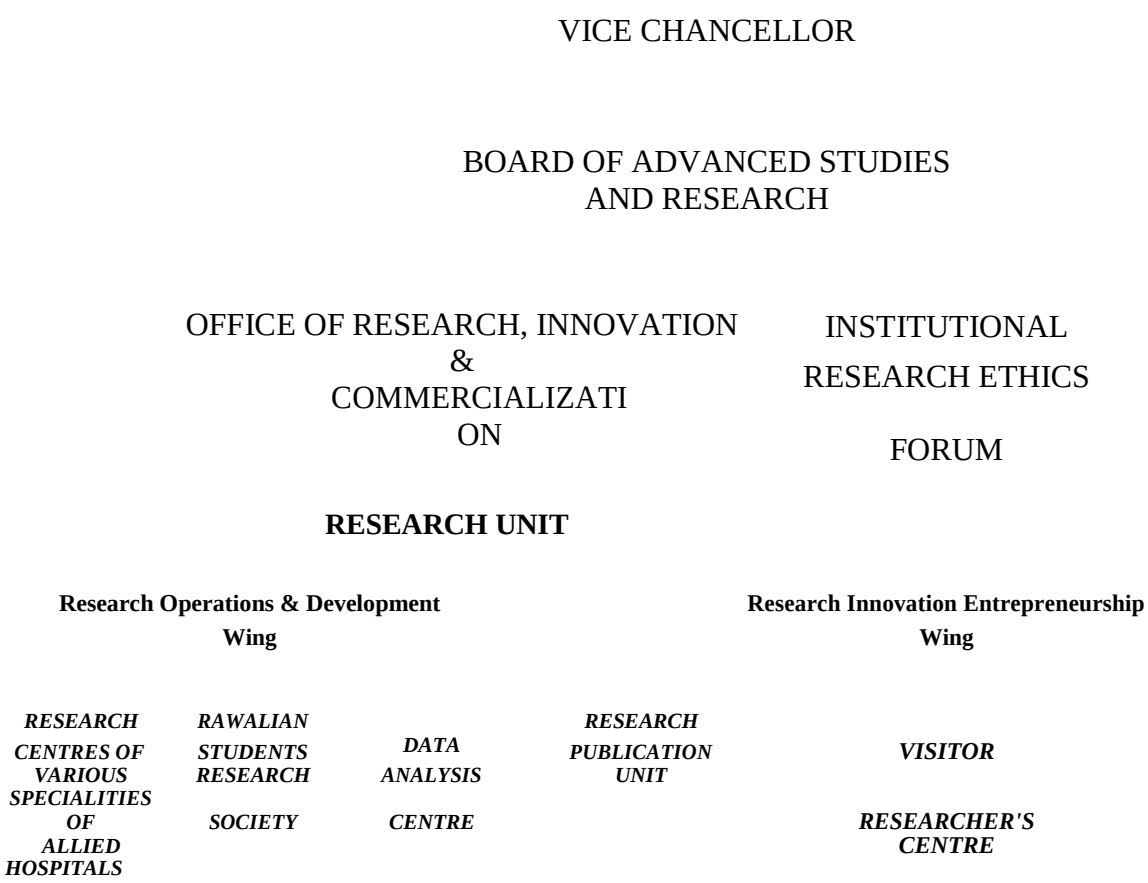
At the beginning of the research course, an orientation session or an introductory session of one hour duration will be held, organized by Director, Deputy Directors of ORIC (Office of Research Commercialization and Innovation) of RMU to make trainees acquainted to the research courses during four years post graduate training, the schedule of all scholarly and academic activities related to research and the assessment procedures.

Trainees will also be introduced to all the facilitators of the course, organizational structure of ORIC (Annexure 1) and the terms of references of corresponding authorities (Annexure 2) for any further information and facilitation.

All the curriculum details and materials for assistance and guidance will be provided to trainees during the orientation session.

The research model of RMU as given in Figure 1 and will be introduced to the newly inducted trainees of RMU.

figure 1.MODEL OF RESEARCH AT RAWALPINDI MEDICAL UNIVERSITY



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

RESEARCH COURSE OF FIRST POST GRAUDATION TRAINING YEAR R-Y1

PURPOSE OF R-Y1 RESEARCH COURSE:

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

LEARNING OUTCOMES OF R-Y1 RESEARCH COURSE

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

Discuss the value of research in health service in helping to solve priority problems in a local context.

Identify, analyse and describe a research problem

Review relevant literature and other available information

Formulate research question, aim, purpose and objectives

Identify study variables and type

Develop an appropriate research methodology

Identify appropriate setting and site for a study

Calculate minimally required sample size for a study.

Identify sampling technique, inclusion and exclusion criteria

Formulate appropriate data collection tools according to techniques

Formulate data collection procedure according to techniques

Pre-test data collection tools

Identify appropriate plan for data analysis

Prepare of a project plan for the study through work plans and Gantt charts

Identify resources required for research and means of resources

Prepare a realistic study budget in accordance with the work plan.

Critically appraise a research paper of any national or international journal.

Present research papers published in various national and international journals at journal club.

Prepare a research proposal independently.

Develop a strategy for dissemination and utilization of research results.

Familiarization with application Performa for submission of a research proposal to BSAR or IRF.

Familiarization with format of presentations and procedure of presentation and defence of a research proposal to BSAR or IRF.

Familiarization with the supervisor, nominated by the Dean and to develop a harmonious rapport with supervisor.

RESEARCH COURSE OF FIRST TRAINING YEAR

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

A. TEACHING SESSIONS:

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

Didactic lectures through power-point presentations.

On spot individual exercises.

On spot group exercises.

Take home individual assignment

Take home group assignment.

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

Format of teaching sessions:

During year 1 i.e. R-Y1, 23 teaching sessions in total will be taken, with an average of three sessions per month. Each session will comprise of a didactic lecture delivered initially, to attain the mentioned learning outcomes.

Each didactic lecture will be of 30 minutes' duration using the power-point medium that will be followed by a 30 minutes on spot individual or group exercises of trainees during the same session.

By the end of each session, a take home individual task/assignment will be given to trainees, either individually or in groups, that will be duly evaluated and marked each month.

Course content of teaching sessions:

The course materials will be based on an updated modified version of course titled as "Designing Health Services Research (Basic)" that was developed in collaboration of Rawalpindi Medical College & Nuffield Institute for Health, University of Leeds, UK based adapted from "Designing and Conducting Health Systems Research Projects" by CM. Varkevisser KIT Publishers, Amsterdam (International Development Research Centre) in association with WHO Regional Office for Africa.

The trainees will be provided hard copies as well as soft copies of the course content in a folder at the initiation of the course.

In addition to it they will be provided various soft copies and links of updated and good resource materials regarding research by the course facilitators.

Curriculum of teaching sessions:

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

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

SESSIONS & TIMINGS	***TEACHING STRATEGY***	***TOPIC OF SESSION***	***SESSION OBJECTIVES i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;***
SESSION 1 WEEK 1 Month 1 SESSION 2	Lecture through power point presentation followed by both individual exercise & Group exercise Lecture through power	Introduction to health systems research Identifying and Prioritizing Research Problems Analysis and statement	Describe the purpose, scope and characteristics of health systems research Identify criteria for selecting health-related problems to be given priority in research □ Analyze a selected problem and the factors

WEEK 2 Month 1	point presentation followed by Individual exercise	of problem & Introduction to Literature review	influencing it and understand how to prepare the statement of the problem for research. Describe the reasons for reviewing available literature and other information for preparation of a research. Identify the resources that are available for carrying out such a review.
SESSION 3 WEEK 3 Month 1	Lecture through power point presentation followed by Individual exercise & Take home assignment	Literature review Referencing systems; Vancouver & Harvard referencing systems	Describe the methods for reviewing available literature and other information for preparation of a research. Should be familiar with referencing systems and its importance. Use Vancouver and Harvard referencing systems and should be able to differentiate between them.

SESSIONS & TIMINGS	***TEACHING STRATEGY***	***TOPIC OF SESSION***	***SESSION OBJECTIVES i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;***
SESSION 4 WEEK 1 Month 2	Lecture through power point presentation followed by Individual exercise & Take home assignment	Literature review Referencing managing systems	□ Describe the methods for reviewing available literature and other information for preparation of a research. Should be familiar with use and importance of reference managing systems; Endnote & Mendeley.
SESSION 5 WEEK 2 Month 2	Lecture through power point presentation followed by Individual exercise & Take home assignment	Plagiarism	Use the literature review and other information pertaining to a research topic that will adequately describe the context of study and strengthen the statement of the problem. Describe the significance and necessity of plagiarism detection Use online plagiarism detection tools and turn-it-in for detecting plagiarism through assessment of originality scores/similarity index for plagiarism
SESSION 6 WEEK 3 Month 2	Lecture through power point presentation followed by Individual exercise	Formulation of research objectives	State the reasons for writing objectives for a research project. Define and describe the difference between general and specific objectives. Define the characteristics of research objectives.

Prepare research objectives in an appropriate format.

Develop further research questions, and

SESSION 7	Lecture through power	Formulation of
WEEK 4	point presentation	Hypothesis for a
Month 2	followed by Individual	research
	Assignment	

research hypotheses, if appropriate for study.

SESSIONS & TIMINGS	*TEACHING STRATEGY*	*TOPIC OF SESSION*	*SESSION OBJECTIVES i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;*
			State the reasons and scenario for formull2ating research hypothesis. Define and describe the types difference between one sided and two sided hypothesis. Formulate Null hypothesis and Alternate hypothesis in an appropriate format. Identify importance of hypothesis testing and to identify type I & type II errors.
SESSION 8 WEEK 1 Month 3	Lecture through power point presentation followed by a group exercise.	Research methodology; Variables and Indicators	Define what study variables are and describe why their selection is important in research. State the difference between numerical and categorical variables and define the types of scales of measurement.

Discuss the difference between dependent and independent variables and how they are used in

			research designs. Identify the variables that will be measured in a research project and development of operational definitions with indicators for those variables that cannot be measured directly.
SESSIONS	***TEACHING STRATEGY***	***TOPIC OF SESSION***	***SESSION OBJECTIVES***
& ***TIMINGS***			***i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;***
SESSION 9 WEEK 2 Month 3	Lecture through power point presentation followed by a group exercise.	Research methodology; Study types	Describe the study types mostly used in HSR. Define the uses and limitations of each study type. Describe how the study design can influence the validity and reliability of the study results. Identify the most appropriate study design for a study.
SESSION 10 WEEK 1 Month 4	Lecture through power point presentation	Data collection techniques	Describe various data collection techniques and state their uses and limitations. Advantageously use a combination of different data collection techniques. Identify various sources of bias in data collection and ways of preventing bias.

			• Identify ethical issues involved in the implementation of research and ways of ensuring that informants or subjects are not harmed. • Identify appropriate data-collection techniques.
SESSION 11 WEEK 2 Month 4	Lecture through power point presentation	Data collection tools	• Prepare data-collection tools that cover all important variables.
SESSIONS & TIMINGS	***TEACHING STRATEGY***	***TOPIC OF SESSION***	***SESSION OBJECTIVES i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;***
SESSION 12 WEEK 1 Month 5	Lecture through power point presentation	Sampling	• Identify and define the population(s) to be studied • Describe common methods of sampling. • Decide on the sampling method(s) most appropriate for a research design.
SESSION 13 WEEK 2	Lecture through power point presentation	Sampling	• List the issues to consider when deciding on sample size.

Month 5	Group exercises		Calculate minimally required sample size according to study designs Use WHO's (World Health Organization's) sample size calculator. Decide on the sample size(s) most appropriate for a research design.
SESSION 14 WEEK 3 Month 5	Lecture through power point presentation	Plan for Data Entry , storage and Statistical Analysis	Identify and discuss the most important points to be considered when starting to plan for data collection. Determine what resources are available and needed to carry out data collection for study. Have knowledge of resources, available for data recording, storage and to carry out data analysis of a study? Describe typical problems that may arise during data collection and how they may be solved. Identify important issues related to sorting, quality control, and processing of data.

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

Describe the characteristics and purposes of various project planning and scheduling techniques such as work scheduling & GANTT charting.

			• Determine the various tasks and the staff needed for a research project and justify any additional staff (research assistants, supervisors) apart from the research team, their recruitment procedure, training and supervision. • Prepare a work schedule, GANTT chart and staffing plan for the project proposal.
SESSIO;NS & TIMINGS	***TEACHING STRATEGY***	***TOPIC OF SESSION***	***SESSION OBJECTIVES i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;***
SESSION 17 WEEK 3 Month 6	Lecture through power point presentation and individual exercises	Budgeting for a study	• Identify major categories for a budget. • Make reasonable estimates of the expenses in various budget categories. • List various ways a budget can be reduced, if necessary, without substantially damaging a project. • Prepare a realistic and appropriate budget for the project proposal
SESSION 18 WEEK 1	Lecture through power point presentation.	• Project administration • Plan for	• List the responsibilities of the team leader and project administrator related to the administration

Month 7	dissemination	and monitoring of a research project.

		• Research ethics & concepts of protection of human study	Prepare a brief plan for administration and monitoring of a project. Identify the ethical considerations mandatory during execution of a research project and their importance. Prepare a plan for actively disseminating and fostering the utilization of results for a research the project proposal.
SESSION 19 WEEK 2 Month 7	Lecture through power point presentation communications, case reports, systematic reviews and meta-analysis	Differences between articles, short	Differentiate between original articles, short communications, case reports, systematic reviews and meta-analysis
SESSIONS & TIMINGS	***TEACHING STRATEGY***	***TOPIC OF SESSION***	***SESSION OBJECTIVES i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;***
SESSION 20 WEEK 3	Lecture through power point presentation and	Writing a Case report	• Identify important components of a good case report. • Formulate a quality case report of any rare case

Month 7	group exercises		presented in the clinical unit during the training period
SESSION 21 WEEK 1 Month 8	Lecture through power point presentation and group exercises	Undertaking a clinical audit.	Identify Clinical audit as an essential and integral part of clinical governance. Differentiate between research and clinical audit. Identify types of Clinical Audit Understand steps of process of Clinical Audit
SESSION 22 WEEK 2 Month 8	Lecture through power point presentation and group project	Critical Appraisal of a research paper	Identify the importance and purpose of critical appraisal of research papers or articles. Have ample knowledge of important steps of critical appraisal Can effectively critically appraise a research paper published in any national or international journal.
SESSION 23 WEEK 3 Month 8	Lecture through power point presentation and individual exercises	• Making effective power-point presentations • Making effective poster presentations • Presenting a research paper	Determine various tips for making effective power-point presentations. Determine various tips for making effective poster and its presentations. Identify important components of research paper that essentially should be communicated in a presentation. Can effectively and confidently make a power-point presentation of a research paper published in any national or international

SESSIONS & TIMINGS	***TEACHING STRATEGY***	***TOPIC OF SESSION***	***SESSION OBJECTIVES i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;***
			journal. Can formulate a poster of a research paper published in any national or international journal.

Minimal Attendance of teaching sessions:

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

Assessment of Trainees for teaching sessions:

For didactic lectures, the learning and knowledge of the trainees will be assessed during the end of year examination or Annual Research Paper.

One examination paper of Research of R-Y1 will be taken that will comprise of 75 marks in total and will consist of two sections. Section one will be of 50 marks in total and will comprise of 25 MCQ's (multiple choice questions) while section two will comprise of 5 SAQ's (Short answer questions) and Problems/Conceptual questions.

Total duration of the paper will be 90 minutes.

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

Assessment of individual and group exercises:

The quality, correctness and completeness of the individual as well as group exercises will be assessed during the teaching sessions, when they will be presented by the end of each session by trainees either individually or in groups respectively.

The mode of presentations will be oral using media of charts, flip charts & white boards.

There will be no scores or marks specified for the individual or group exercises but the feedback of evaluation by the facilitators will be on spot by end of presentations.

The correctness, quality and completeness of the individual or group exercises will be determined once these will be submitted after completion to the facilitators after period specified for each task. Assignments should be submitted in electronic version and no manually written assignment will be accepted.

Each assignment will be checked for plagiarism through turn-it-in soft ware. Any assignment that will have originality score less than 90% or similarity index more than 10% will be returned back to trainees for rephrasing and resubmission.

Assignments will be assessed and checked during the sessions and will be scored by the facilitators who had taken the session.

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

PARTICIPATION IN JOURNAL CLUB SESSIONS

The journal club of every department will comprise of an academic meeting of the head of department, faculty members, trainees and internees at departmental level.

The purpose of journal club will be to collectively attempt to seek new knowledge through awareness of current and recent research findings and also to explore best current clinical research and means of its implementation and utilization.

6Apart from the teaching sessions of the trainees should attend the journal club sessions of the departments and should attempt to actively participate in them too.

One journal club meeting must be organized in the department in every two months of the year and its attendance by the trainees will be mandatory.

The journal club meeting will be chaired by the Dean of specialty.

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

Format of Journal Club Meetings:

In a journal club meeting, one or two research paper/s published in an indexed national or international journal, selected by the Dean of the department will be presented by year 2 trainees; R-Y2 trainees.

The research paper will be presented through power-point and the critical appraisal of the paper will follow it.

The topic will also be discussed in comparison to other evidences available according to the latest research.

The year one trainee i.e. R-Y1 trainee will only participate in the journal club and will not present during first year of training. He/she will be informed regarding the selected paper one and a half month prior to the meeting and should do extensive literature search on the topic and also of the research paper that will be presented in meeting.

The trainees should actively participate in question & answer session of the journal club meeting that will be carried out following the presentation of the critical appraisal of the research paper. It will be compulsion for each R1 trainee to ask at least one question or make at least one comment relevant to the topic and/or the research paper, during the journal club meeting.

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

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

Assessment of Trainees for Journal Club sessions:

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

OBSERVATION OF MONTHLY MEETING OF INSTITUTIONAL RESEARCH FORUM (IRF) OF RMU

In order to provide exposure to R-Y1 trainees regarding standard operational procedures and protocols of the research activities of Rawalpindi Medical University, each R-Y1 trainee should attend at least two monthly meetings of the Institutional Research Ethics Committee of RMU and should observe the proceedings of the meeting.

He/she will be informed by the research associates of ORIC about the standard procedures of application to IRF step wise including guidance regarding how an applicant should access the RMU website and download the application Performa and then how to electronically fill it in for final submission. They will also be provided format of presentation for their future presentations at IRF meetings.

Minimal Attendance of IRF meetings by R-Y1 trainee:

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

Assessment of Trainees for participation in the IRF meetings:

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

NOMINATION OF THE SUPERVISOR OF THE TRAINEE FOR THE DISSERTATION PROJECT

During the first year of training, the supervisor of each trainee must be nominated within first six months. The Dean of the specialty will decide the nomination of the supervisor for the post graduate trainee as well as MS scholars.

A meeting will be held in the middle of the year, in June preferably, that will be attended by all heads of the departments and the Dean. The list of all the first year trainees and the available supervisors in each department will be presented by respective heads of each department in meeting. All of the eligible trainees and supervisors will also be around for brief interviews during the meeting.

The head of departments, prior to interviews of the trainees and supervisors, will inform the Dean in the meeting, their own personal observation of the level of performance, talent personality and temperament of both the trainees and the supervisors. Based on their consideration of the compatibility of both eligible trainees and the supervisors, Head of departments (HOD's) will recommend or propose most suitable supervisors for each trainee after eloquent discussions and justifications.

The Dean will then call each trainee individually to inform him/her the suggested Supervisor for him/her and will also give right and time for objection or reservation in nomination, if any. The Dean will seek the trainee's final consent and then after asking the trainee to leave the meeting room, will call the supervisor for final consent.

If the supervisor will also be willing to happily supervise the trainee, then the Dean will finally approve the nomination.

A tentative list will be issued by the office of the Dean, within three days of the meeting, copied to the HOD's and the trainees and supervisors.

Both the trainees and the supervisors will be given two weeks to challenge the nominations, in case either of the two have any qualms or objections regarding the nominations. They will also be given right to personally approach the Dean for any request for change. In case of any objection, the Dean will make changes in consultation with the HOD's, after final consent and satisfaction of both trainee and supervisor

The final revised list of nominations will be then issued by the office of Dean and will be sent to the Board of Advanced studies and Research of RMU (BSAR).

