



Our Mission: Teach & **Serve**  
Our Vision: Explore & **Evolve**

HOME OF  
**PRECISION**  
RADIOTHERAPY



# RADIATION ONCOLOGY

## FCPS Residency Training Program

Department of Radiation Oncology; SHIFA Cancer Centre  
SHIFA InternAtional Hospital's Pvt., Ltd., ISLAMABAD.

STRUCTURED TEACHING, OBJECTIVES OF TRAINING & STRUCTURED ASSESSMENTS



**Training Faculty: Departmental Program Evaluation Committee (DPEC) Members:**

**Radiation Oncology**

1. Dr. Muhammad Ali Afridi                      Consultant Radiation Oncology
2. Dr. M. Salim Khan                              Consultant Radiation Oncology
3. **Dr. Muhammad Furrukh\***                      **Program Director**, Consultant Radiation Oncology  
Associate Professor Clinical Oncology (Medicine)  
Member Faculty of Radiation Oncology (CPSP)
4. **Dr. Asif Masood**                              Section Head, Consultant Radiation Oncology  
Assistant Professor, SHIFA College of Medicine
5. **Dr. Uzma Qasim**                              Consultant Radiation Oncology  
Assistant Professor, SHIFA College of Medicine
6. Dr. Hira Asim                                      Associate Consultant Radiation Oncology

**Medical Oncology**

7. Dr. Ayaz Mir                                      Director BMT Unit, Consultant Hematologist  
Associate Professor SHIFA College of Medicine
8. Dr. Azhar Shafi                                  Consultant Medical Oncologist

**Surgical Oncology**

9. Dr. Hadi Khan                                      Consultant General Surgeon  
Assistant Professor, SHIFA College of Medicine
10. Dr. M. Asghar Nawaz                              Consultant Cardiothoracic Surgeon

**Palliative Care Physician and Pain Palliation**

11. Dr. Aqduz Qazi                                      Consultant Palliative Care
12. Dr. Salman A. Saleem                              Consultant Pain Medicine  
*Type name for Pubmed indexed publications or ResearchGate\**

**Medical Physics & dosimetry:**

13. Mr. Haseebullah                                      Head of Medical Physics
14. Mr. Noroz Gul                                      Snr. Medical Physicist
15. Mr. Arshad Shaheen                              Snr. Medical Physicist
16. Ms. Mariya Ishfaq                                  Snr. Medical Physicist

**Tumor Registrar**

17. Mr. Zafar Khattak



**Residents & Teaching Faculty of Radiation Oncology**

## SHIFA International Hospital Pvt., Ltd., (JCIA Accredited)

Located at Pitras Bukhari Road, H-8/4, Islamabad, Pakistan, is a 600 bedded tertiary care private hospital with State-of-the-Art facilities. It is one of the kind hospitals within the country where 5 transplants are carried out under one roof i.e., BMT, liver, kidney, cochlear and corneal transplants. SHIFA Tameer-e-Millat University (STMU) accredited with higher education commission (HEC) has this teaching hospital and 3 faculties: 1- Faculty of Health Sciences, 2- Faculty of Nursing and Midwifery, and 3- Faculty of Pharmaceutical and Allied Health Sciences.

The **vision** of Radiation Oncology department is to comply with W.H.O. continuum of cancer care model. The panorama of training involves **primary prevention** associated with cancer awareness amongst the community, **secondary prevention** that involves early detection through screening programs and **tertiary prevention** which provides in-depth knowledge of cancer management using modern diagnostic tools, staging work-up as well as effective treatment based on evidence and clinical practice guidelines with peer review. The program also integrates into its syllabus, palliative care, pain palliation as well as end of life support, terminal care, and bereavement care. SHIFA cancer center also provides a solid platform for patient support and facilitates survivorship. It holds all the *four essential components* of a comprehensive cancer control program i.e., *comprehensive cancer control, core services, clinical services, and clinical management*.