The Board of Advanced studies and Research of RMU will issue final approval of the list and the Vice chancellor will endorse the nominations as final authority.

During the last few months of the first year of training, the trainees and supervisors will be advised by the Dean, to get familiar with each other and try to identify their abilities to efficiently and successfully work together as a team, especially during the project of Clinical Audit, mentioned in next section.

In case of any issues, either of both will have right to request any change in nomination to the Dean, till last week of first year of training. The Dean will then consider the case and will seek modification in nomination from the BSAR.

After completion of first year of training, no substitution in nomination will be allowed. In case of any serious incompatibility between the trainee and the supervisor, the issue will be brought to the Vice chancellor directly by the Dean as a special case, who will make the final decision accordingly, as the final authority.

As regards the MS scholars, the external supervisors will also be nominated and those nominations will be made by Vice chancellor of RMU in consultation with the Dean of specialty. The consent of the trainees and supervisors will follow the same protocol as specified above and the final list of nominations will then be submitted to BSAR for final approval.

After finalization of nominations a letter of agreement of supervision will be submitted by the trainee to the office of Dean, including consent and endorsement of both trainee and the internal and/or external supervisor, with copies to HOD, ORIC and BSAR.

The supervisor and the trainee will be bound to meet on weekly basis exclusively for research activity with documented record of the activity done during the meeting in the log book.

UNDERTAKING A CLINICAL AUDIT PROJECT

During ninth month of training year 1; R-Y1 the head of department will form groups of trainees, either two or three trainees in one group (along with each supervisor of each trainee), depending on the total number of trainees available in that respective first year.

These groups will undertake clinical audits on various aspects of the department as a project assignment, on one topic assigned to each group by the Dean and Heads of Departments.

If the group will compromise of two trainees and their supervisors' then there will be four group members in that group and if three trainees in one group, then there will be six members of that group after inclusion of their supervisors.

The trainees during session 21 conducted in first week of eighth month of training R-Y1, will already have been taught how to undertake a clinical audit and this task of undertaking a clinical audit will be assigned to them as its group project. This project will also provide the trainees and the supervisors an opportunity to work closely and will help them understand and foresee their group dynamics for future dissertations.

The clinical audits completed in groups will be published as Annual Audit Reports of the departments by the Dean and HOD's and each member of the group will be acknowledged as author in the Annual Audit reports or if also published in any research journal.

The clinical audit will also be presented in weekly Clinico-pathological conferences (CPC) of the University, if approved by the Dean. The presentation will be supervised by HOD.

The contribution of the post graduate trainees'/ MS trainees in audits will be qualitatively assessed by the supervisors and the head of departments.

MONITORING OF RESEARCH COURSE OF YEAR 1

All the concerned faculty members, at department, research units of specialties (including supervisors, senior faculty members and Head of Department) and the Deputy Directors and Director at the Office of Research Innovation & Commercialization of RMU will keep vigilant and continuous monitoring of all the academic activities of each trainee.

There will be a separate section of research in Structured Log books of trainees and also section of Research in portfolio record of the trainees specific to research component of the training that will be regularly observed, monitored and endorsed by all the concerned faculty members, supervisor and facilitators. The Log and portfolio for the research curriculum of each training year will be entered separately.

The Structured Research section in Log books specific to research curriculum of training year 1 will include the record of attendance of all the teaching sessions of the trainee that will be monthly updated and endorsed by the Department of Medical Education (DME) of RMU.

There will also be submission record and scores attained for the individual and group assignments of the trainees, endorsed by the facilitators of ORIC including Deputy Directors and Research Associates.

The log books will also include the attendance of the trainees in the Journal club sessions of the department and with qualitative assessment of the trainee regarding any active participation of the trainee during the journal club. It will specifically mention whether any question or comment was raised by the trainee during each journal club session. This information will be endorsed by the supervisor of the trainee and the Head of Department.

The attendance record of the trainees in the monthly meetings of the Institutional Research Forum (IRF) of RMU will also be part of the Log Book that will be endorsed by the convener of the IRF by the end of each attended meeting.

The HOD will monitor the weekly meetings through observation of the documented record of meetings in log books by the end of every month.

The result of the annual research paper of R-Y1 will be entered in the Log books and will be endorsed by Deputy Directors and Research Associates of ORIC.

The research portfolio of the trainee R-Y1 will be qualitative and quantitative self assessment of the trainee in narrative form. It will also include the individual assessment of the objectives and aims defined by the trainee during the year and elaboration of the extent of attainment of these. The trainee will be able to specify his/her achievements or knowledge gained in any aspect of research that was not even formally part of the research curriculum. It will include reporting of any research courses, online or physically attended by the trainee, contribution in any research paper or publication, any participation and/or presentation in any research conference, competition etc during year R-Y1.

The research portfolio will assist the trainees to reinforce the importance of strategic thinking as a way to understand their context and look to the future. By having a recorded insight of the individual achievements, weaknesses and strengths, the trainee will be able to maximize his/her talent and potential of all the activities and projects of research with an aim of further progression in career development.

OVERALL ASSESSMENT OF PERFORMACE OF TRAINEES FOR YEAR 1

Quantitative assessment of the performance and accomplishment of trainees will be done in an unbiased, impartial and equitable manner by the supervisor, ORIC department and the senior faculty members at the department.

The assessment of trainees will not only serve as an effective tool for evaluation of the extent and quality of knowledge gained and skills learnt by trainees but it will also effectively provide an evidence of the level of standards of teaching and training by the facilitators, supervisor and the faculty members.

For annual assessment of every trainee 75 marks of Annual Research Paper of R-Y1 will be included, while 25 marks will be included from the home tasks assignments. The 50 marks of the home task assignments will be converted to 25 marks, to get an aggregate of 100 total marks. Out of these 100 total marks, 40% will be passing marks of this Research course and in case of failure in it, second attempt will be allowed to the trainees and if any one fails in second attempt too then he/she should appear next year with next batch's first attempt.

EVALUATION/ FEEDBACK OF RESEARCH COURSE OF YEAR 1

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

The feedback of trainees will include structured evaluation of each teaching session through structured and anonymous feedback forms/questionnaire that will be regularly distributed amongst the trainees. Anonymity will ensure an honest and unbiased response. They will be requested to provide their feedback regarding various aspects of teaching sessions eg content, medium used, facilitators performance and knowledge, extent of objectives attained etc through Likert scale. They will mark, through their personal choice without any pressure or peer consultation, one particular category amongst five scales specified ranging from 1-5, I representing the poorest quality while 5 representing excellence. Apart from this structured assessment,

open ended questions will also include an in depth perspective and insight. Similarly, an overall feedback questionnaire will also be rotated amongst trainees.

The feedback of trainers will include structured evaluation of each teaching session by the facilitators, supervisors and senior faculty members involved in the Research training course. They will provide their feedback through structured and anonymous feedback forms/questionnaire, including closed and partially closed questions that will be regularly provided by them. They will provide their inputs and opinions regarding effectiveness of the course contents, curriculum, teaching methodologies, teaching aids and technologies, content and usefulness of the exercises and assessments etc.

Three focus group discussions; oneof the R-Y1 trainees, second of the facilitators and third of the supervisors will also be organized by the ORIC to evaluate the research course, its benefits and weaknesses and scope for improvement.

The research portfolio will be checked and endorsed by the supervisor and the Director of ORIC.

A final evaluation report of the Research Course R-Y1 will be formulated and compiled by the ORIC of RMU. The report will be presented all concerned stake holders, since the course evaluations will play a significant role in curriculum modification and planning.

I.QUALITY ASSURANCE OF RESEARCH COURSE OF YEAR 1

The final quality evaluation report along with all the feedback material, randomly selected log books, research portfolios, submitted individual & groups assessments and randomly selected annual research course examination papers will be observed by an evaluation team of Research course. The quality evaluation team of research course will include the Head of departments, Deans, selected representatives of BSAR, IRF, Director DME (Department of Medical Education), Director of ORIC, Director of Quality enhancement cell (QEC) and Vice chancellor of RMU, individually. The selection of representatives of the concerned departments will be made by the Vice chancellor of RMU.

All the materials will be observed and evaluated by the above mentioned once during the course and finally by the end of course year.

The evaluation during the year will be done at any random occasion by members of evaluation teams individually or in teams and will be done without any prior information to the trainees and trainers.

The evaluation will include not only physical observation of the materials but the evaluators may also make a visit to observe any proceedings or activities of the research course e.g. a lecture, a group exercise, a journal club session and/or an IRF meeting.

ORIC will be responsible for submission of the evaluation content to all including a copy to the Quality Enhancement Cell (QEC) of RMU for internal evaluation.

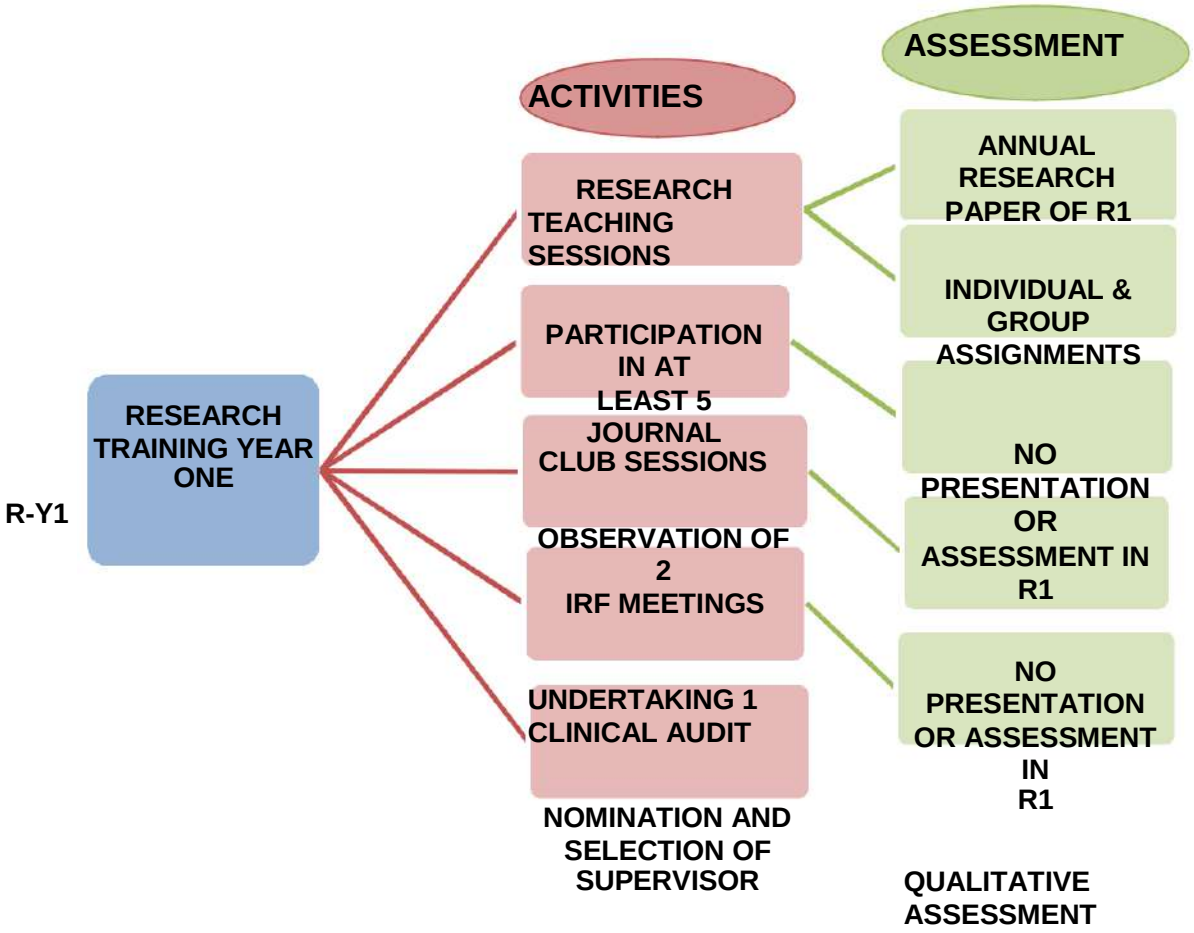
The QEC will organize an external evaluation too through involvement of a third party that may include members of Quality assurance department of Higher Education Department based on their availability.

An annual meeting of the quality assessment and enhancement will also be organized by the Quality Enhancement Cell of RMU, including representatives of supervisors, Head of Departments, Dean, representative members of BSAR, ORIC, DME, QEC & IRF and will be chaired by Vice chancellor. During the meeting all participants will review and discuss all the evaluation material. The quality evaluation team will also share their experiences of their evaluation visits and observations to validate the existing materials.

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

The activities related to research training of post graduate trainees is also displayed in figure 1. Successful completion of above mentioned requirements of research course is one component of the all clinical and scholarly requirements for mandatory advancement to the next Post Graduate Year level i.e. year 2 training year or R-Y2.

Figure 3. A FLOW CHART OF RESEARCH ACTIVITIES OF R-Y1 POST GRADUATE/MS TRAINEE OF RMU AND THEIR ASSESSMENT



RESEARCH COURSE OF SECOND POST GRAUDATION TRAINING YEAR R-Y2

PURPOSE OF R-Y2 RESEARCH COURSE:

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

LEARNING OUTCOMES OF R-Y2 RESEARCH COURSE

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

Identify and define the basic concepts of Epidemiological measures and biostatistics.

Formulate and pretest to finalize all the data collection tools for the research projects

Identify and execute proficiently all procedures required for data analysis and interpretation.

Analyze and interpret the data collected for a research project and draw conclusions related to the objectives of study.

Write a clear and concise research report (paper for a peer reviewed journal/dissertation) and a summary of the major findings and recommendations for each of the different parties interested in the results.

Present the major findings and the recommendations of a study to policy-makers managers and other stakeholders to finalize the recommendations.

Prepare a plan of action for the dissemination, communication and utilization of the findings and (if required) make recommendations for additional future research.

Critically appraise a research paper of any national or international journal.

Present research papers published in various national and international journals at journal club.

Prepare final draft of the research proposal of the Dissertation project, requisite to the post graduation degree of trainee, under the guidance of the nominated supervisor.

Fill in an application Performa for submission of Dissertation's research proposal to BSAR or IRF.

Present and defend a research proposal to BSAR or IRF.

RESEARCH COURSE OF SECOND TRAINING YEAR

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

TEACHING SESSIONS:

Basic and advanced Biostatistics and Epidemiological concepts will be taught to the trainees through following methods in various sessions. Each session will comprise of all or either one or two or all four of the following techniques;

Didactic lectures through power-point presentations.

On spot individual exercises.

Take home individual assignment

Take home group assignment.

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

Format of teaching sessions:

During year 2 i.e. R-Y2, 16 teaching sessions in total will be conducted, with an average of three sessions per month.

Each session will comprise of a didactic lecture delivered initially, to attain the mentioned learning outcomes. Each didactic lecture will be of 30 minutes duration using the power-point medium that will be followed by a 30 minutes on spot individual exercises of trainees during the same session.

Since most of the curriculum will comprise of quantitative calculations so trainees will be encouraged to work individually on exercises assigned both manually as well on Statistical Package of Social Sciences, instead of group exercises. These exercises will require calculations and numerical solving too.

By the end of each session, a take home individual task/assignment will be given to trainees, that too preferably individually rather than in groups, that will be duly evaluated and marked each month.

Course content of teaching sessions:

The course materials will be based on an updated modified version of course titled as "Designing Health Services Research (Advanced)" that was developed in collaboration of Rawalpindi Medical College & Nuffield Institute for Health, University of Leeds, UK based adapted from "Designing and Conducting Health Systems Research Projects" by CM. Varkevisser KIT Publishers, Amsterdam (International Development Research Centre) in association with WHO Regional Office for Africa.

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

Curriculum of teaching sessions:

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

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

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

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

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

SESSIONS & TIMINGS	***TEACHING STRATEGY***	***TOPIC OF SESSION***	***SESSION OBJECTIVES i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;***
SESSION 6 WEEK 3 Month 2	Lecture through power point presentation followed by Individual exercise & Take home individual assignments	Basic statistical concepts; Measure of dispersion and confidence Intervals	Explain what is meant by a range, a percentile, a standard deviation, a normal distribution, a standard error and a 95% confidence interval. Calculate ranges, standard deviations, standard errors and 95% confidence intervals for data, manually as well as through SPSS.
SESSION 7 WEEK 1 Month 3	Lecture through power point presentation	Hypothesis testing for a research	State the concept of hypothesis testing. Define and describe the types difference between one sided and two sided hypothesis. Formulate Null hypothesis and Alternate hypothesis in an appropriate format.
SESSION 8	Lecture through	Tests of	hypothesis testing and to identify types of errors Explain what a significance test is and

WEEK 2 Month 3	power point presentation followed by a Take home individual assignment.	Significance	what its purpose is. • Explain what is probability value or p-value • Identifying various tests of significances • Identifying appropriate test of significance for a specific research design.
SESSIONS & TIMINGS	***TEACHING STRATEGY***	***TOPIC OF SESSION***	***SESSION OBJECTIVES i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;***
SESSION 9 WEEK 1 Month 4	Lecture through power point presentation followed by an individual exercise & a Take home individual assignment.	Determining difference between two groups- categorical data Paired & unpaired observations	Decide when to apply the chi-square test. Calculate chi-square values. Use the chi-square tables to assess whether calculated chi-square values are significant. Decide when to apply the McNemars test and calculate its values. Make a decision concerning whether these tests can be used on give data and, if so, what test should be used on which data.

Perform these tests on data manually as

			well as through SPSS.
SESSION 10 WEEK 2 Month 4	Lecture through power point presentation followed by an individual exercise & Take home individual assignment.	Determining difference between two groups- numerical data Paired & unpaired observations	Decide when to apply the independent and dependent t-test. Calculate paired and unpaired t- values. Use the t tables to assess whether calculated t values are significant. Decide when to apply the independent and dependent t test and calculate its values. Make a decision concerning whether these tests can be used on give data and, if so, what test should be used on which data. Perform these tests on data manually as well as through SPSS.
SESSIONS & TIMINGS	***TEACHING STRATEGY***	***TOPIC OF SESSION***	***SESSION OBJECTIVES i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;***

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

SESSION 13 WEEK 3 Month 5	Lecture through power point presentation followed by an individual exercise	Regression Analysis	Explain what is a regression analysis Differentiate between simple linear and multiple logistic regression analysis. Decide when to apply the regression analysis and how to interpret. Make a decision concerning whether these tests can be used on give data and, if so, what test should be used on which data. Perform these tests on data through SPSS.
SESSIONS & TIMINGS	***TEACHING STRATEGY***	***TOPIC OF SESSION***	***SESSION OBJECTIVES i.e. BY THE END OF SESSION THE TRAINEES SHOULD BE ABLE TO;***
SESSION 14 WEEK 1 Month 6	Lecture through power point presentation and individual exercises	Diagnostic Accuracy of a test	Identify what is a diagnostic accuracy of a test compared to gold standard tests. Identify what are true positives, true negatives, false positive and false negatives in a diagnostic testing. Calculate Sensitivity, specificity, Positive and negative predictive values of

a diagnostic test using standard formulae.

SESSION 15 WEEK 2 Month 6	Lecture through power point presentation and individual exercises	Writing a research paper	List the main components of a research paper. Make an outline of a research paper. Write drafts of report in stages. Check the final draft for completeness, possible overlaps for clarity and smoothness of style. Draft recommendations for action based on research findings. List the main components of a dissertation
SESSION 16 WEEK 3 Month 6	Lecture and individual exercises	Writing a dissertation	Explain how a research paper differs from a dissertation Make an outline of a dissertation

Minimal Attendance of teaching sessions:

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

Assessment of Trainees for teaching sessions:

For didactic lectures, the learning and knowledge of the trainees will be assessed during the end of year examination.

One examination paper of Research of R-Y2 will be taken that will comprise of 75 marks in total and will consist of two sections. Section one will be of 50 marks in total and will comprise of 25 MCQ's (multiple choice questions) while section two will comprise of 5 Numerical Problems/Conceptual questions.

Total duration of the paper will be 120 minutes.

The papers will be checked by the research associates and Bio-statisticians of ORIC.

***Assessment of individual exercises*:**

The quality, correctness and completeness of the individual exercises will be evaluated during the teaching sessions, when they will be presented by the end of each session by trainees.

The mode of presentations will be oral, electronic or written accordingly and if needed using media of charts, flip charts & white boards.

Most of the individual exercises will be observed and evaluated by the facilitators directly on computers since it mostly will involve skills of data analysis through Statistical Package of Social Sciences.

There will be no scores or marks specified for the individual exercises but the feedback of evaluation by the facilitators will be on

spot.

Assessment of individual; take home tasks/assignments:

The take home assignments of the trainees willbe checked once these will be submitted after completion to the facilitators after period specified for each task.

Most of the take home assignments will be related to numerical problem solving, calculations or tasks of analysis in SPSS.

Assignments should be submitted in electronic version and no manually written assignment will be accepted.

Each assignment will be checked for plagiarism through turn-it-in soft ware. Any assignment that will have originality score less than 90% or similarity index more than 10% will be returned back to trainees for rephrasing and resubmission.

They will be assessed and checked within one week of the session and will be scored by the facilitators.

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

PRESENTATION IN JOURNAL CLUB SESSIONS

During year 2 of training, the trainees should actively participate in the journal club sessions of the department regular basis.

One journal club meeting must be organized in the department within every two months of a year and apart from mandatory more than 80% yearly attendance, the trainees must present two research paper in year 2 of training individually.

The purpose of presentation of the second year trainees in journal club is teach them how to form a bridge between research and practice, how to confidently appraise recent research and then how to practically apply best research findings into their clinical setting as their first steps evidenced-based medicine.

Format of Journal Club Meetings:

In a journal club meeting, two research papers, published in an indexed national or international journal, selected by the Dean of the department must be presented by second year trainee during R-Y2 training year, in two different meetings.

Trainee will be given the selected paper one and a half month prior to the meeting by the Dean of the department.

After thoroughly going through the research a paper, trainee should do extensive literature search on the topic also and must be familiar with all the recent and current research done on the similar topic by other researchers.

An approximately 30 minutes long oral presentation will be made by the trainee, in monthly journal club session on the selected research paper. The research paper will be presented through power-point and the critical appraisal of the paper will follow it.

The topic will also be discussed in comparison to other evidences available according to the latest research.

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

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

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

Assessment of presentation of the trainee at Journal Club:

During the presentation, the head of department and two other senior faculty members will evaluate, trainee's ability to make effective presentation of the research paper and also his/her skills to critically appraise a research paper.

The scoring will not be done for the first paper presentation by the trainee, since that will be the first ever presentation by the trainee. During the first presentation the evaluators will generally qualitatively evaluate the skills of presenter without any quantitative assessment. They will inform the presenter by the end of first paper presentation, his/her mistakes, weaknesses and scope for improvement. The strengths and competences, on the other hand, will also be appreciated for encouragement.

A structured checklist for scoring the skills and abilities of trainee will be used by the above mentioned senior faculty members. The average of the three total scores will be calculated, out of total attainable score of 25 that will then be used in overall assessment of the trainee.

The evaluation will include aspects like the presenter’s aptitude to identify the strengths and weaknesses of a research article, apart from assessment of the usefulness and validity of research findings. He/she should be able to determine the appropriateness of the study methodology and design for the research question, apart from suitability of the statistical methods used, their appropriate presentation, interpretation and discussion. He/she should also be able to identify and justify relevance of the research to one's own practice.

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

At the beginning of year 2, the trainee will start sorting out various research questions for his/her research project as dissertation requisite for the post graduation degree.

Trainee must submit and seek approval of the research proposal/s from the concerned institutions till end of year 2 i.e. R-Y2.

Since post graduate trainees seeking Fellowship from the College of Physicians and surgeons of Pakistan (CPSP) have either of the two following options, as per guidelines of CPSP:

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

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

The MS scholars will also have to submit one research dissertation, in specialty field, to Rawalpindi Medical University, so they will also submit one research proposal for the dissertation till end of second year of training.

Whatever is the post graduation academic scenario; the trainee must decide the research question/s under the guidance of the supervisor till third month of R-Y2 and hence decide the final title of the research project/s.

During these first three months of R-Y2, the trainee under guidance of the supervisor and ORIC will do extensive review of the literature, relevant to topic. He/she will do online as well physical search of printed, Journal articles,

reports, books, conference papers, dissertations, Research and programme reports- published/ unpublished. He/she will also access the libraries of Rawalpindi medical University, repositories of various institutions.

The trainee will also consult the research Associates and Deputy Directors at the ORIC for the feasibility of the research question and any modification. The trainees will be encouraged to preferably select research questions that will be better answered through cross sectional comparative, analytic and experimental study designs instead of simple descriptive cross sectional or caseseries design. Descriptive cross sectional, exploratory or case series design will be allowed only in special cases when the research question will deal with an exceedingly significant and priority issue, not addressed previously ever though published work either locally/nationally or internationally.

Once the research question and topic is finalized with mutual understanding of the supervisor, trainee will submit the selected topic to the Head of Department and Dean of specialty.

The Dean of the specialty will give approval of the topic after scrutiny and will confirm that there is no duplication of the topic in the department, after consultation with HOD's.

Then the Dean will finalize the list of the topics of research proposals of all trainees during fourth month of R-Y2 and will submit the list to BSAR.

BSAR will give the final approval of all topics within same month.

For the post graduate trainees following aforementioned option B (Publication of two original research articles in any CPSP recognized journals, being first author, as requisite to FCPS degree) must submit their topics (already approved from BSAR) to CPSP for its approval. Once the topics are approved by CPSP, they will initiate research proposal development for these research projects that they will publish as original articles.

Once the trainee gets the approval of the topic/s from all concerned authorities, the formal write up of proposal/s must be initiated within fifth month of R-Y2 in consultation with supervisor and the research associates of ORIC for guidance in methodology.

The research proposal/s will be brief outline of trainees' future research project/s (approx of 1000-1500 words) and must comprise of the following topics:

Title of research project.

Introduction and rationale (with Vancouver in text citations)

Research aim, purpose and objectives

Hypothesis, if required according to the study design.

Operational Definitions

Research Methodology:

Setting

Study Population

Study Duration

Study Design

Sampling: *Sample size with statistical justifications, sampling technique, inclusion criteria & exclusion criteria.*

Data Collection technique/s

Data Collection tool/s

Data Collection procedure

Plan for Data entry & Analysis

Ethical Considerations

Work plan/Gantt chart

Budget with justifications

Reference list according to the Vancouver referencing style

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

The research proposal should be completed in eighth month of R-Y2 and should also be reviewed and finalized by the Supervisor of the trainees.

The finalized research proposal will be reviewed by publication in charge of ORIC for plagiarism through turn-it-in soft ware. Any proposal that will have originality score less than 90% or similarity index more than 10% will be returned back to trainees for rephrasing and resubmission. Only when the eligible scores will be reached, then the proposal will be further processed.

The statistician at data analysis centre of ORIC will facilitate the trainees in sample size calculation through sample size calculators according their study designs.

The trainees should formulate all the data collection tools under guidance of supervisor and research associates of ORIC and should also pretest to finalize all the data collection tools for their research projects.

These research proposals along with the tools will be submitted to all concerned authorities for appraisal.

The supervisors and research associates of ORIC will also ensure that the duration of research project should be adequate and realistic so that trainees will be able to complete their project/s during third year of training leaving enough time for its write up during year 4 of training. For the post graduate trainees following option of Publication of two original research articles as requisite to FCPS degree, the study duration will be even briefer.

PRESENTATION OF RESEARCH PROPOSAL/S TO INSTITUTIONAL RESEARCH FORUM

(IRF) OF RMU

The R-Y2 trainees will already be aware of the standard operational procedures and protocols of the Institutional Research Ethics Committee of RMU as they had, as a mandatory activity, participated and observed the proceedings of the meeting during R-Y1. However, he/she will be informed about any modifications or updates regarding the standard procedures of application to IRF if will have occurred during last one year.

Trainees will be individually provided an updated step wise guidance by the research associates of ORIC, regarding how an applicant should access the RMU website and download the application Performa and then how to electronically fill it in for final submission. They will also be provided updated format of presentation for their Research Proposal presentations at IRF meetings.

The trainees must submit ten sets of hard copies of all the documentation including the research proposal with all annexes, plagiarism detection report and application performa to ORIC, at least ten days prior to the monthly meeting. ORIC will provide them date and month of the IRF meeting for presentation and the trainee must present in the meeting along with his/her supervisor.

The trainee must make a five to ten minutes' presentation through power-point at Institutional Research Ethics Forum during 9-10 months of R-Y2. By the end of presentation, he/she will respond to all the queries of the forum and the supervisor will facilitate in defense of the proposal.

The IRF will appraise and scrutinize every aspect of the proposal/s and if found acceptable then will provide on spot verbal approval of the project followed by written approval letter within next two weeks to the trainees.

If members of IRF will find any modifications required in the proposal/s they will recommend them to trainee and supervisor. The trainee must incorporate those changes and will resubmit the corrected version of proposal/s within next one week's period.

The written approval letter of IRF will be issued within next two weeks of meeting, to the trainee.

In case the trainee will be working on option B of CPSP i.e. publication of two research papers, instead of writing dissertation, then he/she will present both research proposals to IRF for the two topics already approved by CPSP.

ASSURANCE OF FEASIBILITY & AVAILIBILITY OF RESOURCES FOR RESEARCH PROJECTS

The trainee will ensure that for his/her research project/s ample resources in terms of monetary, human or physical will be available to complete the project. He will also provide documented proof and justification to avoid any unforeseen problems that may lead to incompletion of research project/s.

No individual funding will be provided to the trainees for their research projects requisite to their post graduation degrees by Rawalpindi Medical University. The trainee may be bearing all the expenses on individual basis or may be applying to any of national or international funding agencies for research project/s.

In case the trainee will be applying for any external source of funding from any national or international funding agency, the funding application and approval process must be completed by the end of year 2 of training.

The trainee may also be pursuing the degree, through any scholarship that also will include the research project expenses.

In either of the above mentioned circumstances, the trainee must provide and submit the budget details and documented evidences of the funding or availability of monetary resources to the supervisor and Dean who will ensure the feasibility of the resources available to the trainees.

Moreover, if any tools, kits, equipment or physical materials will be required for research project, the trainee will provide documented evidence of its availability.

If the data collection will require hiring of additional human resources, then the trainee will provide documented evidence like consent of staff members contributing to his/her research or details of training expenses or honorarium details if any to the supervisor.

The supervisor will also consult the Dean and HOD's in ensuring the feasibility and availability of resources of a trainee during second year of training.

SUBMISSION OF RESEARCH PROPOSAL/S TO CPSP/BSAR OF RMU

Post graduate trainees applying for their CPSP fellowship using aforementioned option A (Submission of one dissertation in specialty field as requisite to FCPS degree) after receiving appraisal of IRF of RMU, must submit their proposal to CPSP during last quarter of second year of training. The approval process from CPSP takes approximately 3 months on an average but in case any

corrections are suggested the resubmission and acceptance procedure may take 6 months on an average. These trainees will initiate data collection as soon as they receive the acceptance by CPSP authorities.

ii. However, the post graduate trainees who will opt to publish two original research articles in any CPSP recognized journals, as requisite to FCPS degree, will not require any submission of their proposals to CPSP. The will directly initiate the data collection as soon as they will receive the IRF acceptance letter. Hence their data collection phase of both research projects will begin in last quarter of R-Y2.

The MS scholars of RMU will submit their research proposals to the Board of Advanced Studies and Research (BSAR) of RMU for appraisal. BSAR will issue an acceptance letter of the research proposal endorsed by the Vice

chancellor of RMU copied to the concerned stake holders and authorities including office of Dean and ORIC. If members of BSAR will find any modifications required in the proposal they will recommend them to trainee and supervisor. The trainee must incorporate those changes and will resubmit the corrected version of proposal to BSAR within next one-week period. The written approval letter of BSAR will then be issued within next two weeks to the trainee. The trainees will thus receive formal permission to initiate data collection phase through this acceptance of BSAR.

All trainees who will require data collection from any RMU or its teaching hospitals that are Benazir Bhutto Hospital, District Headquarters Hospital and Holy Family Hospital, will not require any permission from the administration of these hospitals. The appraisal letters of IRF and BSAR will be considered as acceptance by all authorities of the RMU.

If any trainee will need to collect data from any institution other than RMU or its teaching hospital, they must seek that institution's approval too according to their standard protocols parallel to the period when they will have submitted proposals to CPSP/BSAR to save their time.

All the post graduate trainees will follow the guidelines regarding the format and content of the research proposals provided by the authorities to whom they will be presenting their research proposals that are Board of Advanced Studies and Research (BSAR) for MS scholars or College of Physicians and surgeons of Pakistan (CPSP).

MONITORING OF RESEARCH COURSE OF YEAR 2

An alert and continuous monitoring of all the scholarly activities of each trainee will be carried out by all the concerned faculty i.e. research units of specialties, supervisor, Head of Department and the deputy Directors and research fellows at the Office of Research Innovation & Commercialization of RMU.

The structured Research component of Log books and Research portfolio of the trainees specific to research component of the training of year 2; R-Y2 will also be regularly observed, monitored and endorsed by all the concerned faculty members, supervisor and facilitators.

The Log books section R-Y2 specific to research curriculum of training year 2 will include the record of attendance of all the teaching sessions of the trainee that will be monthly updated and endorsed by the department of Medical Education (DME) of RMU.

It will also comprise of all the submission record and scores attained for the individual and group assignments of the trainees, endorsed by the supervisor and the research associates and Deputy Directors of ORIC.

The log books will also include the attendance and presentation scores of the trainees in the Journal club sessions of the department. It will also include observation notes catering to qualitative evaluation for active participation by the trainee during each journal club session. This information will be endorsed by the supervisor of the trainee and HOD.

The record of the trainees regarding timely completion and quality of each activity related to completion of research proposals and its presentation in the monthly meeting of the Institutional Research Ethics Forum (IRF) of

RMU will also be part of the Log Book that will be endorsed by the supervisor, research associates of ORIC and conveners of the IRF and BSAR.

The result of the annual research paper of R-Y2 will also be entered in the Log books by Research Associates and will be endorsed by the Deputy Directors of ORIC.

The research portfolio of the trainee R-Y2 will again include qualitative and quantitative self assessment of the trainee in narrative form. It will include the individual assessment of the objectives and aims defined by the trainee during the second year of training

and extent of their successful attainment. The trainee will also mention individual achievements or knowledge and skills acquired in any aspect of research that was either formally part of the research curriculum or even not. It will also include reporting of any research courses, online or physically attended by the trainee, contribution in any research paper or publication, any participation and/or presentation in any research conference, competition etc during year R-Y2.

H. OVERALL ASSESSMENT OF PERFORMACE OF TRAINEES FOR YEAR 2

The overall assessment of performance of trainee for R-Y2 will rely on marks attained out of total 100 obtainable marks. These total 100 marks will include 50 marks for the Annual Research Paper of R2 (where the 75 marks of paper will be converted to 50 marks), while 25 marks will be included from the home tasks assignments (by conversion of 50 marks of the home task assignments into 25 marks) and actual 25 marks of presentation of journal club will be included in assessment (without any conversion), to get an aggregate of 100 total marks.

Out of the total attainable 100 total marks, 40% will be passing marks of this Research course and in case of failure in it, second attempt will be allowed to the trainees and if any one fails in second attempt too then he/she should appear next year with next batch's first attempt.

EVALUATION/ FEEDBACK OF RESEARCH COURSE OF YEAR 2

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

The feedback of trainees will include structured evaluation of each teaching session of R-Y2 through structured and anonymous feedback forms/questionnaire that will be regularly distributed amongst the trainees. The forms will include questions phrased as Likert scales (1-5 categories) inquiring their responses regarding various aspects of teaching sessions. Category 1 will represent the poorest quality increasing till category 5 representing excellence and the trainees will choose either of 5 based on their honest and unbiased personal choice. The open ended questions in form will indicate qualitative evaluation of the trainees. There will also an overall feedback questionnaire for entire second year of training course administered to trainees.

The feedback of trainers will be obtained through structured and anonymous feedback forms/questionnaire, including closed and partially closed questions that will be regularly provided by them. They will provide their inputs and opinions regarding effectiveness of the R-Y2 course contents,

curriculum, teaching methodologies, teaching aids and technologies, content and usefulness of the exercises and assessments etc.

Three focus group discussions; oneof the R-Y2 trainees, second of the facilitators and third of the supervisors will also be organized by the ORIC to evaluate the research course, its benefits and weaknesses and scope for improvement.

A final evaluation report of the Research Course R-Y2

will be formulated and compiled by the ORIC of RMU. The report will be presented all concerned stake holders.

QUALITY ASSURANCE OF RESEARCH COURSE OF YEAR 2

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

The evaluation team that will observe all these R-Y2 course evidences will be same team that will evaluate R-Y1 course. The team of R-Y2 will include the Head of departments, Deans, selected representatives of BSAR, IRF, Director of ORIC, Director DME, Director of Quality enhancement cell (QEC) and Vice chancellor of RMU, individually.

The random visit for physical observation of the materials and also of all the academic activities through uninformed visits will also follow same protocol as mentioned in quality assurance procedure of R-Y1.

ORIC will be responsible for submission of the evaluation content of R-Y2 to all including a copy to the Quality Enhancement Cell (QEC) of RMU for internal evaluation.

The QEC will organize an external evaluation too through involvement of a third party that may include members of Quality assurance department of Higher Education Department based on their availability.

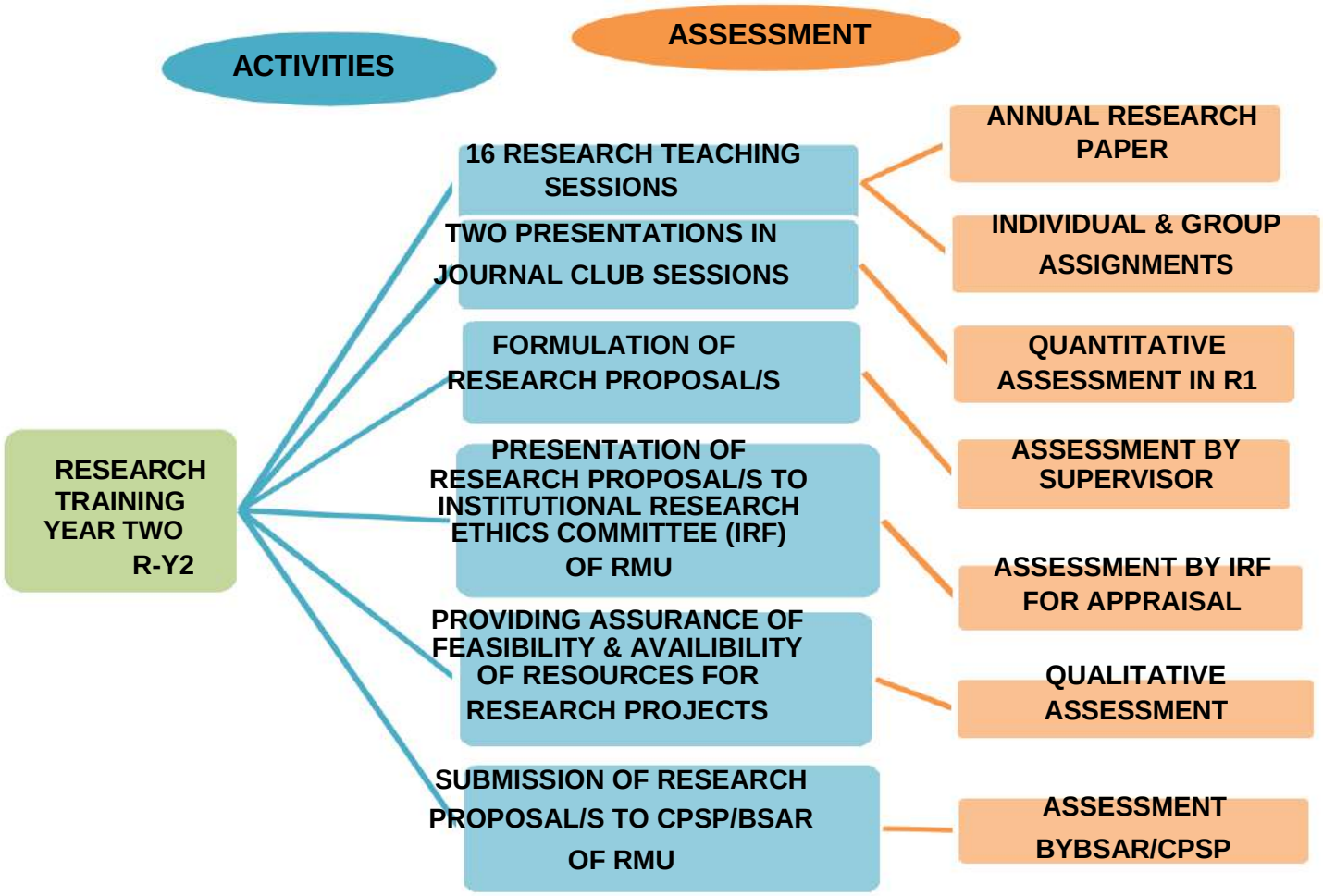
An annual meeting of the quality assessment and enhancement, by end of year 2, will also be organized by the Quality Enhancement Cell of RMU, including representatives of supervisors, Head of Departments, Dean, representative members of BSAR, ORIC, DME, QEC & IRF, who will be then collectively, review all the evaluation material of R-Y2. The evaluation team will also share their experiences of their evaluation visits and observations to validate the existing materials.