The *faculty* also supports,

1. Teaching the undergraduates from:

*SHIFA College of Medicine*

*SHIFA School of Nursing*

*Medical Lab Technology*

2. CPSP sub-specialty rotations in:

*Neurosurgery*

*Ophthalmology*

3. Facilitates Mental Health & Psychology:

*Rotation for BS & MS Clinical Psychology*

4. Facilitate Trainee Medical Physicists:

*Pakistan Nuclear Regulatory Authority (PNRA)*

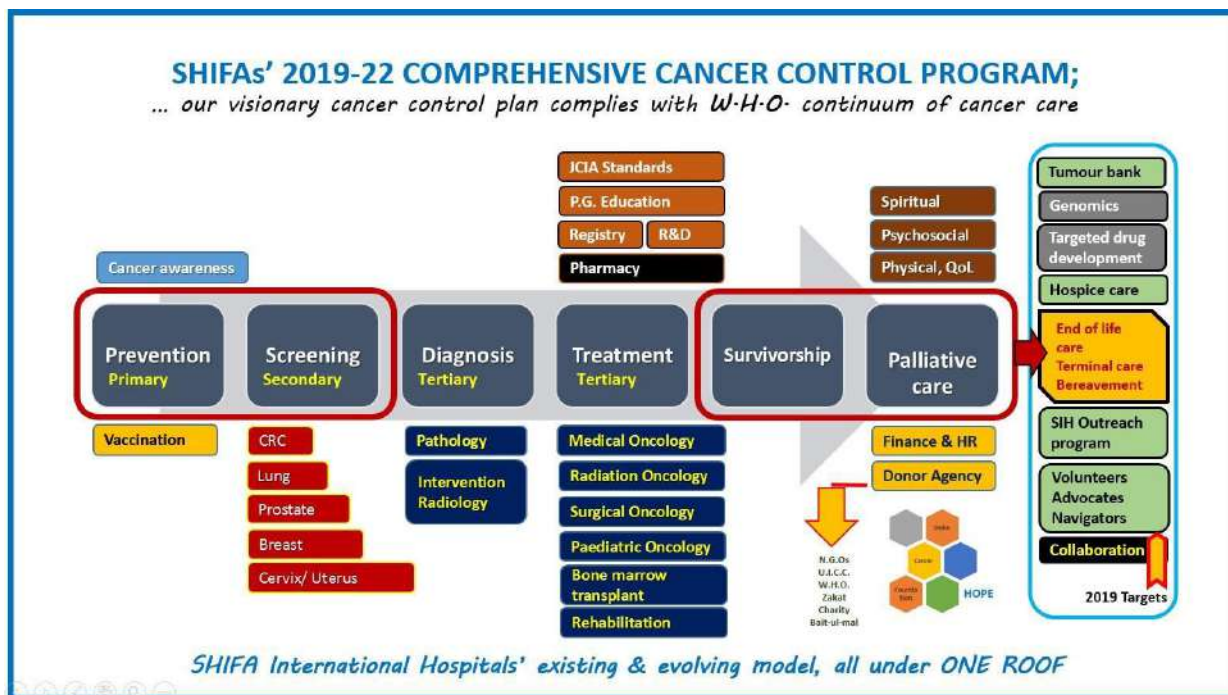
*Pak Institute of Engineering & Applied Sciences*

**Department of Radiation Oncology** is housed in SHIFA Cancer Centre, SHIFA International Hospital Islamabad. The section commenced its work in 1994 with a single multi-energy linear accelerator (LA) commemorating modern radiotherapy in the country. The department has five full time faculty members. The cancer patients are treated at this facility with state-of-the-art equipment which includes an upgraded multi-energy LA-1 embedded with step-and-shoot IMRT (ELEKTA) and a single energy LA-2 embedded with sliding window IMRT (VARIAN; Unique), backed by 16 slices Cannon 3-D virtual simulator-capable of upgrade to 4D, block cutting apparatus, CR system (Kodak), MONACO (v5.5) & ARIA (Eclipse v13.5) including the brachytherapy treatment planning systems. The Quality Assurance & Quality Check tools include 3D water phantom (IBA), dose-I electrometer (IBA), ion chambers, isorad diode detector (SUN Nuclear) and an IMRT Matrixx (IBA). The section also has recently installed a brachytherapy unit (VARIAN; Gamma Med Plus) with 16 channels, housing an HDR Iridium ( $Ir^{192}$ ) varisource, capable of providing treatment for gynecological malignancies as well as potential for interstitial implants for breast CA, soft tissue sarcomas and the prostate gland. The center also provides state of the art brachytherapy services for primarily gynecological oncology.

**Annual Census 2022:** The department has annual influx of over 19046 patients in the last year, including 3862 new cases, 7716 follow- up, 7468 radiation patients follow up, and 4336 chemotherapy cases. The department is estimated to have 1485 virtual simulations and almost 18044 sessions of radiation therapy in year 2022, including 3D CRT, IMRT, SIB- IMRT, and prostate gland IGRT. In addition, an estimated 121 gynecological brachytherapy sessions were performed using HDR Ir192 source (T&O, vaginal cuff brachytherapy as well as interstitial implants).