The quality of R-Y2 course will be determined with recommendations for further enhancement and modifications.

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

An over view of activities related to research training in third year, R-Y3 is also displayed in figure 3.

Figure 3. A FLOW CHART OF RESEARCH ACTIVITIES OF R-Y2 POST GRADUATE/MS TRAINEE OF RMU AND THEIR ASSESSMENTS



RESEARCH COURSE OF THIRD POST GRAUDATION TRAINING YEAR R-Y3

PURPOSE OF R-Y3 RESEARCH COURSE:

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

LEARNING OUTCOMES OF R-Y3 RESEARCH COURSE

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

Revise and rejuvenate all the basic concepts of Epidemiological measures and biostatistics.

Collate the information gathered through an extensive literature review relevant to study topics finalized and formulate an extensive write up of literature for research project.

Collect and store high quality information for their research project in an honest and unambiguous way.

Utilize skills to enter, analyze and interpret the data collected for a research project

Write a clear and concise research report (research paper for a peer reviewed journal/dissertation) and a summary of the major findings and recommendations for each of the different parties interested in the results.

RESEARCH COURSE OF THIRD TRAINING YEAR

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

A. ELECTIVE REFRESHER SHORT COURSES/WORKSHOPS:

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

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

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

Format of short courses:

A total of [illegible] short courses will be offered and the post graduate trainees must attend a minimum of 5 of these short courses during [illegible], according to their needs, choice and preference.

- Each workshop will comprise of 8-12 modules in total.

For each module, power-point presentations will be delivered initially, to restore the memories of the trainees regarding the previous knowledge attained by them in R-Y1 and R-Y2. These presentations will be on an average 15-20 minutes of duration for each module and will teach the basic and advanced concepts.

Following the presentations, on an average 30-60 minutes of individual and group exercises will be supervised by the facilitators to provide the trainees hands on experience. Depending on the type and content of courses, trainees will mostly work through computer soft-wares. These exercises will require calculations and numerical solving too.

By the end of each day of workshop, brief take home individual or group task/assignments will be given to trainees that will be duly evaluated by facilitators within three days of the short course and will provide their feed back to each trainee individually.

Content of short courses:

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

The trainees will be provided hard copies as well as soft copies of the course content in a folder at the initiation of the course. This take away resource material will also include handouts of presentations of all the modules taught during the workshops. Following ten short courses will be offered to the post graduate trainees during year three; R-Y3 along with the tentative time frame work and title of workshops in table 3. However the details of modules, duration and objectives/Learning outcomes of each workshop are not specified right now as these will be formulated based on the needs and requirements of the trainees and also the will depend on the visitor facilitators choice, that will be decided and confirmed at least one month prior to conducting each workshop.

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

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

Assessment of Trainees for short courses:

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

***Assessment of individual and group exercise*s**:

The quality, correctness and completeness of the individual as well as group exercises will be assessed during the workshops by the facilitators.

The exercises will be presented during each module of workshops by trainees either individually or in groups accordingly.

The mode of presentations will be oral using media of charts, flip charts & white boards or through power-point presentations depending on the nature of the tasks.

There will be no scores or marks specified for the individual or group exercises but the feedback of evaluation by the facilitators will be on spot by end of presentations.

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

The correctness, quality and completeness of the individual or group exercises that will be given during the short courses/workshops will also be determined.

These will be submitted after completion to the facilitators within three days of the workshop. No Assignments will be acceptable after three days.

The assignments will be assessed and checked by facilitator within one week of submission along with extensive feedback of these assignments.

No formal quantitative assessment or scoring of any of these take home tasks/assignments of R-Y3 will be done.

PRESENTATION IN JOURNAL CLUB

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

The R-Y3 trainees must present at least one research paper in journal club. The format of presentation and procedure for year 3 trainee will exactly be same as it will be for R-Y1 and R-Y2 trainees as mentioned before.

After oral presentation in monthly journal club session on the selected research paper and the critical appraisal of the paper R-Y3 trainee should actively participate in question & answer session of the journal club too. It will be compulsion for each R-Y3 trainee to ask at least one question or make at least one comment relevant to the topic and/or the research paper, during the journal club meeting.

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

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

Assessment of presentation of the trainee at Journal Club:

During the presentation of R-Y3 trainee in journal club, even though the head of department and two other senior faculty members will evaluate trainee's ability to make effective presentation of the research paper and also his/her skills to critically appraise a research paper, but no formal scoring will be done

The assessment will be qualitative rather than a quantitative assessment. Even though not scored in numbers, but by the end of paper presentation, evaluators will inform the strengths, mistakes, weaknesses and scope for improvement to each trainee.

The evaluators will assess that how far the presenter was successful to identify the strengths and weaknesses of a research article, to determine the appropriateness of the study methodology and design for the research question and to assess suitability of the statistical methods used. The appropriateness of presentation, interpretation and discussion will also be considered.

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

By the beginning of year 3, the trainees will have received the approval from the IRF, BSAR and respective examination authorities for their research proposals of dissertations or research papers. Moreover, till then all the data collection tools for their research projects will also have been ready after pretesting.

During first quarter of year 3, it will be mandatory for the trainees to initiate the data collection phase of their project/s. If the trainee will be collecting the data individually for his/her research project, it will be started under continuous guidance of their supervisors and continuous facilitation by the research centers of specialties, the data analysis center and Research Associates of ORIC of RMU.

In case the data collection will require more human resources, other than trainee himself/herself, either as honorary or hired data collection staff, they should be properly trained for data collection by the trainee. The supervisor will also ensure that the additional data collection staff will be adequate in number within data within the time framework and should also make sure that they will be proficient enough to collect high quality and authentic data.

The data storage will also be finalized by trainee under the guidance of Supervisor and research center of specialty.

The trainee will initiate data collection phase and will seek assistance of statisticians at Data analysis centre of ORIC for compilation of data sheets in SPSS/or any other statistical software for data coding and entry. The

trainees will be encouraged by statisticians to collect the data and enter it simultaneously after cleaning into the soft ware to save time.

By the end of R-Y3, the data collection and entry of data must be completed.

In case the trainee will be working on option B of CPSP i.e. publication of two research papers, keeping in consideration, the lengthy period required for submission and then acceptance of papers by journals, he/she should be vigilant in data collection and must do it at faster pace as compared to those writing dissertation. So such trainees should complete data collection of both papers within first half of year 3 of training simultaneously. Otherwise they can also collect data for first paper within first three months of year 3 of training and then will initiate data collection of second paper from sixth to ninth month of year 3 of training. Whatever is the option followed by the trainee, the data collection phase should not extend beyond ninth month of R-Y3, in order to complete both papers for submission till end of R-Y3.

The trainees and MS scholars writing dissertation must also complete data collection and analysis till last month of R-Y3.

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

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

The trainees opting for publication of two research papers should complete and submit manuscripts of both research papers by the end of third year of training. Keeping in consideration, the lengthy period required for submission and then acceptance of papers by journals (that varies from journal to journal and may range from 3

months to even one year) he/she should be vigilant in data collection and paper completion at faster pace as compared to those writing dissertation.

These trainees will be provided the following options and they will choose either of it based on their will and their supervisor's advise:

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

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

Whatever is the option followed by the trainee, both of his/her paper should be submitted to journals of choice before initiation of year 4 of trainee, keeping adequate time secured in advance, in case any paper will not be accepted and will have to be sent to another journal accordingly.

During the data collection and entry phase, trainees will receive continuous assistance from the Research Associates and Data analysis unit of ORIC of RMU.

When the data entry will be completed in the statistical software, the trainee will be provided full assistance in data analysis, interpretation and write up of results by the statisticians of ORIC.

The supervisors and publication in charge of ORIC will also guide the trainee to write the section "Discussion" based on the comparison of the findings of their study with the previously available research nationally as well as internationally.

They should also be able to identify strengths and weaknesses of their studies and should make recommendations with statement of final conclusion.

The trainees will identify the target journals for publication and after formatting their write up according to the specific format required by both journals.

The research papers will be reviewed by publication in charge of ORIC for plagiarism through turn-it-in soft ware. Any article that will have originality score less than 90% or similarity index more than 10% will be returned back to trainees for rephrasing and resubmission. Only when the eligible scores will be reached, then the trainee will be allowed to proceed further and to submit their research in the form of original articles under continuous assistance of Publication unit of ORIC.

The trainee should also submit copies of submitted papers to the Dean, Director of ORIC and Chairperson of BSAR that will be kept with them as confidential documents.

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

In case any of the paper is refused publication by a journal even then the supervisor and publication unit at ORIC will assist the trainee on urgent basis, to get it rectified and resubmitted to another target journal of choice within next 10 days' time and not delaying it all.

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

MONITORING OF RESEARCH ACTIVITIES OF YEAR 3

Continuous monitoring of all the research activities of each trainee will be carried out by research centers of specialties, supervisors, Head of Departments and the research fellows & Deputy Directors at the Office of Research Innovation & Commercialization of RMU.

The structured Log books specific to research component of the training of year 3; R-Y3 and Research portfolio of the trainees will also be regularly observed, monitored and endorsed by all the concerned faculty, supervisor and facilitators.

The section of research training in Structured Log books of R-Y3 will be specific to short refresher courses of research conducted during training year 3. It will also include the record of attendance of all the short course/workshops attended by the trainee endorsed by the facilitators of each course and Office of Research Innovation & Commercialization (ORIC) in addition to the Department of Medical Education of RMU.

It will also comprise of all the submission record of the individual and group assignments of the trainees, endorsed by the facilitators of ORIC along with their comments.

The log books will also include the attendance and presentation details of the trainees in the Journal club sessions of the department. The observation notes catering to qualitative evaluation for active participation by the trainee during each journal club session will also be inclusive. This information will be endorsed by the supervisor of the trainee and HOD.

The record of the trainees regarding timely completion and quality of each research activity related to completion of data collection and entry phase will also be part of the Log Book that will be endorsed by the supervisor, research associates and relevant facilitators of ORIC.

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

OVERALL ASSESSMENT OF PERFORMACE OF TRAINEES DURING R-Y3

The overall assessment of performance of trainee will be more qualitative in R-Y3, so it will not rely on any scores or marks attained by trainees hence there will not be any examination paper of research or scoring for the home tasks assignments or presentation of journal club.

The Heads of department and the director of ORIC will observe the log books for assessments of facilitators of short courses, their comments regarding the home tasks/assignments, comments of evaluators of presentation at

journal club and the remarks of supervisor regarding his/her opinion regarding the trainee's overall performance during third year of training.

The Heads of department and the director of ORIC will also observe the research portfolio of the trainees. Based on their observations, they will evaluate the completeness and quality of performance of each trainee. In case of any deficiencies or weaknesses they will personally call the trainee and supervisor and will guide them how to correct or improve accordingly.

EVALUATION/ FEEDBACK OF RESEARCH COURSE OF YEAR 3

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

The feedback of trainees will include structured evaluation of short courses/workshops of R-Y3 through structured and anonymous feedback forms/questionnaire that will be administered by the end of each short course/workshop. The forms will include questions phrased as Likert scales (1-5 categories) inquiring their responses regarding various aspects of workshops. Category 1 will represent the poorest quality while category 5 will represent excellence and the trainees will choose either of 5 based on their honest and unbiased personal choice. The open ended questions in form will indicate qualitative evaluation. There will also an overall feedback questionnaire for entire third year of research training.

The feedback of trainers will be obtained through structured and anonymous feedback forms/questionnaire to provide their inputs and opinions regarding effectiveness of the R-Y3 short course contents, curriculum, teaching methodologies, teaching aids and technologies, content and usefulness of the exercises and assessments etc.

Three focus group discussions; oneof the R-Y3 trainees, second of the facilitators and third of the supervisors will also be organized by the ORIC to evaluate the research course, its benefits and weaknesses and scope for improvement.

A final evaluation report of the Research Course R-Y3 will be formulated and compiled by the ORIC of RMU. The report will be presented to all concerned stake holders.

QUALITY ASSURANCE OF RESEARCH COURSE OF YEAR 3

The quality assessment of research course of R-Y3 will involve meticulous review of materials of R-Y3 course (including randomly selected data sheets and completed data collection tools, feedback forms of R-Y3 short course/workshops, log books, research portfolios, individual & group assessment records).

The quality evaluation team of R-Y3 will include the Head of departments, Deans, selected representatives of BSAR, IRF, Director of ORIC, Director DME (Department of Medical Education), Director of Quality enhancement cell (QEC) and Vice chancellor of

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

The research papers submitted by post graduate trainees following option of publication of two original articles to CPSP accredited journals will be observed as confidential evidences by Director of ORIC, Dean and chairperson of BSAR for quality assessment. No other person will have access to these manuscripts in order to avoid any risk of potential plagiarism.

ORIC will submit evaluation content of R-Y3 to all stake holders including a copy to the Quality Enhancement Cell (QEC) of RMU for internal evaluation.

The QEC will organize an external evaluation too through involvement of a third party that may include members of Quality assurance department of Higher Education Department based on their availability.

Since the R-Y3 will primarily comprise of the data collection phase of research projects of trainees, therefore, Quality Enhancement Cell (QEC) in liaison with the research centers of the specialty, will ensure the originality, transparency and unambiguity of data, during entire data collection.

An annual meeting of Quality assurance, by end of year 3, will be organized by the Quality Enhancement Cell of RMU, including representatives of supervisors, Head of Departments, Dean, representative members of BSAR, ORIC, DME, QEC & IRF, who will be then collectively, review all the evaluation material of R-Y3. The meeting will be chaired by the Vice Chancellor of RMU. The evaluation team will also share their experiences of their evaluation visits and observations to validate the existing materials.

The quality of R-Y3 course will be stringently determined with recommendations for further quality enhancement.

Successful completion of above mentioned requirements of research course, also outlined in Figure 4 ((A) and 4 (B), will be mandatory requirement for advancement to the next Post Graduate Year level i.e. last, final or fourth year or R-Y4.

Figure 4 (A) . A FLOW CHART OF RESEARCH ACTIVITIES AND ASSESSMENTS OF R-Y3 POST GRADUATE/MS TRAINEE OF RMU WHO WILL OPT FOR DISSERTATION WRITING

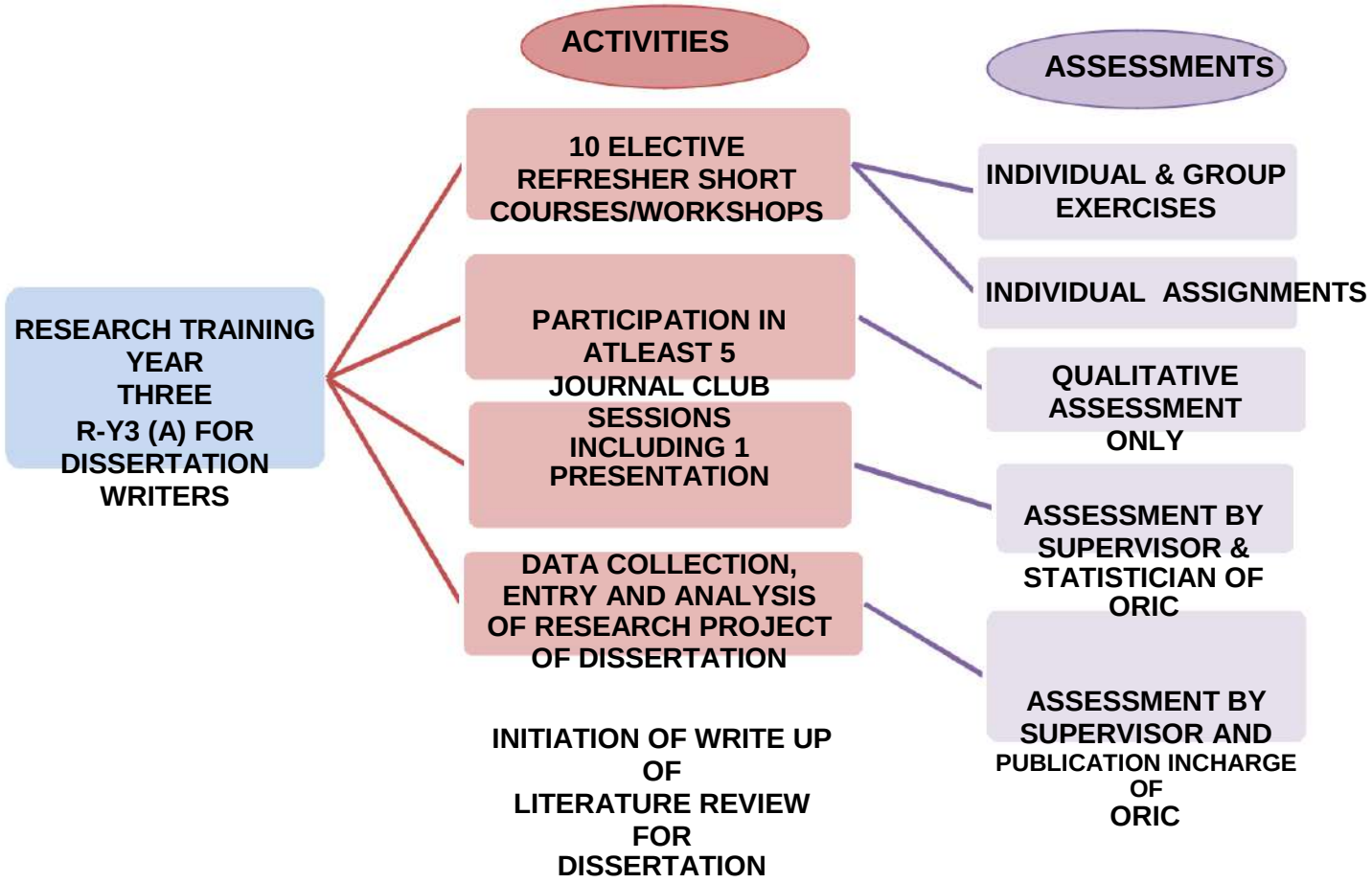
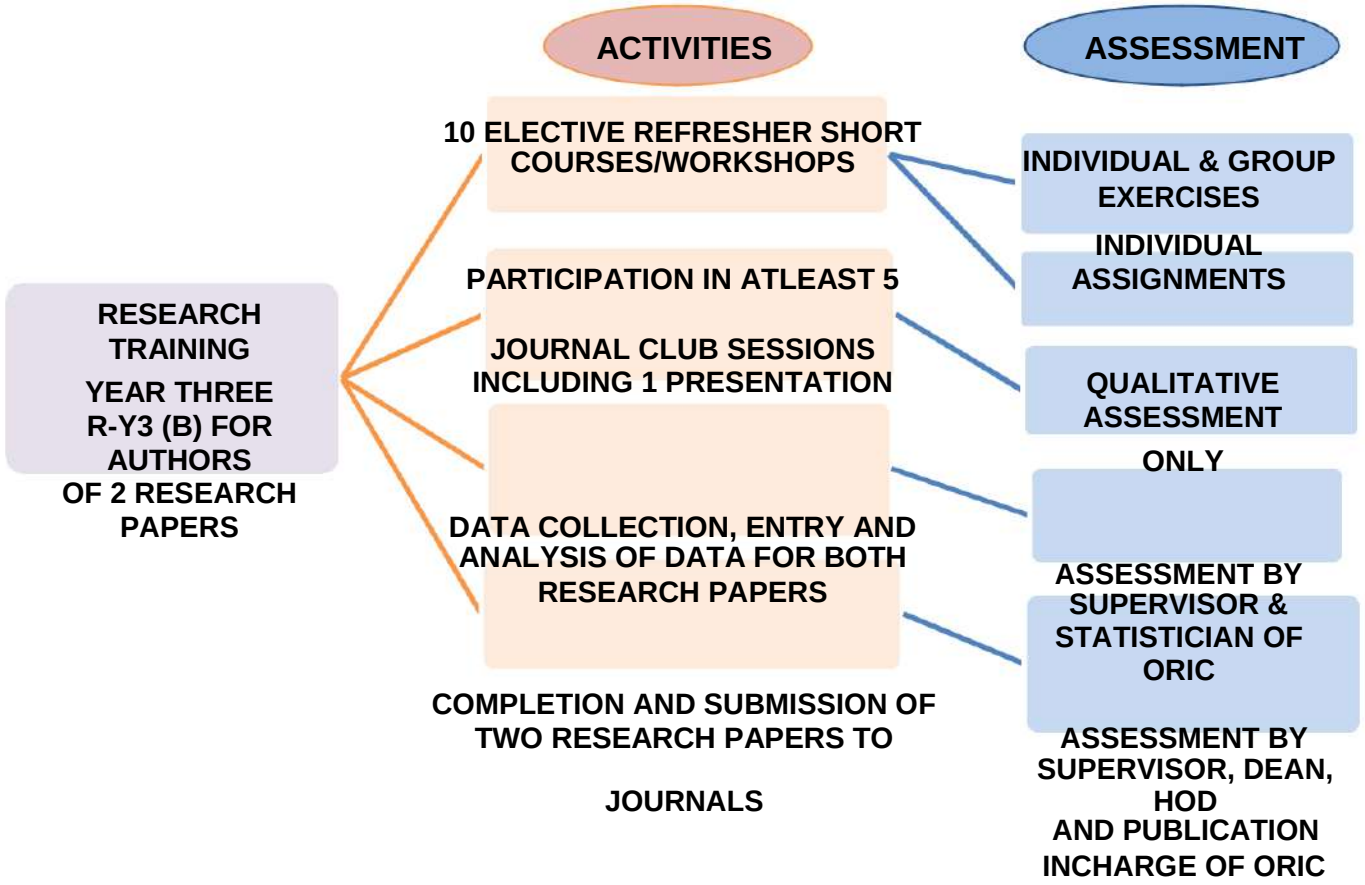


Figure 4 (B) . A FLOW CHART OF RESEARCH ACTIVITIES AND RELEVANT ASSESSMENTS OF R-Y3 POST GRADUATE TRAINEES OF RMU OPTING FOR PUBLICATION OF TWO RESEARCH PAPERS AS REQUISITE TO CPSP FELLOWSHIP DEGREE



RESEARCH COURSE OF FOURTH POST GRAUDATION TRAINING YEARR-Y4

PURPOSE OF R-Y4 RESEARCH COURSE:

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

LEARNING OUTCOMES OF R-Y4 RESEARCH COURSE

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

Identify and execute proficiently all procedures required for data analysis and interpretation.

Analyze and interpret the data collected for a research project and draw conclusions related to the objectives of study. Write a clear and concise research report (paper for a peer reviewed journal/dissertation) and a summary of the major findings and recommendations for each of the different parties interested in the results.

Present the major findings and the recommendations of a study to policy-makers, managers and other stakeholders to finalize the recommendations. Prepare a plan of action for the dissemination, communication and utilization of the findings and (if required) make recommendations for additional future research. Critically appraise a research paper of any national or international journal. Present research papers published in various national and international journals at journal club.

RESEARCH COURSE OF FOURTH TRAINING YEAR

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

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

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

The trainees writing dissertations should have completed their data collection and entry by the end of third year of training and will have also initiated write up literature view for the dissertation.

As soon as the year four of training commences, these trainees should complete the introduction and literature review sections of their dissertations along with proper referencing during first three months of R-Y4. They will be continuously guided in this task by their supervisors, research associates and the publication in charge at the ORIC.

The trainees, In the meanwhile, will also seek continuous assistance of statisticians of Data analysis unit of ORIC for data analysis in statistical soft ware. Trainees will be guided how to interpret the results, how to determine the statistical significances and how to write these results in textual, tabulated and graphical forms. They will have to complete their data analysis and write up of results till fourth month of year 4.

The supervisor and publication in charge at ORIC will also guide the trainee to write the section of "discussion" for their dissertations based on the comparison of the findings of their study with the previously available research nationally as well as internationally.

The trainees will also identify strengths and weaknesses of their study and should make recommendations with statement of final conclusion.

According to the required referencing systems the reference lists and in text citation will also be completed correctly.

After writing the abstract and cover pages and annexure of the dissertation, the trainee will submit his/her dissertation's final draft to publication in charge ORIC for plagiarism detection through turn-it-in soft ware. Any dissertation that will have originality score less than 90% or similarity index more than 10% will be returned back to trainees for rephrasing till the eligible scores will be reached.

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

Based on the feed back of the reviews, the trainee will make final editing and will get the dissertation printed and submitted to the degree awarding authority accordingly (BSAR for MS trainees and CPSP for post graduate trainees of fellowship) for review for acceptance before third week of sixth month of year 4.

The trainee will also submit a copy of dissertation to head of department, the Dean, Director of ORIC and Chair person of BSAR that will be dealt as a confidential document in order to avoid potential risk of plagiarism.

While the dissertations will be under review by the degree awarding authority for acceptance, the trainees will be continuously guided by the supervisor and the research associates at ORIC regarding defense of their dissertation. They will be guided how to make effective presentations according to the format provided by the examination authorities and also how to successfully and confidently respond to the queries of examiners.

In case the dissertation is sent back with recommended corrections or modifications, the supervisor and research associates at ORIC will assist the trainee on urgent basis to get it rectified and resubmitted within at least 10 days' time and not more than it.

RESUBMISSION OF RESEARCH PAPER/S IN CASE MODIFICATIONS ADVICED OR REJECTED FOR

PUBLICATION BY A JOURNAL

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

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

supervisor and publication unit at ORIC will assist the trainee on urgent basis, to get it rectified and resubmitted to another target journal of choice within next 10 days' time without any delay.

SUBMISSION OF ACCEPTANCE LETTERS OF APPROVED RESEARCH PAPER/PAERS AND SUBMISSION

OF HARD AND SOFT COPIES OF PUBLISHED RESEARCH PAPER/S TO CPSP

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

In case the research paper/s is/are approved by the target journals, the trainee will submit the letter of acceptance/s to CPSP in addition to copies to supervisor, HOD, Dean and Publication in charge of ORIC.

When the original article will be published in journal/s, then the trainee will submit hard and soft copies of the original journal with his/her published articles to CPSP in addition to copies to supervisor, HOD, Dean and Publication in charge of ORIC and BSAR.

PARTICIPATION IN JOURNAL CLUB SESSIONS

Since the journal club is one of the best sources to provide awareness of best current clinical research, its implementation and utilization so its importance cannot be overlooked. In spite of a demanding and eventful fourth year of training, the participation of trainee in the journal club will still be mandatory.

The participation of trainees in journal club during R-Y4 will complement their knowledge and skills that will be beneficent in write up as well as defense of dissertation but also enhance their evidence based clinical skills.

However, to decrease the trainees' workload during final year of training, only participation in journal club will be mandatory and he/she will be exempted from making a presentation during R-Y4.

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

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

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

Assessment of Trainees for Journal Club sessions:

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

MONITORING OF RESEARCH ACTIVITIES OF YEAR 4

During the last year of training of post graduate trainees, they will be scrutinized for each and every activity of dissertation completion by research centers of specialties, supervisors, Head of Departments and the research associates and Deputy Directors at the Office of Research Innovation & Commercialization of RMU.

The structured component of research in Log books of fourth training year will pertain to various components of their research projects including timing and completeness of data analysis, result write up, introduction, literature review's write up, methodology, discussion, recommendations, conclusions and cover pages.

The log books will also include the attendance details of the trainees in the Journal club sessions of the department during R-Y4. This information will be endorsed by the supervisor of the trainee and the HOD.

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

OVERALL ASSESSMENT OF PERFORMACE OF TRAINEES DURING R4

The overall assessment of performance of trainee will not rely on any scores or marks attained by trainees since there will not be any examination Paper or scoring for the home tasks assignments or presentation of journal club.

The Heads of department and the director of ORIC will observe research portfolio of trainees in addition to the log books for attendance record and the remarks of supervisor regarding his/her opinion regarding the trainee's overall performance during fourth year of training. Based on their observations, they will evaluate the completeness and quality of performance of each activity of trainee during fourth year.

In case of any deficiencies or weaknesses, the trainee and supervisor will be called by the Heads of department and the director of ORIC who will direct them on how to improve accordingly.

EVALUATION/ FEEDBACK OF RESEARCH COURSE OF YEAR 4

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

The end of year R-Y4 and end of four years' research training feedback of trainees will include structured evaluation through feedback questionnaire not only four fourth year but also for entire four year of research training. It will be anonymous and apart from questions phrased in Likert scale, open ended questions will also be included for the opinions of trainees.

The end of year R4 and end of of four years' research training feedback of trainers will also reflect the anonymous feedback for the opinions of all supervisors and facilitators regarding benefits, drawbacks or weaknesses of R-Y4 course as well as of entire four year's research training course.

Three focus group discussions; oneof the R-Y4 trainees, second of the concerned facilitators and third of the supervisors will also be organized by the ORIC to evaluate the entire four year's research course, its benefits and weaknesses and scope for improvement.

A final evaluation report of the Research Course R-Y4 and entire 4 years' research training Course will be formulated and compiled by the ORIC of RMU. The report will be presented to all concerned stake holders.

QUALITY ASSURANCE OF RESEARCH COURSE OF YEAR 4

The quality assessment of research course of R-Y4 as well as the entire four years' research course will be carried out through review of materials and observations of proceedings by the evaluation team of RMU.

The research dissertations submitted by post graduate trainees will be observed as confidential evidences by Director of ORIC, Dean and chairperson of BSAR for quality assessment. No other person will have access to these manuscripts in order to avoid any risk of potential plagiarism.

ORIC will submit evaluation content of R-Y4 to all stake holders including a copy to the Quality Enhancement Cell (QEC) of RMU for internal as well as external evaluation.

An annual meeting of the trainers by end of year 4, will be organized by the Quality Enhancement Cell of RMU, including representatives of supervisors, Head of Departments, Dean, representative members of BSAR, ORIC, QEC, DME & IRF, to review and discuss all the evaluation materials of R-Y4, its quality and any recommendations for quality enhancement, under the chairman ship of Vice chancellor of RMU.

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

Figure 5 (A) . A FLOW CHART OF RESEARCH ACTIVITIES AND ASSESSMENTS OF R-Y4 POST GRADUATE/MS TRAINEE OF RMU WHO WILL OPT FOR DISSERTATION WRITING

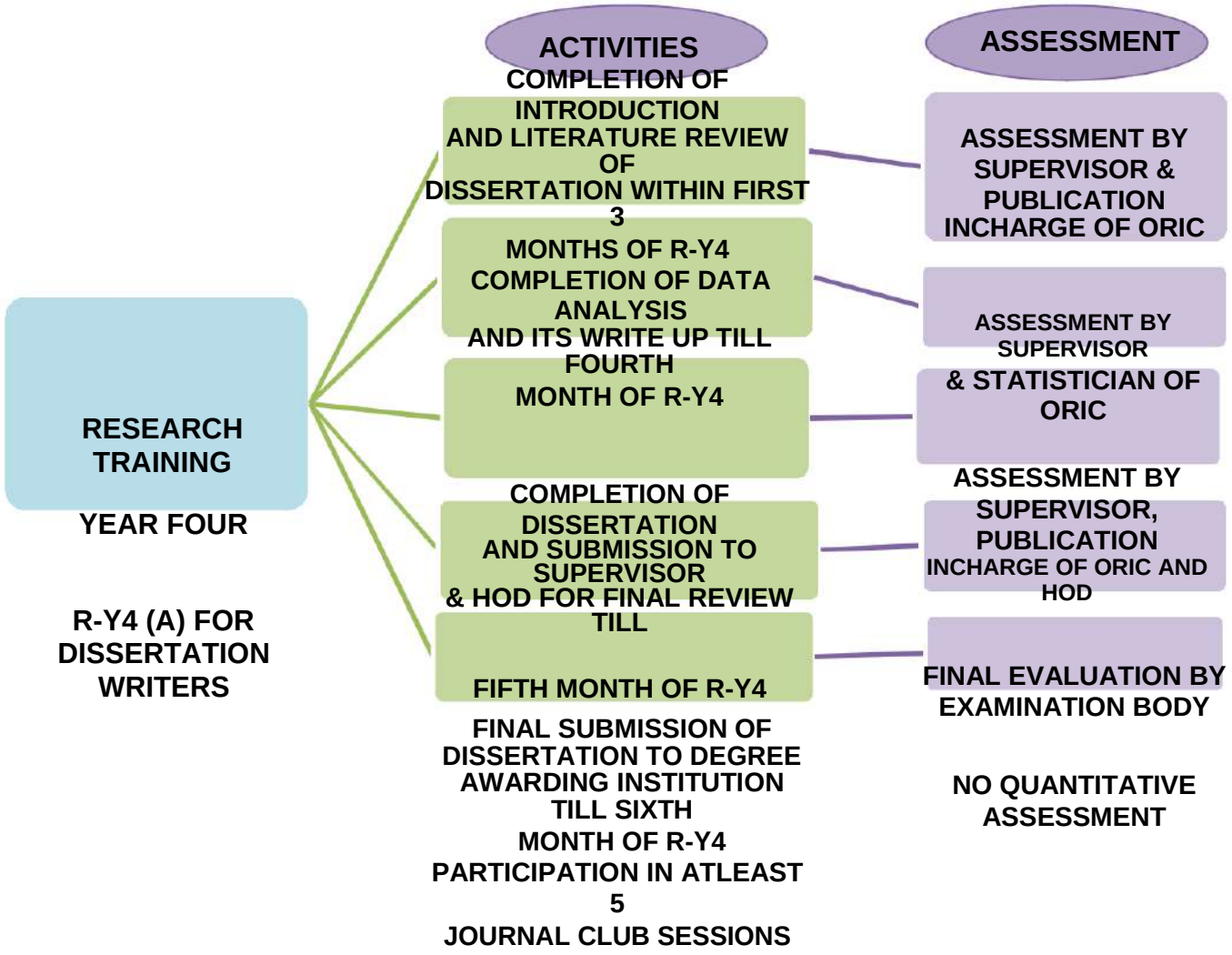
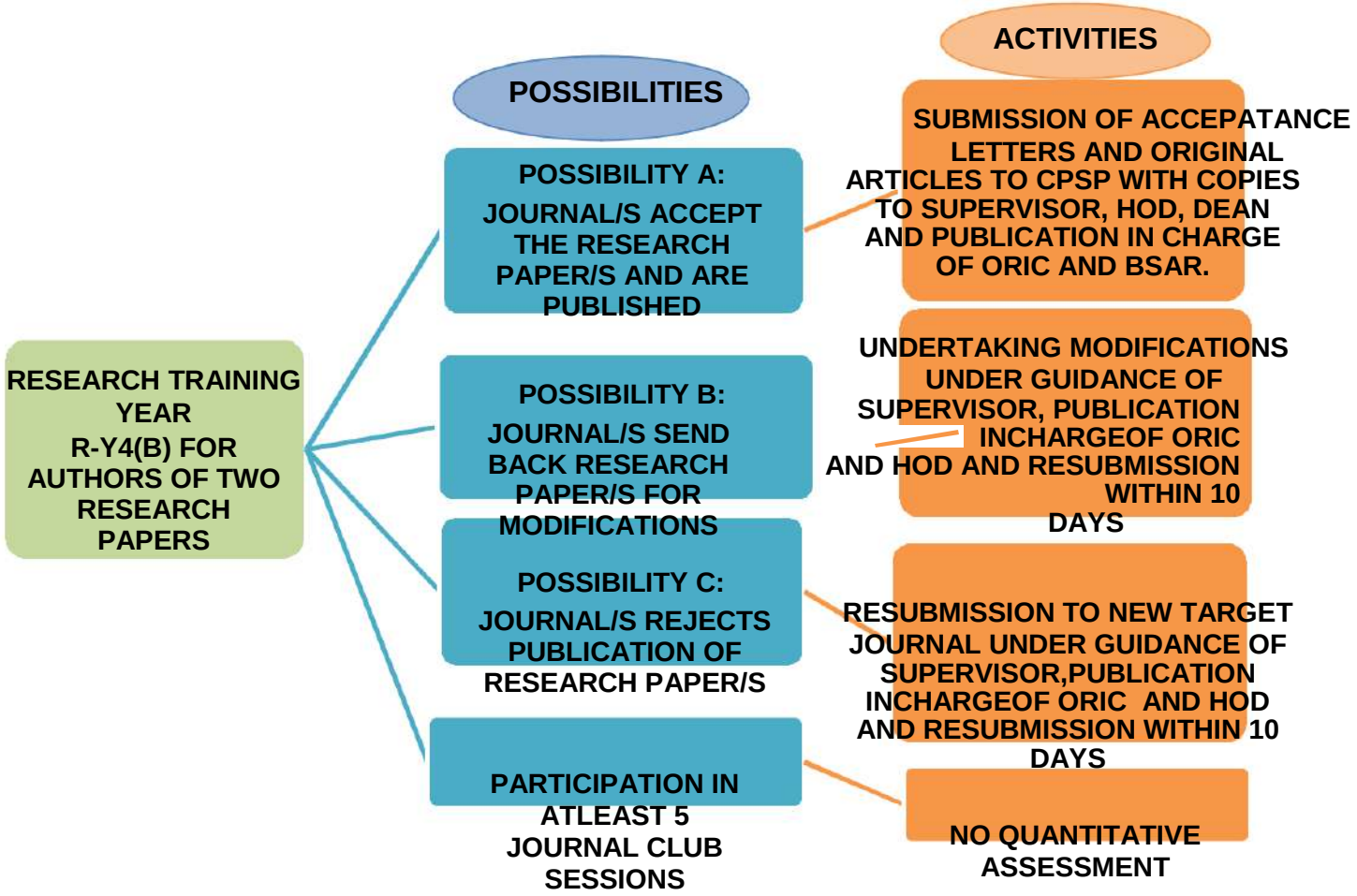
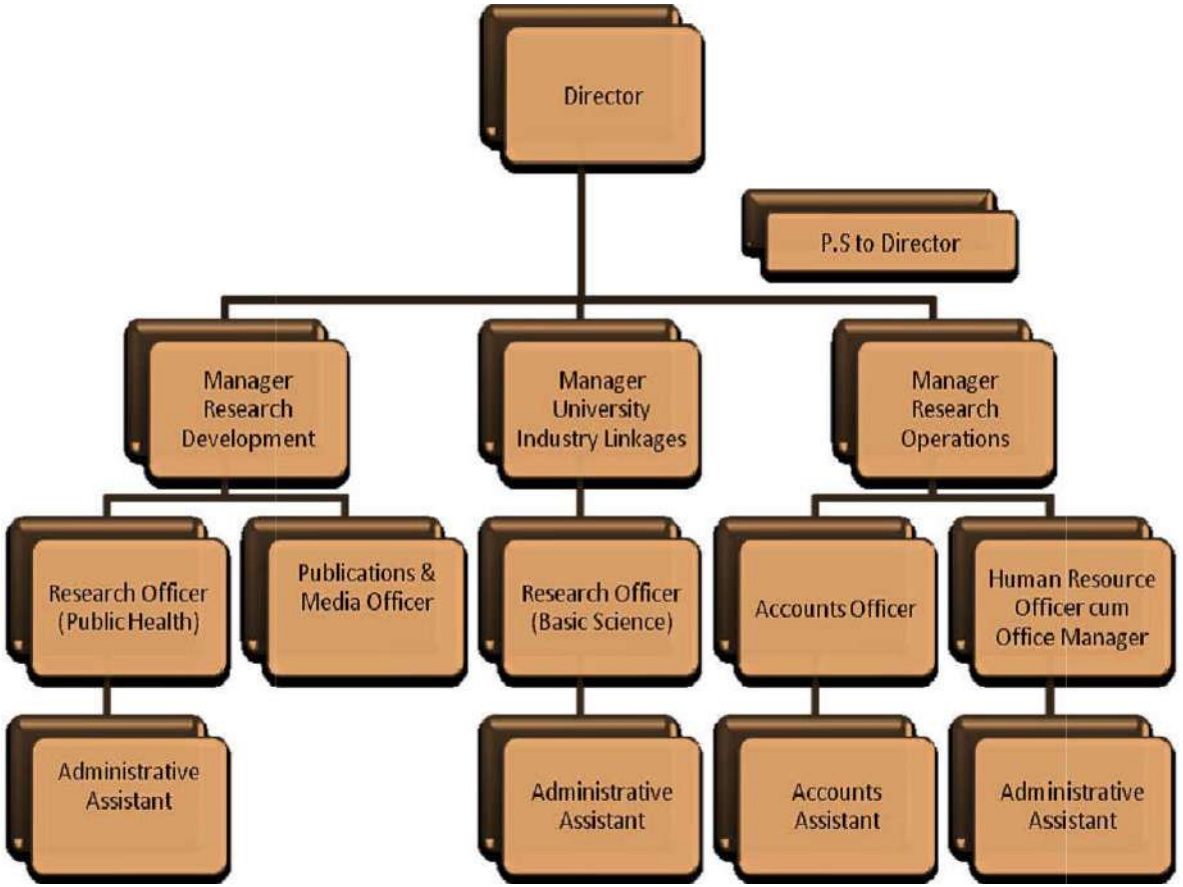