### Residency Training Program in Radiation Oncology

**Our Vision** is to prepare residents in accordance with CPSP guidelines and SHIFAs' comprehensive cancer control program with its existing and expanding model, depicted as follows:



The goals of Radiation Oncology Residency Training Program are to provide excellence in resident education under highly trained and professionally sound supervision, in an environment which utilizes State-Of-The-Art radiotherapy equipment. The training encompasses compassionate, multidisciplinary patient care with concerns for quality of life (QoL) of cancer patients and to foster new knowledge through scholarly activities in-order to develop skilled radiation oncologists who will become recognized experts in the field. The training will provide a platform for the Radiation Oncology fellows to develop into a highly professional and dependable health care provider.

Residency training program in Radiation Oncology also provides an environment rich for learning through out-patient, in-patient, emergency room and on-call training through direct patient interaction and under supervision. The section ensures interactive discussions with peers, fellow-colleagues, and other residents. The section is mirrored by medical oncology services, comprehensive back-up from modern imaging including interventions, state of the art pathology services, blood bank, rehabilitation unit, medical ICU/PICU, surgical ICU, medical step-down and wide range of sub-specialties, library, computers as well as MIS and media back up. Residents are encouraged and expected to utilize all these facilities to enhance their knowledge, clinical skill sets, and expertise.

## Duration and basic approach of training

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Total duration of training is **four (4) years**, as under.

- A. **Intermediate Module in Radiation Oncology = Two (2) years**, will cover concepts from basic to intermediate levels of complexity in the field of Radiation Oncology
- B. **Advance Training in Radiation Oncology = Two (2) years**, the last two years of training will comprise of concepts from advance to complex level of training in the specialty

The residency training program of the **Department of Radiation Oncology** is a structured training program, offering clinical training in radiation oncology as per the requirements of the College of Physicians & Surgeons Pakistan. The program provides an opportunity to function within the context of a multi-disciplinary team approach for cancer patients, which is an essential component of the training and warrants interacting effectively with specialists of other disciplines, nurses, unit receptionists, nutritionists, pharmacists, rehab staff, social services, and other paramedical personnel. Specific rotation structure is strictly followed to coach the trainees in the most comprehensive system of working in a multidisciplinary team environment. The Resident learns to function in harmony with other members of the health care team and become proficient in interpersonal relationships and in the organization and management of patient care.

Over the training period, the Residency training program provides extensive experience and training to residents who acquire the knowledge base, skill sets, and attitudes required to practice as an independent specialist. Term assessments are structured and being conducted regularly followed by End of Term assessments and briefing sessions.

## The Treatment Modalities

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Section of radiation Oncology, SHIFA Cancer Centre (SIH) provides training in all aspects of precision radiotherapy, including but not limited to.

### A. External beam radiotherapy:

- **3D-Conformal Radiotherapy (3D-CRT)**
- **Precision radiotherapy: Step & Shoot and sliding window Intensity Modulated Radiotherapy (IMRT), SIB-IMRT, Image Guided Radiotherapy (IGRT)**

### B. Brachytherapy:

- **HDR Ir<sup>192</sup> Brachytherapy** with endoluminal and interstitial applicators for gynecological malignancies.

### C. Radioisotope therapy

 through Nuclear Medicine services e.g. I<sup>131</sup>, Sm<sup>153</sup>, Sr<sup>89</sup>, RA.<sup>226</sup>

### D. Systemic therapy

 e.g., chemotherapy, targeted therapy, monoclonal antibody therapy, hormonal therapy, immunotherapy and radiolabeled monoclonal antibodies.

## FCPS Residency Training Program Structure

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The Radiation Oncology Residency Program is designed to provide core knowledge and relevant clinical experience, comprising of:

1. A sound knowledge of basic sciences including applied radiation physics, applied radiobiology, cancer biology, cancer genetics & hereditary basis of cancer, regional and surface anatomy, and medical statistics (biostatistics).