Figure 6 (B).A FLOW CHART OF RESEARCH ACTIVITIES AND ASSESSMENTS OF R-Y4 POST GRADUATE OF RMU WHO WILL OPT FOR 2 RESEARCH PAPERS AS REQUISITE TO CPSP FELLOWSHIP DEGREE



ANNEXURE 1

THE ORGANIZAITONAL CHART OF ORIC OF RMU



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

ANNEXURE 2

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

A. THE VICE CHANCELLOR:

The vice chancellor of RMU will be final authority to approve nominations of external supervisors of MS scholars, in consultation with the Dean of specialty.

Regarding nominations of the internal supervisors of MS trainees and also of Post graduate trainees of fellowship of CPSP, after completion of first year of training, i.e. R-Y1, no substitution in nomination will be allowed. But in case of any serious incompatibility between the trainee and the supervisor, the issue will be brought to the Vice chancellor, directly by the Dean, as a special case. And only the vice chancellor will make the final decision accordingly, as the final authority.

The vice chancellor will also be the head of the quality evaluation team of research training courses that will also include the Head of departments, Deans, selected representatives of BSAR, IRF, Director of ORIC and Director of Quality enhancement cell (QEC). The selection of above mentioned team members will be made by the Vice chancellor of RMU.

The Vice chancellor will have the authority through the research training course, to make surprise visits, evaluations, rounds and checking (without any prior information to the trainees and trainers) at any random occasion, being member of quality evaluation team individually or in team.

An annual meeting of the trainers will also be organized by the Quality Enhancement Cell of RMU, including representatives of supervisors, Head of Departments, Dean, representative members of BSAR, ORIC, QEC & IRF and this meeting will be chaired by the Vice chancellor.

In perspective of the quality assessed through extensive procedure all the year round and also during the Annual meeting of quality assessment and enhancement, the Vice Chancellor and the Board of Advanced study and Research will finalize any modifications or enhancement in the next Research course.

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

MEMBERS OF BOARD OF ADVANCED STUDIES AND RESEARCH:

The Board of Advanced studies and Research of RMU will finalize, approve and issue final approval list of the supervisors of the trainees of RMU.

The Board of Advanced Studies and Research (BSAR) of RMU will receive the submitted research proposals of MS scholars of RMU for appraisal. BSAR will issue an acceptance letter of the research proposal endorsed by the Vice chancellor of RMU copied to the concerned stake holders and authorities including office of Dean and ORIC. If members of BSAR will find any modifications required in the proposal they will recommend them to trainee and supervisor. The trainee must incorporate those changes and will resubmit the corrected version of proposal to BSAR within next one-week period. The written approval letter of BSAR will then be issued within next two weeks to the trainee. The trainees will thus receive formal permission to initiate data collection phase through this acceptance of BSAR.

The quality evaluation team of research training course will include selected representatives of BSAR who will be nominated and selected byBSAR and Vice chancellor of RMU. The members may pay random visits for

physical observation of the proceedings and materials of all the research related activities of the trainees and supervisors for quality assessment and assurance.

The copies of research papers or dissertations submitted by post graduate trainees following option of publication of two original articles to CPSP accredited journals will also be submitted to the chairperson of BSAR for quality assessment to be observed as confidential evidences

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

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

MEMBERS OF INSTITUTIONAL RESEARCH AND ETHICS FORUM OF (IRF) RMU:

Institutional Research Ethics Forum will organize monthly meetings for approval of research proposals of the trainees of RMU in which the trainee must present along with his/her supervisor for presentation and defence of proposals of dissertations/research papers.

The members will be provided hard copies of the research proposals prior to the meetings that they will review before coming to the meeting.

Members will listen and visualize five to ten minutes' presentation through power-point by the trainees and by the end of presentationwill make relevant queries to the trainees.

The IRF will appraise and scrutinize every aspect of the proposal/s and if found acceptable then will provide on spot verbal approval of the project followed by written approval letter within next two weeks to the trainees.

If members of IRF will find any modifications required in the proposal/s they will recommend them to trainee and supervisor. The trainee must incorporate those changes and will resubmit the corrected version of proposal/s within next one week's period.

The written approval letter of IRF will be issued within next two weeks of meeting, to the trainee.

In case the trainee will be working on option B of CPSP i.e. publication of two research papers, instead of writing dissertation, then he/she will present both research proposals to IRF for the two topics already approved by CPSP.

The quality evaluation team of research training course will include selected representatives of IRF who will be nominated and selected bychairperson of IRF and Vice chancellor of RMU. The members may pay random

visits for physical observation of the proceedings and materials of all the research related activities of the trainees and supervisors for quality assessment and assurance.

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

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

THE DEAN OF THE SPECIALITY:

The journal club meetings will be chaired by the Dean of specialty.

In a journal club meeting, one or two research paper/s published in an indexed national or international journal will be selected by the Dean and will be notified to the departments at least one and a half month prior to the meeting.

The Dean of the specialty will decide the nomination of the supervisor for the post graduate trainee as well as the internal supervisors of MS scholars within first six months of the first year of training R-Y1.

For the selection of supervisors, the Dean will chair meeting for selection of supervisors that will be held in the middle of the first research training year, preferably in June.

The list of all the first year trainees and the available supervisors in each department will be presented to the Dean, by respective heads of each department in meeting.

The Dean will consider the recommendations and proposals of most suitable supervisors for each trainee after eloquent discussions and justifications with the Head of Departments.

The Dean will then call each trainee individually to inform him/her the suggested Supervisor for him/her and will also give right and time for objection or reservation in nomination, if any. The Dean will seek the trainee's

final consent and then after asking the trainee to leave the meeting room, will call the supervisor for final consent.

If the supervisor will also be willing to happily supervise the trainee, then the Dean will finally approve the nomination.

A tentative list will be issued by the office of the Dean, within three days of the meeting, copied to the HOD's and the trainees and supervisors.

Both the trainees and the supervisors will be given two weeks to challenge the nominations and will also be given right to personally approach the Dean for any request for change. In case of any objection, the Dean will make changes in consultation with the HOD's, after final consent and satisfaction of both trainee and supervisor

The final revised list of nominations will be then issued by the office of Dean and will be sent to the Board of Advanced studies and Research of RMU (BSAR).

During the last few months of the first year of training, the trainees and supervisors will be advised by the Dean, to get familiar with each other and try to identify their abilities to efficiently and successfully work together as a team.

In case of any issues, either of both will have right to request any change in nomination to the Dean, till last week of first year of training. The Dean will then consider the case and will seek modification in nomination from the BSAR.

After completion of first year of training, no substitution in nomination will be allowed. In case of any serious incompatibility between the trainee and the supervisor, the Dean will have authority to bring it to the notice of the Vice chancellor as a special case.

As regards the MS scholars, the external supervisors will also be nominated and those nominations will be made by Vice chancellor of RMU in consultation with the Dean of specialty. After finalization of nominations a letter

of agreement of supervision will be submitted by the trainee to the office of Dean, including consent and endorsement of both trainee and the internal and/or external supervisor.

Regarding the project of undertaking clinical audits on various aspects of the department during first year of research training, on one topic assigned to each group by the Dean in consultation with Heads of Departments.

The clinical audits completed in groups will be published as Annual Audit Reports of the departments by the Dean

The Dean will make the decision regarding the presentation of clinical audit weekly Clinico-pathological conferences (CPC) of the University.

Once the research question and topic is finalized with mutual understanding of the supervisor, the Dean will also be handed over the selected topic by the trainee. The Dean of the specialty will give approval of the topic after scrutiny and will confirm after consultation with HODs that there is no duplication of the topic in the department.

The Dean will finalize the list of the topics of research proposals of all trainees during fourth month of R-Y2 and then will submit the list to BSAR.

Dean will also ensure the feasibility and availability of resources during second year of research training of the trainees of RMU, before initiation of the research project.

The office of Dean will receive a copy of approval of the acceptance letter of BSAR once the MS scholars of RMU will get their research proposals approved by to the Board of Advanced Studies and Research (BSAR) of RMU.

The Dean will receive the copies of final manuscript by post graduate trainees following option of publication of two original articles to CPSP accredited journals that will be observed as confidential evidences by Dean for quality assessment. It will be kept strictly confidential by the office of the Dean in order to avoid any risk of potential plagiarism

The Dean will also receive the copies of final dissertation manuscript by post graduate trainees and MS trainees that will be observed as confidential evidences by Dean for quality assessment. It will be kept strictly confidential by the office of the Dean in order to avoid any risk of potential plagiarism.

The office of Dean must also receive the letter of acceptance/s by the trainees, in case the research paper/s is/are approved by the target journals. When the original article will be published in journal/s, then the trainee will submit hard and soft copies of the original journal with his/her published articles to Dean of speciality for evidence.

The Dean of speciality will be member of the quality evaluation team of research course and he/she will have right to make any surprise visit during the four years training research course, at any random occasion, either individually or in teams, without any prior information to the trainees and trainers.

The Dean will also attend the annual meeting that will be organized by the Quality Enhancement Cell of RMU. During the meeting, the Dean will share his/her experience of evaluation visits and observations to validate the existing materials.

THE HEAD OF THE DEPARTMENT:

The Head of the Department (HOD) will oversee all the research activities of the trainees, in close consultation with the Dean and the supervisors at the departmental level.

The HOD will attend all the journal club sessions of department.

During the first six months of research training year 1 i.e. R-Y1, the HOD will be responsible for consideration of the nominations of the internal supervisor of each trainee. The HOD will decide these nominations based on his/her own personal observation of the level of performance, talent personality and temperament of both the trainees and the supervisors. Based on his/her personal observation of the compatibility of both eligible trainees and the supervisors, Head of department will recommend or propose most suitable supervisors for each trainee

after eloquent discussions and justifications to the Dean during a nomination meeting that will be especially held for this purpose.

The nominations will be finalized in a special meeting by all heads of the departments and the Dean. The list of all the first year trainees and the available supervisors in each department will be presented by respective heads of each department in meeting.

In case of any objection to nominations of supervisors, the Dean will make changes after direct consultation with the HOD's, apart from final consent and satisfaction of both trainee and supervisor.

After finalization of nominations a copy of letter of agreement of supervision will be received by the office of HOD, submitted by the trainee.

The weekly meetings of the supervisor and the trainee will be monitored by the HOD through observation of the documented record of meeting in log books, by the end of every month.

During ninth month of training year 1; R-Y1 the head of department will supervise the project of clinical audit of the trainees. In this regard HOD will firstly form groups of trainees, either two or three trainees in one group (along with each supervisor of each trainee), depending on the total number of trainees available in that respective first year.

The HOD in consultation with the Dean of specialty will assign topics of audits to each group.

The clinical audits completed in groups will be published as Annual Audit Reports of the departments under supervision of HOD's.

The presentation of clinical audit in weekly Clinico-pathological conferences (CPC) of the University, will also be supervised by HOD's.

The contribution of the trainees in execution and publication of clinical audit will also be qualitatively assessed by the head of departments.

Once the trainee finalizes research question and topic in mutual understanding with supervisor, the HOD will also be handed over the selected topic by the trainee who in consultation with the Dean of the specialty will confirm for non duplication of the topic in the department.

HOD will also ensure the feasibility and availability of resources during second year of research training of the trainees of RMU, before initiation of the research project.

The trainee should submit final draft of dissertation to the head of department till end of fifth month of year for final modifications and the Head of Department will also provide his /her feedback within 10-15 days.

The HOD will receive a copy of final dissertation by the trainee during fourth year of research training that will be kept by him/her as a confidential document in order to avoid any potential risk of plagiarism.

In case the research paper/s of the trainees is/are approved by the target journals, the office of HOD trainee will also receive a copy of the letter of acceptance/s and when the original article will be published in journal/s, even then the trainee will submit hard and soft copies of the original journal with his/her published articles to HOD.

All the Head of Departments along with other staff members of Office of Research Innovation & Commercialization of RMU will keep vigilant and continuous monitoring of all the research activities of each trainee.

The HOD will monthly check and endorse the sections of research in Structured Log books of trainees and also section of Research in portfolio record of the trainees specific to research component of the training.

The HOD will also endorse the attendance of the trainees in the Journal club sessions of the department in the log books along with his/her quantitative and/or qualitative assessment of the trainees' active participation and/or presentation during the journal club session. HOD will also endorse the information whether any question or comment was raised by the trainee during each journal club session or not. The Heads of department will observe the log books for assessments of facilitators of short courses during third year of research training and their comments regarding the home tasks/assignments apart from the remarks of supervisor regarding his/her opinion regarding the trainee's overall performance during third year of training.

In case of any deficiencies or weaknesses, HOD will personally call the trainee and supervisor and will guide them how to correct or improve accordingly.

The research course of the trainees will also be evaluated by the HOD's through end of sessions forms and then collectively through end of course feedback forms.

The HODs will also be members of the quality evaluation team of research training course and will vigilantly and equitably observe and evaluate all the documented records and materials during the course and finally by the end of each course year for quality assessment.

They will also make surprise visits at any random occasion, without any prior information to the trainees and trainers, individually or in team.

HODs will also attend the annual meeting quality assessment and enhancement where they along with other participants will actively review and discuss all the evaluation material. And will also share their experiences of evaluation visits and observations to validate the existing materials.

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

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

The director ORIC will take few research training sessions of first two training years (R-Y1 & R-Y2) that will comprise of didactic lecture followed by taking exercises and then also be responsible for giving and checking the home task assignments (if any) related to session.

During the third year of training the Director ORIC will conduct few of short refresher courses/workshops along with other staff members of Office of Research Innovation and commercialization. For the specific course, Director will have to carry out a 20-25 minutes' power-point presentation to restore the memories of the trainees regarding the previous knowledge attained by them in R-Y1 and R-Y2. The director ORIC will also facilitate the individual or groups exercises of trainees in the training session following the presentation and also check the take home assignments.

Director at the Office of Research Innovation & Commercialization of RMU will keep vigilant and continuous monitoring of all the academic activities of each trainee related to Research courses.

Director of ORIC will check the research portfolio of the trainee and will endorse it.

Based on his/her observations, the completeness and quality of performance of each trainee will be evaluated and in case of any deficiencies or weaknesses he/she will personally call the trainee and supervisor and will guide them how to correct or improve accordingly.

Director ORIC will supervise the formulation of evaluation report of the research training course and after its endorsement will send it to all concerned departments and stake holders. The director ORIC will also be responsible for submission of the evaluation content to the Quality Enhancement Cell (QEC) of RMU for internal evaluation and external evaluation.

The Director will also be member of the quality evaluation team of research training course and will also evaluate all the documented records and materials during the course and finally by the end of each course year for quality assessment.

Like all other members of Quality evaluation team, the director will also have the right to make a surprise visit at random individually or in team. The evaluation will include not only physical observation of the materials but the evaluators may also make a visit to observe any proceedings or activities of the research course e.g. a lecture, a group exercise, a journal club session and/or an IRF meeting.

The Director will attend the annual meeting quality assessment and enhancement where he/she will actively review and discuss all available material of training course will also share his/her experience of evaluation visits and observations to validate the existing materials.

The trainees who will opt for publication of research papers to journals will submit copy of submitted papers to Director of ORIC who will check and keep them secured in records as confidential documents.

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

G. THE DEPUTY DIRECTORS OF OFFICE OF RESEARCH INNOVATION AND COMMERCIALIZATION

(ORIC):

The Deputy Directors ORIC (Office of Research Commercialization and Innovation) of RMU, along with Deputy Director and other staff members of ORIC will conduct an orientation/introductory session of one-hour duration at the initiation of first research training year of all post graduate trainees of RMU. The Deputy Directors will provide introduction to trainees regarding the research course of four years' post graduate training, its schedule of all scholarly and academic activities and the assessment procedures. They will also inform the trainees organizational structure of ORIC and all requisites of training along with introduction to the staff members of ORIC who will be involved in their training. The Deputy directors ORIC will take research training sessions of first two training years (R-Y1 & R-Y2) that will comprise of didactic lecture followed by taking exercises and then also be responsible for giving and checking the home task assignments (if any) related to session. The submitted record and scores of trainees attained for the individual and group assignments during first two training years will be endorsed by the Deputy Directors of ORIC.

During the third year of training the Deputy Directors ORIC will conduct a few of short refresher courses/workshops. For the specific course, they will have to carry out a 20-25 minutes' power-point presentation to restore the memories of the trainees regarding the previous knowledge attained by them in R-Y1 and R-Y2. In addition, they will also facilitate the individual or groups exercises of trainees in the training session following the presentation and will also check the take home assignments.

The submitted record and scores of trainees attained for the individual and group assignments of the short training courses of third year of training will also be endorsed by the Deputy Directors of ORIC.

The Deputy Directors will check and mark the written papers of end of year examination or Annual Research Paper of first two training year R-Y1 & R-Y2. They will also endorse the scores of the Annual papers in the log book of the trainees.

The research course will be evaluated by the deputy directors of ORIC too through end of sessions forms and then collectively through end of course feedback forms.

During these first three months of R-Y2, the Deputy Directors at the ORIC will provide consultation to the trainees regarding feasibility of their research questions and will be advised if any modification required.

The deputy directors will be continuously involved in an alert and continuous monitoring of all the scholarly activities of each trainee.

The structured Research component of Log books and Research portfolio of the trainees specific to research component of all the training years R-Y1 to R-Y4 will also be regularly observed, monitored and endorsed by the Deputy Directors of ORIC. Based on his/her observations, the completeness and quality of performance of each trainee will be evaluated and in case of any deficiencies or weaknesses he/she will personally call the trainee and supervisor and will guide them how to correct or improve accordingly.

The Deputy Director will also monitor the submission of the evaluation content to all including a copy to the Quality Enhancement Cell (QEC) of RMU for internal evaluation.

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

The Research Associates of ORIC (Office of Research Commercialization and Innovation) of RMU, along with Deputy Director and other staff members of ORIC will facilitate the orientation/introductory session of one-hour duration at the initiation of first research training year of all post graduate trainees of RMU.

The Research Associates will take few research training sessions of first two training years (R-Y1 & R-Y2) that will comprise of didactic lecture followed by taking exercises and then also be responsible for giving and checking the home task assignments (if any) related to session.

The Research Associates will also be will be present and will be actively involved in facilitation of all the training sessions that will be taken by Director, Deputy Directors or guest facilitators. They will actively facilitate the individual and group works of the trainees during the sessions.

The Research Associates will be responsible for record keeping of the post graduate trainees regarding the training sessions and the records and scores of trainees for the individual and group assignments during all four training years that will also be endorsed by the Deputy Directors of ORIC. They will not only collate the record at the ORIC in computerized versions as well as in the form of hard copies. The Research Associates will also fill in the record in research sections of the log books relevant to the training sessions and other relevant activities that will be supervised by them.

During the third year of training, the Research Associates will also be present in the short refresher courses/workshops for facilitating the Director, Deputy Directors or guest facilitators. They will actively facilitate the individual and group works of the trainees during the workshops.

The Research Associates along with the Deputy Directors will check and mark the written papers of end of year examination or Annual Research Paper of first two training year R-Y1 & R-Y2. They will enter the the scores of the Annual papers in the log book of the trainees and will also keep its record at the ORIC in computerized versions as well as in the form of hard copies.

During the first three months of R-Y2, the Research Associates at the ORIC will provide consultation to the trainees regarding feasibility of their research questions and will advise trainees if any modification required.

Once the trainee gets the approval of the topic/s from all concerned authorities during R-Y2 and will initiate the formal write up of proposal/s, the research associates of ORIC will guide them regarding the research methodologies.

The research associates of ORIC will also ensure that the duration of research project should be adequate and realistic so that trainees will be able to complete their project/s timely during training leaving enough time for its write up.

The research associates of ORIC will also guide the trainees regarding the research formulation of data collection tools, their pre-testing and execution of data collection phase

Trainees will be individually provided an updated step wise guidance by the research associates of ORIC, regarding submission of their synopsis to IRF for appraisal. They will be supervised by Research Associates regarding how to access the RMU website, to download the application Performa and then how to electronically fill it in for final submission. They will also be provided updated format of presentation by the Research Associates for their Research Proposal presentations at IRF meetings.

The record of the trainees regarding timely completion and quality of each activity related to completion of research proposals and its presentation in the monthly meeting of the Institutional Research Ethics Forum (IRF) of RMU will also be part of the Log Book that will be entered by the research associates of ORIC and conveners of the IRF and BSAR.

As soon as the year four of training commences, these trainees should complete the introduction and literature review sections of their dissertations along with proper referencing during first three months of R-Y4 and the Research Associates will also guide them along with the supervisors and the publication in charge at the ORIC.

While the dissertations will be under review by the degree awarding authority for acceptance, the trainees will be continuously guided by the supervisor and the research associates at ORIC regarding defence of their dissertation. They will be guided how to make effective presentations

according to the format provided by the examination authorities and also how to successfully and confidently respond to the queries of examiners.

In case the dissertation is sent back with recommended corrections or modifications, research associates at ORIC will guide the trainee along with supervisor on urgent basis to get it rectified and resubmitted within at least 10 days' time.

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

The Publication in charge will be actively involved in the Research training course and for the academic sessions relevant to literature search, review and write up, he/she will take didactic lectures, followed by facilitating individual and group exercises and checking of relevant home tasks and assignments.

The post graduate trainees and MS scholars submit a copy of their finalized research proposal/s for the dissertation/research papers to the publication in charge of ORIC who will review for plagiarism through turn-it-in soft ware. Any proposal that will have originality score less than 90% or similarity index more than 10% will be returned back to trainees for rephrasing and resubmission. Only when the eligible scores will be reached, then the publication in charge will approve and the proposal will be further processed.

The publication in charge of ORIC will also guide the trainees to write the literature review sections and the section of "Discussion" based on the comparison of the findings of their study with the previously available research nationally as well as internationally.

The final research papers/dissertations of traineeswill also be reviewed by publication in charge of ORIC for plagiarism through turn-it-in soft ware. Any article that will have originality score less than 90% or similarity index more than 10% will be returned back to trainees for rephrasing and resubmission. Only when the eligible scores will be reached, then the trainee will be allowed to proceed further and to submit their research in the form of original articles under continuous assistance of Publication unit of ORIC.

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

In case any of the paper of trainee is refused publication by a journal then the publication unit at ORIC along with the supervisor and concerned facilitators at ORIC will assist the trainee on urgent basis, to get it rectified and resubmitted to another target journal of choice within next 10 days' time and not delaying it all.

THE STATISTICIANS AT DATA ANALYSIS UNIT OF OFFICE OF RESEARCH INNOVATION AND

COMMERCIALIZATION (ORIC):

The statisticians at the Data Analysis Unit of ORIC at data analysis centre of ORIC will also be actively involved in the Research training course specifically those of Basic and advanced Biostatistics and Epidemiological concepts. The statisticians will take didactic lectures, followed by facilitating individual and group exercises and checking of relevant home tasks and assignments.

The statisticians will facilitate the trainees in sample size calculation through sample size calculators according their study designs.

Trainees will also be assisted by the statisticians in planning the Data analysis for the research projects and also data coding, cleaning and sorting accordingly.

The statisticians will facilitate the trainees in formulation of the data entry sheets in SPSS or other data analysis softwares and will be continuously assisted in the process till data entry is completed.

The trainees will perform the data analysis of their research projects for research papers or dissertations, under continuous guidance and supervision of the statisticians who will also guide them how to interpret analyzed files and to write up results in textual forms, tabulated versions or figures/graphs.

In case the research paper/s or dissertation/s of trainees is/are sent back with recommended corrections or modificationsin results section then the statisticians along with the supervisor, publication in chargeand concerned facilitators at ORIC will assist the trainee on urgent basis to get it rectified and resubmitted within next 10 days' time.

K. DEPARTMENT OF MEDICAL EDUCATION:

The quality evaluation team of research training course will include Director of Department of Medical Education who may pay random visits for physical observation of the proceedings and materials of all the research related activities of the trainees and supervisors for quality assessment and assurance.

The Director DME will also attend the annual meeting of Quality assurance, by end of each research training year and will also share his/her experiences of evaluation visits and observations to validate the existing materials.

The demonstrator at the DME will keep record of attendances of all the post graduate trainees and MS scholars for all the academic sessions attended by them regarding the research training course along with the record of all assessments, scores, marks of annual papers. They will monitor the log books and research portfolio for the completeness and regularity too. The record will not only be kept and maintained at DME as hard copies as well as computerized version, but they will also regularly share records with ORIC and Quality enhancement cells of RMU.

THE SUPERVISOR OF THE TRAINEE FOR THE DISSERTATION PROJECT

The supervisor of the trainee must be nominated within first six months of the research training. The Dean of the specialty will decide the nomination of the supervisor for the post graduate trainee as well as MS scholars. In this regards a meeting will be held that will be attended by all heads of the departments and the Dean. The list of all the first year trainees and the available supervisors in each department will be presented by respective heads of each department in meeting. All of the eligible trainees and supervisors will also be around for brief interviews during the meeting.The supervisor for the trainee will be nominated based the the level of performance, talent personality and temperament of both the trainees and the supervisors by the HOD. If the

supervisor will also be willing to happily supervise the trainee, then the Dean will finally approve the nomination, apart from other requirements.

After finalization of nominations a letter of agreement of supervision will be submitted by the trainee to the office of Dean, including consent and endorsement of both trainee and the internal and/or external supervisor, with copies to HOD, ORIC and BSAR.

The supervisor will be bound to meet with the trainee, on weekly basis exclusively for research activity and will document the activity performed during the meeting in the log book along with endorsement.

During ninth month of training year 1; R-Y1 the supervisor/s will supervise trainees together in groups and will undertake clinical audit on various aspects of the department as a project assignment, on one topic assigned to each group by the Dean and Heads of Departments. The contribution of the post graduate trainees'/ MS trainees in audits will be qualitatively assessed by the supervisors and the head of departments.

The supervisor will keep vigilant and continuous monitoring of all the research related academic activities of each trainee.

The supervisors will provide their feedback through structured and anonymous feedback forms/questionnaire, including closed and partially closed questions that will be regularly provided by them. They will provide their inputs and opinions regarding effectiveness of the course contents, curriculum, teaching methodologies, teaching aids and technologies, content and usefulness of the exercises and assessments etc.

One Focus group discussion ofsupervisors will also be organized by the ORIC to evaluate the research course, its benefits and weaknesses and scope for improvement, each year.

The supervisor will keep a close and continuous check on the Log books, Research portfolio of the trainee and will endorse it regularly. Based on his/her observations, the supervisor will evaluate the performance of the trainee and will discuss it in monthly meeting with the Head of Department or Dean of the speciality if required.

The supervisor will not only guide and facilitate the trainee in preparation of presentation of Journal Club but will also ensure that trainees should actively participate in question & answer session of the journal club meeting and will also ensure the attendance of the trainees in Journal club as per set requirements.

During these first three months of R-Y2, topic and finalize the research question/s Department and Dean of specialty.

supervisor will guide and supervise the trainee to do extensive review of the literature, relevant to and research topic/s with mutual understanding and will submit the selected topic to the Head of

The supervisor will facilitate the trainee at every step, the formal write up of research proposal/s in consultation with the research associates of ORIC for guidance in methodology. The research proposal should be completed in eighth month of R-Y2 and should also be reviewed and finalized by the Supervisor of the trainees.

The trainees should formulate all the data collection tools under guidance of supervisor and should also pretest to finalize all the data collection tools for their research projects.

The supervisors will also ensure that the duration of research project should be adequate and realistic so that trainees will be able to complete their project/s during third year of training leaving enough time for its write up during year 4 of training. The supervisor will also consult the Dean and HOD's in ensuring the feasibility and availability of resources of a trainee during second year of training.

The supervisor will help the trainee Forum during 9-10 months of R-Y2.

During first quarter of year 3, it will be mandatory for the trainees to initiate the data collection phase of their project/s under continuous guidance of their supervisors. In case the data collection will require more human resources, other than trainee himself/herself, the supervisor will ensure that the additional data collection staff will be adequate in number within data within the time framework and should also make sure that they will be proficient enough to collect high quality and authentic data.

The data storage will also be finalized by trainee under the guidance of Supervisor and research centre of specialty.

Whether the trainee is opting for dissertation writing or research paper publication, the supervisor will ensure that every step and procedure is being followed effectively and timely meeting all set requirements as per standard operational procedures.

The supervisor will actively assist the trainee in write up of dissertation/ research papers.

The trainee should submit final draft of dissertation to the supervisor till end of fifth month of year4 for final modifications. Since the supervisor will be incessantly involved in every aspect of the project since the beginning and will be persistently guiding the procedure, so he/she should not take more than 10 days to give final review to dissertation of the trainee with written feedback that will be entered in a structured performa with recommendations for improvement or corrections.

In case the dissertation or research paper/s is/are sent back with recommended corrections or modifications, the supervisor will assist the trainee on urgent basis to get it rectified and resubmitted within next 10 days' time. In case any of the paper is refused publication by a journal even then the supervisor will assist the trainee on urgent basis, to get it rectified and resubmitted to another target journal of choice within next 10 days' time and not delaying it all.

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

While the dissertations will be under review by the degree awarding authority for acceptance, the trainees will be continuously guided by the supervisor regarding defense of their dissertation. They will be guided how to make effective presentations according to the format provided by the examination authorities and also how to successfully and confidently respond to the queries of examiners.

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MANDATORY WORKSHOPS

WORKSHOPS (3 hours each for 2-5 days)

S.NO	NAME OF THE WORKSHOP	LEARNING OBJECTIVES	TOPICS TO BE COVERED
	Research Methodology & Biostatistics (4 days)	To understand the basics of Bio-Statistics To critique why research is important? To discuss the importance of Selecting a Field for Research To prepare oneself for Participation in National and International Research To prepare oneself for Participation in Pharmaceutical Company Research To interpret the importance of research ideas & Criteria for a good research topic To discuss Ethics in Health Research To learn to write a Scientific Paper To learn to make a Scientific Presentation To learn to make a purposeful literature search	Introduction to Bio-Statistics Introduction to Bio- Medical Research Why research is important? What research to do? Selecting a Field for Research Drivers for Health Research Participation in National and International Research Participation in Pharmaceutical Company Research Where do research ideas come from Criteria for a good research topic Ethics in Health Research Writing a Scientific Paper Making a Scientific Presentation & Searching the Literature
2.	Computer Skills and IT	By the end of this workshop student should be able to:	1.Hardware and Software • Understand the main components of a computer,

		Appropriately start up and shut down your computer. Navigate the operating system and start applications. Perform basic functions of file management. Perform basic functions in a word processor and spreadsheet. Manage print settings and print documents. Receive and send email. Use a web browser to navigate the Internet. work with windows, toolbars, and command menus perform basic word processing and graphic tasks make a Power Point presentation explore Web browsing basics back up files save, copy, and organize your work to enter data accurately in software of Statistical Package for Social Sciences	including input and output devices. Understand the function of communication devices such as smartphones and tablets. Understand the role of Operating Systems, programmes and apps. 2.Windows Turning on the computer and logging on. The Windows screen. Running programmes from the Start Menu. Minimising, maximising, moving, resizing and closing windows. Logging off and shutting down your computer. 3.Working with Programmes Running multiple programmes. Desktop icons and creating a desktop shortcut. Managing programmes from the taskbar. Closing programmes. 4.File Management Managing Windows Explorer. Creating, moving, renaming and deleting folders and files. Understandings file extensions. Viewing storage devices and network connections. Managing USB flash drives. 5.Word Processing Creating documents in Microsoft Word. Typing text, numbers and dates into a document. Easy formatting. Checking the spelling in your document. Making and saving changes to your document. • 6.Power Point Making Power Point presentation 7.Spreadsheets Understanding spreadsheet functionality.

			Creating spreadsheets in Microsoft Excel. Typing text numbers and dates into a worksheet. Easy formulas. Easy formatting. Charting your data. Making and saving changes to your workbook. Printing a worksheet. 8.Printing Print preview. Print settings. Managing the print queue. 9.Using Email The Outlook mail screen elements. Composing and sending an email message. Managing the Inbox. 10.Accessing the Internet Going to a specific website and bookmarking. Understanding how to search/Google effectively. Copy and paste Internet content into your documents and emails. Stopping and refreshing pages. Demystifying the Cloud. Understanding social media platforms such as Facebook and Twitter. Computer security best practices. 11.Statistical Package for Social Sciences general understanding for data entry Use of Non-medicinal Interventions in Clinical Practice Communication Skills Counseling
	communication skills **(3 days)**	To learn to use Non-medicinal Interventions in Communication Skills of Clinical Practice To discuss the importance of counseling To role play as a counselor To learn to manage a conflict	Informational Skills Crisis Intervention/Disaster Management Conflict Resolution Breaking Bad News

		resolution To learn to break a bad news To discuss the importance of Medical Ethics, Professionalism and Doctor-Patient Relationship Hippocratic Oath To learn to take an informed consent To illustrate the importance of confidentiality To summarize Ethical Dilemmas in a Doctor's Life	Medical Ethics, Professionalism and Doctor-Patient Relationship Hippocratic Oath Four Pillars of Medical Ethics (Autonomy, Beneficence, Non-malficence and Justice) Informed Consent and Confidentiality Ethical Dilemmas in a Doctor's Life
	Synopsis writing	**Road Map for workshop:** Step 1:Topic selection Step 2: Setting of criteria and standards Step 3: First data collection Step 4: Evaluation and comparison with criteria and standards Step 5: Implementation of change Step 6: Second data collection – evaluation of change **The following are factors that may affect your choice of audit topic:** Strong impact on health Convincing evidence available about appropriate care Common condition which can be clearly defined Good reasons of believing that current performance can be improved Readily accessible data which can be collected within a reasonable length	To understand clinical audit process. To help clinicians decide exactly why they are doing a particular audit and what they want to achieve through carrying out the audit. To determine, how clinical audit relates to other activities related to accountability for the quality and safety of patient care. To select the right subject for audit. To use evidence of good practice in designing clinical audits. To help clinicians formulate measures of quality based on evidence of good practice, as the basis for data collection and also to develop data collection protocols and tools and advise on data collection for clinical audits. To help in understanding how to handle data protection issues related to clinical audit. To understand use of statistics for analyzing and presenting findings of data collection and thus help clinicians to analyze causes of problems that are affecting the quality of care. This helps in applying principles and strategies for taking action to achieve changes in clinical practice.

		of time • Consensus on the audit topic among the practice members	8. To help clinicians manage review of clinical audit findings with their colleagues. 9. To be able to prepare clinical audit reports. 10. To recognize and handle ethics issues related to clinical audit.
	Advanced Cardiac Life Support (4 days) (Workshop is specific for MS Internal Medicine only)	Upon successful completion of the workshop, the student will be able to: • Recognize and initiate early management of pre-arrest conditions that may result in cardiac arrest or complicate resuscitation outcome • Demonstrate proficiency in providing BLS care, including prioritizing chest compressions and integrating automated external defibrillator (AED) use • Recognize and manage respiratory arrest • Recognize and manage cardiac arrest until termination of resuscitation or transfer of care, including immediate post-cardiac arrest care • Recognize and initiate early management of ACS, including appropriate disposition • Recognize and initiate early	The workshop is designed to give students the opportunity to practice and demonstrate proficiency in the following skills used in resuscitation: 1. Systematic approach 2. High-quality BLS 3. Airway management 4. Rhythm recognition 5. Defibrillation 6. Intravenous (IV)/intraosseous (IO) access (information only) 7. Use of medications 8. Cardioversion 9. Transcutaneous pacing 10. Team dynamics 11. Reading and interpreting electrocardiograms (ECGs) - Be able to identify—on a monitor and paper tracing—rhythms associated with bradycardia, tachycardia with adequate perfusion, tachycardia with poor perfusion, and pulseless arrest. These rhythms include but are not limited to: ○ Normal sinus rhythm Sinus bradycardia ○

	management of stroke, including appropriate disposition • Demonstrate effective communication as a member or leader of a resuscitation team and recognize the impact of team	○ Type I second-degree AV block ○ Type II second-degree AV block ○ Third-degree AV block ○ Sinus tachycardia ○ Supraventricular tachycardias ○ Ventricular tachycardia	

SECTION – V

Charting the Road to Competence: Developmental Milestones for MS Programme Obs/Gynae at Rawalpindi Medical University

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

High-quality assessment of resident performance is needed to guide individual residents' development and ensure their preparedness to provide patient care. To facilitate this aim, reporting milestones are now required across all MS Obs / Gynae residency programmes. Milestones promote competency based training in MS Obs Gynae. Residency programme directors may use them to track the progress of trainees in the 6 general competencies including ***patient care, Medical Knowledge, Practice-BasedLearningand Improvement, Inter personal and Communication Skills,***

Professionalism and Systems-Based Practice. Mile stones inform decisions regarding promotion and readiness for independent practice. In addition, the milestones may guide curriculum development, suggest specific assessment strategies, provide benchmarks for resident self-directed assessment-seeking, assist remediation by facilitating identification of specific deficits, and provide a degree of national standardization in evaluation. Finally, by explicitly enumerating the profession's expectations for graduates, they may improve public accountability for residency training.