2. Patient-oriented care, teaching all types and sub-types, stages of cancer, and treatment using the **State-of-the-Art** radiotherapy equipment with concerns purely on out-comes i.e., *efficacy, safety, focus on keeping anatomic continuity, and preservation of function as well as preserving cosmetics and quality of life.*
3. Indications/ contraindications for irradiation incorporating special therapeutic considerations unique to each site and stage of disease.
4. Residents learn standard and sophisticated radiation techniques for palliative and curative cases, as well as use of treatment aids and treatment planning/ dosimetry to optimize radiation dose distribution.
5. Learn multi-modality management of both newly diagnosed and established cancer patients.
6. Learn follow-up care for treated patients in the out-patients, in-patients & E.R.
7. Develop research and conduct basic clinical trials that focus on radiation/ clinical oncology as the primary modality of treatment

### Our Professional Development Plan

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The **Program Director** & the training faculty at SHIFA Cancer Centre ensure that trainees follow a professional development plan to cover *four basic structures* required to transform the residents into dependable, competitive, ethical, and conscience driven health care providers useful for patient, community, staff, students, and the Nation.



The resident is encouraged to follow a weekly program and devise their training into four areas of grooming. The *clinical part* accounting for 70% of their weekly activities, while 10% each are reserved for *scholarly (research/ journal club) activities, residents teaching activities* and *administrative duties* respectively. The department supports mandatory research methodology courses in-house or with the CPSP. The SHIFA Research Centre staff facilitates dissertation writing or publications or both under direct supervision of the faculty.

### Induction of Trainees and the application process

The program seeks candidates based upon their academic credentials, preparedness, ability, communication skills, motivation, passion, and integrity.

**Eligibility:** The applicants must meet the following qualifications:

- **MBBS** recognized by the PMDC
- **One year House Job in Medicine & Allied, Surgery & Allied or Radiology, or Oncology** from PMDC recognized Institutes and Hospitals
- **FCPS Part-I** in
  - ✚ **Radiology** or
  - ✚ **Medicine & Allied**
  - ✚ **Surgery & Allied**

## The application process:

- **Advertisement** - Medical Staff Affairs (MSA)
- **Entry list** - Medical Staff Affairs (MSA)
- **Written Examination** > Short-listing
- **Interview** - by faculty supervisors and the Program Director + Section Head

Section of Radiation Oncology recruits its post graduate residents (PGRs) purely based on merit through competition. The initial step of hiring a resident is an open advertisement in the print media. The applicant/s are invited for:

- **a written examination** (40% weightage; MCQs + SEQs = 50) duration 1 hour, and successful candidates are shortlisted for,
- **an interview** by the supervisors / PD + HOD (60% weightage)

The process of hiring occurs twice a year and PGRs are inducted on Jan. 1 and July 1 of each year. All the existing SIH Medical Staff Affairs (MSA) policies are followed throughout the recruitment process. Selected candidates are subsequently asked to attend a two-day orientation program arranged by MSA.

The program had 11 applications in year 2022 against one post.

## Outline of TRAINING

### Core Competencies and Instructional Methods:

The following levels of core competencies shall be assessed throughout the training period and endorsed in the attached CPSP forms/ SVCD Charts (Annex I – IV)





## 1. Out-patient Clinics, In-patients & E.R. rounds

Postgraduate residency training in Radiation Oncology is intended to provide the trainee with the practical clinical experience necessary to develop the knowledge based and clinical skills required to manage patients with the wide spectrum of solid as well as hematological malignancies and certain benign conditions. Residents are made familiar with the natural history of various cancers and complications associated with them and their treatment. Patients who are being irradiated are also evaluated for early side effects, advised appropriate management, and followed for late effects. The out-patient clinic is done 6 days a week, residents are supposed to attend minimum three out-patient consults per week as well as one OPD for patients on radiation. They must ensure 1 in 4 on calls with Radiation Oncology section, and ensure attendance in morning rounds, meetings, and MDTBs.

In general, the competencies outlined below have been reflected in the CPSP Model comprising up of **Advocacy, Pedagogy & Professionalism** where patient care is derived through *knowledge & technical skills, critical reasoning, research, communication skills and teamwork*.

The postgraduate residents should be able to:

1. Assess patient through six vital signs, obtain appropriate history, under-take relevant general and systemic physical examination. In-depth management through analgesics (WHO step ladder, opiates – morphine, fentanyl, tramadol, NSAIDs, etc. antagonists and synergistic drugs for opiates, nerve blocks, bisphosphonates, anti-epileptics, benzodiazepines, anxiolytics, and attending sedation workshop, etc.).
2. Use of Morphine sulfate should be embedded in Radiation Oncology Residents. Its integral they should be familiar with opiate conversion tables as well as their anticipated side effects and antidotes. Assess the general performance status and able to do comprehensive geriatric assessment (when indicated) of the cancer patient; this may be taught by experts from Oncology or Family physicians.