Table-1	Developmental Milestones for Internal Medicine Training—Patient Care	
Competency	Developmental Milestones Informing Competencies	Approxima Frame Trai Should Ach Stage (mon
A. Clinical skills and reasoning • Managepatients using clinical skills of interviewing and physical examination • Demonstrate competence in theperformance of procedures • Appropriately uselaboratory and imaging techniques	***Historical data gathering***	
	1.Acquireaccurateandrelevanthistoryfromthepatient inanefficientlycustomized,prioritized,andhypothesis drivenfashion	8
	2. Seek and obtain appropriate, verified, and prioritized data from secondary sources (eg, family, records, pharmacy)	12
	3. Obtain relevant historical subtleties that inform and prioritize both differential diagnoses and diagnostic plans, including sensitive, complicated, and detailed information that may not often be volunteered by the patient	24
	4.Rolemodelgatheringsubtleandreliableinformation fromthepatientforjuniormembersofthehealthcare team	40
	Performing a physical examination	
	1. Perform an accurate physical examination that is appropriately targeted to the patient's complaints and medical conditions. Identify pertinent abnormalities using common maneuvers	8
	2.Accuratelytrackimportantchangesinthephysical examinationovertimeintheoutpatientandinpatient settings	12
	3. Demonstrate and teach how to elicit important physicalfindingsforjuniormembersofthehealthcare team	24
	4.Routinelyidentifysubtleorunusualphysicalfindings that may influence clinical decision making, using advanced maneuvers whereapplicable	40
	Clinical reasoning	
	1. Synthesize all available data, including interview, physical examination, and preliminary laboratory data, to define each patient's central clinical problem	16
	2. Develop prioritized differential diagnoses, evidence- based diagnostic and therapeutic plan for common inpatient and ambulatory conditions	32
	3.Modifydifferentialdiagnosisandcareplanbasedon clinicalcourseanddataasappropriate	32
	4.Recognizediseasepresentationsthatdeviatefromcommonpatternsandthatrequirecomplexdecision	48

	making	
	Invasive procedures	
	1. Appropriately perform invasive procedures and provide post-procedure management for common procedures	24
B. Delivery of patient-centered clinical care • Managepatients with progressiveresponsibility • Managepatientsacross the spectrum of clinical diseases seen in the practice of general internal medicine • Managepatients in a variety of health care settings to include the inpatient ward, critical careunits, the ambulatory setting,andthe emergency setting • Manage undifferentiated acutely and severely ill patients • Managepatientsin the prevention, counseling, detection, diagnosis, and treatment of gender-specific diseases • Managepatientsas a consultantto other physicians	***Diagnostic tests***	
	1.Makeappropriateclinicaldecisionsbasedontheresults ofcommondiagnostictesting,includingbutnotlimitedto routine blood chemistries, hematologic studies, coagulation tests, arterial blood gases, ECG, chest radiographs, pulmonary function tests, urinalysis and otherbodyfluids	16
	2.Makeappropriateclinicaldecisionbasedontheresults ofmoreadvanceddiagnostictests	24
	Patient management	
	1.Recognizesituationswithaneedforurgentor emergent medical care, including life-threatening conditions	8
	2. Recognize when to seek additional guidance	8
	3.Provideappropriatepreventivecareandteachpatient regardingself-care	8
	4. With supervision, manage patients with common clinicaldisordersseeninthepracticeofinpatientand ambulatory general internalmedicine	16
	5. With minimal supervision, manage patients with commonandcomplexclinicaldisordersseeninthe practiceofinpatientandambulatorygeneralinternal medicine	16
	6. Initiate management and stabilize patients with emergent medical conditions	16
	7.Managepatientswithconditionsthatrequireintensive care	48
	8.Independentlymanagepatientswithabroadspectrum ofclinicaldisordersseeninthepracticeofgeneralinternal medicine	48
	9. Manage complex or rare medical conditions	48
	10.Customizecareinthecontextofthepatient's preferences and overallhealth	48
	Consultative care	
	1. Provide specific, responsive consultation to other services	32
	2.Provideinternalmedicineconsultationforpatientswith more complex clinical problems requiring detailed risk assessment	48

Table-2Developmental Milestones for Internal Medicine Training—Medical Knowledge			
Competency	**Developmental Milestones Informing Competencies**	**Approximate Time Frame Trainee Should Achieve Stage (months)**	**General Evaluation Strategies Assessment Methods/ Tools**
A. Core knowledge of general internal medicine and its subspecialties • Demonstrate a level of expertiseintheknowledgeof thoseareasappropriateforan internal medicinespecialist • Demonstrate sufficient knowledgetotreatmedical conditions commonly managed by internists, provide basic preventivecare, andrecognizeandprovide initial management of emergency medicalproblems	***Knowledge of core content***		
	1. Understand the relevant pathophysiology and basic science for common medical conditions	8	• Direct observation • Chart audit • Chart-stimulated recall • Standardized tests
	2.Demonstratesufficientknowledgetodiagnoseand treat common conditions that requirehospitalization	16	
	3. Demonstrate sufficient knowledge to evaluate common ambulatory conditions	24	
	4.Demonstratesufficientknowledgetodiagnoseand treat undifferentiated and emergentconditions	24	
	5. Demonstrate sufficient knowledge to provide preventive care	24	
	6.Demonstratesufficientknowledgetoidentifyandtreat medicalconditionsthatrequireintensivecare	32	
	7. Demonstrate sufficient knowledge to evaluate complex or rare medical conditions and multiple coexistent conditions	48	
	8.Understandtherelevantpathophysiologyandbasic science for uncommon or complex medicalconditions	48	
	9. Demonstrate sufficient knowledge of sociobehavioral sciences including but not limited to health care economics, medical ethics, and medical education	48	
B. Commonmodalitiesusedinthe practice of internalmedicine&Demonstrate sufficient knowledgetointerpretbasic clinicaltestsandimages,use	***Diagnostic tests***		
	1.Understandindicationsforandbasicinterpretationof commondiagnostictesting,includingbutnotlimitedto routine blood chemistries, hematologic studies, coagulation tests, arterial blood gases, ECG, chest	16	• Chart-stimulated recall • Standardized tests

common pharmacotherapy, and appropriately use and performdiagnostic and therapeutic procedures.	radiographs,pulmonaryfunctiontests,urinalysis,and otherbodyfluids		• Clinical vignettes
	2.Understandindicationsforandhasbasicskillsin interpreting more advanced diagnostictests	24	
	3.Understandpriorprobabilityandtestperformance characteristics	24	

Table-3Developmental Milestones for Internal Medicine Training—Practice-BasedLearningand Improvement

Competency	Developmental Milestones Informing Competencies	Approximate T Frame Trainee Should Achiev Stage (months)
A. Learningandimprovingviaauditofperformance&Systematically analyze practice using quality improvement methods, and implement changes with the goal of practice improvement	***Improvethequalityofcareforapanelof patients***	
	1.Appreciatetheresponsibilitytoassessand improvecarecollectivelyforapanelofpatients	16
	2.Performorreviewauditofapanelofpatients using standardized, disease-specific, and evidence-based criteria	32
	3. Reflect on audit compared with local or national benchmarks and explore possible explanations for deficiencies, including doctor- related, system-related, and patient related factors	32
	4.Identifyareasinresident'sownpracticeand localsystemthatcanbechangedtoimprove effectoftheprocessesandoutcomesofcare	48
	5.Engageinaqualityimprovementintervention	48
B. Learning and improvement via answering clinical questions from patient scenarios • Locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems; • Use information technology to optimize learning	***Askanswerablequestionsforemerginginformationneed***	
	1.Identifylearningneeds(clinicalquestions)as theyemergeinpatientcareactivities	16
	2. Classify and precisely articulate clinical questions	32
	3.Developasystemtotrack,pursue,andreflect on clinicalquestions	32

	Acquires the best evidence	
	1. Access medical information resources to answerclinicalquestionsandsupportdecisionmaking	16
	2. Effectively and efficiently search NLM database for original clinical research articles	16
	3. Effectively and efficiently search evidence- based summary medical information resources	32
	4.Appraisethequalityofmedicalinformation resourcesandselectamongthembasedonthe characteristics of the clinicalquestion	48
	Appraises the evidence for validity and usefuln	
	1.Withassistance,appraisestudydesign, conduct,andstatisticalanalysisinclinical researchpapers	16
	2. With assistance, appraise clinical guidelines	32
	3. Independently appraise study design, conduct, and statistical analysis in clinical research papers	48
	4. Independently, appraise clinical guideline recommendations for bias and cost-benefit considerations	48
	Appliestheevidencetodecision-makingfor individualpa	
	1.Determineifclinicalevidencecanbe generalizedtoanindividualpatient	16
	2.Customizeclinicalevidenceforanindividual patient	32
	3.Communicaterisksandbenefitsof alternatives topatients	48
	4. Integrate clinical evidence, clinical context, andpatientpreferencesintodecisionmaking	48
C. Learning and improving via feedback and self-assessment • Identify strengths, deficiencies, and limitsin one's knowledge and expertise • Set learning and improvementgoals • Identifyandperformappropriate learning activities • Incorporate formative evaluation feedback into dailypractice	***Improves via feedback***	
	1. Respond welcomingly and productively to feedback from all members of the health care team including faculty, peer residents, students, nurses, allied health workers, patients, and their advocates	16
	2.Activelyseekfeedbackfromallmembersof the health careteam	24

• Participate in the education of patients, families, students, residents, and other healthprofessionals	3. Calibrate self-assessment with feedback and other external data	32
	4.Reflectonfeedbackindevelopingplansfor improvement	32
	Improves via self-assessment	
	1. Maintain awareness of the situation in the moment,andrespondtomeetsituationalneeds	32
	2.Reflect(inaction)whensurprised,applies newinsightstofutureclinicalscenarios,and reflects(onaction)backontheprocess	48
	Participates in the education of all members of the health	
	1. Actively participate in teaching conferences	16
	2. Integrate teaching, feedback, and evaluation with supervision of interns' and students' patient care	32
	3.Takealeadershiproleintheeducationofall membersofthehealthcareteam.	48

Table-4Developmental Milestones for Internal Medicine Training—InterpersonalandCommunication Skills

Competency	Developmental Milestones Informing Competencies	Approximate Time Frame Trainee Should Achieve Stage (months)	General Evaluation Strategies Assessment Methods/ Tools
A. Patients and family Communicate effectively with patients, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds	***Communicate effectively***		
	1.Providetimelyandcomprehensiveverbaland written communication topatients/advocates	16	• Multisource feedback • Patient surveys • Direct observation • Mentored self-reflection
	2.Effectivelyuseverbalandnonverbalskillstocreate rapport withpatients/families	16	
	3.Usecommunicationskillstobuildatherapeutic relationship		
	4. Engage patients/advocates in shared decision making for uncomplicated diagnostic and therapeutic scenarios	32	

	5. Use patient-centered education strategies	32	
	6. Engage patients/advocates in shared decision making for difficult, ambiguous, or controversial scenarios	48	
	7.Appropriatelycounselpatientsabouttherisksand benefitsoftestsandprocedures,highlightingcost awareness and resourceallocation	48	
	8.Rolemodeleffectivecommunicationskillsin challengingsituations	48	
	Intercultural sensitivity		
	1.Effectivelyuseaninterpretertoengagepatientsin theclinicalsetting,includingpatienteducation	8	• Multisource feedback • Direct observation • Mentored self-reflection
	2.Demonstratesensitivitytodifferencesinpatients includingbutnotlimitedtorace,culture,gender, sexualorientation,socioeconomicstatus,literacy,and religiousbeliefs	16	
	3.Activelyseektounderstandpatientdifferencesand viewsandreflectsthisinrespectfulcommunication andshareddecision-makingwiththepatientandthe healthcareteam	40	
B. Physicians and other health care professionals • Communicate effectively with physicians, other healthprofessionals, and health-related agencies • Workeffectivelyasa memberorleaderofa health care team or other professional group • Actinaconsultative role to other physiciansandhealthprofessionals	***Transitions of care***		
	1.Effectivelycommunicatewithothercaregiversin order to maintain appropriate continuity during transitions ofcare	16	• Multisource feedback • Direct observation • Sign-out form ratings • Patient surveys
	2.Rolemodelandteacheffectivecommunication withnextcaregiversduringtransitionsofcare	32	
	Interprofessional team		
	1. Deliver appropriate, succinct, hypothesis-driven oral presentations	8	• Multisource feedback
	2.Effectivelycommunicateplanofcaretoall membersofthehealthcareteam	16	
	3.Engageincollaborativecommunicationwithall membersofthehealthcareteam	40	
	Consultation		

	1. Request consultative services in an effective manner	8	• Multisource feedback • Chart audit
	2.Clearlycommunicatetheroleofconsultanttothe patient,insupportoftheprimarycarerelationship	16	
	3. Communicate consultative recommendations to the referring team in an effective manner	48	
C. Medical records • Maintain comprehensive, timely, and legible medical records	***Health records***		
	1. Provide legible, accurate, complete, and timely written communication that is congruent with medical standards	8	• Chart audit
	2. Ensure succinct, relevant, and patient-specific written communication	32	

Table-5Developmental Milestones for Internal Medicine Training— Professionalism

Competency	Developmental Milestones Informing Competencies	Approximate Time Frame Trainee Should Achieve Stage (months)	General Evaluation Strategies Assessment Methods/ Tools
A. Physicianship • Demonstrate compassion, integrity, and respect for others • Respon- siveness to patient needs that supersedes self-interest • Account-	***Adhere to basic ethical principles***		
	1. Document and report clinical information truthfully	15	• Multisource feedback
	2. Follow formal policies	15	
	3. Accept personal errors and honestly acknowledge them	8	
	4. Uphold ethical expectations of research and scholarly activity	48	
	Demonstrate compassion and respect to patients		
	1. Demonstrate empathy and compassion to all patients	4	• Multisource feedback
	2. Demonstrate a commitment to relieve pain and suffering	4	
	3. Provide support (physical, psychological, social, and spiritual) for dying	32	

abilitytopatients,society, and the profession	patients and their families		
	4. Provide leadership for a team that respects patient dignity and autonomy	32	
	Provide timely, constructive feedback to colleagues		
	1.Communicateconstructivefeedbacktoothermembersofthehealthcareteam	16	• Multisource feedback • Mentored self-reflection • Direct observation
	2.Recognize,respondto,andreportimpairmentincolleaguesorsubstandardcare viapeerreviewprocess	24	
	Maintain accessibility		
	1. Respond promptly and appropriately to clinical responsibilities including but not limited to calls and pages	15	• Multisource feedback
	2.Carryouttimelyinteractionswithcolleagues,patients,andtheirdesignated caregivers	8	
	Recognize conflicts of interest		
	1.Recognizeandmanageobviousconflictsofinterest,suchascaringforfamily members and professional associates aspatients	8	• Multisource feedback • Mentored self-reflection • Clinical vignettes
	2. Maintain ethical relationships with industry	40	
	3. Recognize and manage subtler conflicts of interest	40	
	Demonstrate personal accountability		
	1. Dress and behave appropriately	15	• Multisource feedback • Direct observation
	2. Maintain appropriate professional relationships with patients, families, and staff	15	
	3. Ensure prompt completion of clinical, administrative, and curricular tasks	8	
	4. Recognize and address personal, psychological, and physical limitations that may affect professional performance	16	
	5.Recognizethescopeofhis/herabilitiesandaskforsupervisionandassistance appropriately	16	
	6.Serveasaprofessionalrolemodelformorejuniorcolleagues(eg,medical students,interns)	40	
	7. Recognize the need to assist colleagues in the provision of duties	40	

	Practice individual patient advocacy		
	1. Recognize when it is necessary to advocate for individual patient needs	8	• Multisource feedback • Direct observation
	2. Effectively advocate for individual patient needs	40	
	Comply with public health policies		
	1. Recognize and take responsibility for situations where public health supersedes individual health (eg, reportable infectious diseases)	32	• Multisource feedback
B. Patient-centeredness • Respect for patient privacy andautonomySensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities,andsexual orientation	***Respect the dignity, culture, beliefs, values, and opinions of the patient***		
	1.Treatpatientswithdignity,civilityandrespect,regardlessofrace,culture,gender, ethnicity, age, or socioeconomicstatus	15	• Multisource feedback • Direct observation
	2. Recognize and manage conflict when patient values differ from their own	40	
	Confidentiality		
	1. Maintain patient confidentiality	15	• Multisource feedback • Chart audits
	2. Educate and hold others accountable for patient confidentiality	24	
	Recognize and address disparities in health care		
	1.Recognizethatdisparitiesexistinhealthcareamongpopulationsandthatthey mayimpactcareofthepatient	16	• Multisource feedback • Direct observation • Mentored self-reflection
	2.Embracephysicians'roleinassistingthepublicandpolicymakersin understandingandaddressingcausesofdisparityindiseaseandsuffering	40	
	3. Advocates for appropriate allocation of limited health care resources.	40	

Table-6Developmental Milestones for Internal Medicine Training— Systems-Based Practice			
Competency	Developmental Milestones Informing Competencies	Approximate Time Frame Trainee Should Achieve Stage (months)	General Evaluation Strategies Assessment Methods/ Tools
A. ***Work effectively with other care providers and settings*** • Work effectively invarioushealth care delivery settings and systems relevant to their clinical practice • Coordinate patient care within thehealth care system relevanttotheir clinicalspecialty • Work in interprofessional teams to enhancepatien t safety and improvepatien t carequality • Work in teams and effectively transmit necessaryclinica l information to	***Works effectively within multiple health delivery systems***		
	1.Understanduniquerolesandservicesprovidedbylocalhealth care deliverysystems.	16	• Multisource feedback • Chart-stimulated recall • Direct observation
	2.Manageandcoordinatecareandcaretransitionsacross multipledeliverysystems,includingambulatory,subacute, acute, rehabilitation, and skillednursing.	32	
	3.Negotiatepatient-centeredcareamongmultiplecareproviders.	48	
	Works effectively within an interprofessional team		
	1.Appreciaterolesofavarietyofhealthcareproviders, including but not limited to consultants, therapists, nurses, home care workers, pharmacists, and social workers.	8	• Multisource feedback • Chart-stimulated recall • Direct observation
	2. Work effectively as a member within theinterprofessionalteamtoensuresafepatientcare.	8	
	3. Consider alternative solutions provided by other teammates	16	
	4.Demonstratehowtomanagetheteambyusingthe skills and coordinating the activities of interprofessional teammembers.	48	

ensuresafean d proper care of patients, including the transitionofcare betweensettings			
B. *Improving health caredelivery* • Advocate for quality patient careandoptimal patient care systems • Participate in identifying system errors and implementing potential systems solutions • Recognize and function effectively in high-qualitycare system	***Recognizessystemerrorandadvocatesforsystem improvement***		
	1.Recognizehealthsystemforcesthatincreasetheriskfor errorincludingbarrierstooptimalpatientcare	16	• Multisource feedback • Quality improvement project
	2.Identify,reflecton,andlearnfromcriticalincidents suchasnearmissesandpreventablemedicalerrors	16	
	3.Dialoguewithcareteammemberstoidentifyriskfor andpreventionofmedicalerror	32	
	4.Understandmechanismsforanalysisandcorrectionof systemserrors	32	
	5. Demonstrateabilitytounderstandandengageina system-level quality improvementintervention.	48	
	6.Partnerwithotherhealthcareprofessionalstoidentify, propose improvement opportunities within the system.	48	
C. *Cost-effective care for patients and populations* &Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population- based care as appropriate	***Identifiesforcesthatimpactthecostofhealthcareand advocates for cost-effectivecare***		
	1. Reflect awareness of common socioeconomic barriers that impact patient care.	16	• Standardized examinations • Direct observation • Chart-stimulated recall
	2. Understand how cost-benefit analysis is applied to patientcare(ie,viaprinciplesofscreeningtestsandthe development of clinicalguidelines)	16	
	3. Identify the role of various health care stakeholders includingproviders,suppliers,financiers,purchasers,and consumersandtheirvariedimpactonthecostofand accesstohealthcare.	32	
	4. Understand coding and reimbursement principles.	32	
	Practices cost-effective care		

	1.Identifycostsforcommondiagnosticortherapeutic tests.	8	• Chart-stimulated recall
	2. Minimize unnecessary care including tests, procedures, therapies, and ambulatory or hospital encounters	8	
	3. Demonstrate the incorporation of cost-awareness principles into standard clinical judgments and decision making	24	
	4. Demonstrate the incorporation of cost-awareness principles into complex clinical scenarios	48	

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