Residents should be familiar with:

- *Karnofsky's (KPS) or Eastern Co-operative Oncology Group (ECOG) Performance Status*
  - *Polypharmacy: use of drug interaction checker and able to carry medicine reconciliation*
  - *Charlson age co-morbidity index (CACI)*
  - *Activity of Daily Living (ADL)/ IADL Scores*
  - *Account for visual or hearing problems, Gait problems, falls or incontinence, dementia, depression, or delirium*
  - *calculation of GFR for chemo prescription, interpreting ECG, ECHO, PFTs, etc.*
  - *Psychological state*
  - *Social/ family support*
  - *Financial support*
  - *Able to meet JCIA Standards including departmental KPIs and policies*
3. Able to stage the patient clinically and subsequently confirm through imaging and other tools.
  4. Device a differential- diagnoses and able to order relevant investigations to confirm the diagnoses, justify ordering and interpretation of investigations and able to draw a management plan for the patient in consultation with their supervisor or faculty.
  5. Apply the requisite knowledge and skills to think critically and solve patient problems all together with ability to call other specialties for assistance when essential.
  6. Plan and supervise delivery of palliative and radical radiation treatments
  7. Follow the patient's course during treatment and surveillance, and able to deal with complications of the disease and its treatment (radiotherapy, chemotherapy, targeted therapy, interventional procedures, etc.)
  8. Case based discussion are done to enable the trainee to identify and address complications e.g.

- *Metastatic and progressive cancer e.g. DVT, PE, DIC, de-saturating cancer patient (Aa gradient), febrile neutropenia, thrombocytopenia, anemia, infection/ sepsis, immunocompromised patient, community and hospital acquired infections, visceral obstructing scenarios, nausea, vomiting, diarrhea, acid base balance, electrolyte imbalance, oncological emergencies, renal, hepatic & neurologic impairment, cachexia, delirium, derangement in renal, liver or cardiac functions, COPD exacerbations, and stroke, etc.*
- *Early & late effects and complications of radiation therapy.*
- *Identify, manage, treat, and follow systemic therapy induced adverse events from chemotherapy, targeted therapy, hormonal therapy, Mc-Ab as well as immunotherapy.*
- *Transfusion of individual blood products, indications, knowledge of anticipated adverse events and their management, including blood product irradiation.*
- *Use of antibiotics, antifungal and anti-viral medications pertinent to neutropenia and oncology.*
- *Use of various oral or IV contrast agents used during virtual simulation, and prevention and recognition of contrast nephropathy and its sequelae including retroperitoneal fibrosis.*

**Specific Learning Objectives:**

- ✓ The department promotes **Chief Resident (C.R.)** led teaching and training. The CR in consult with the residents, draws a clear objective of teaching and training including syllabus being covered in a quarterly manner, identifies skill and procedures mentioned in SVCD charts of the CPSP in consult with the faculty and after approval from the Program Director. The syllabus is set for a quarter, strictly adhered, self-learning as well as tutor led teaching is defined through presentations as well as hands-on teaching (Sample syllabus attached at page no. 32-36).
- ✓ Areas needing self-learning, tutor led tutorials, resident presentations, and lectures by faculty are designated in the start of the and run throughout the year. CMEs are encouraged including MDTB, National Molecular Tumor Boards, National Symposia, and international conferences via zoom link.
- ✓ The residents acquire basic oncology knowledge for epidemiology, risk factors, pathophysiology, stage through clinical skills & pertinent imaging, and make management or treatment decisions, draw conclusions, obtain references, review literature, and apply clinical practice guidelines.
- ✓ Acquire knowledge through reading, journal clubs, morbidity & mortality meetings, intra- departmental and multi-disciplinary team meetings, and attending CME activities mentioned above.
- ✓ Pain management & able to balance between anti-tumor therapy and palliative care across the continuum of care
- ✓ Provision of end-of-life care, terminal care, and bereavement care
- ✓ Clinical, technical and communication skills (verbal & written)
- ✓ Medical ethics, breaking bad news, and patient confidentiality
- ✓ Follow personal & professional development
- ✓ Act as a navigators, volunteers, and advocates for patients & families
- ✓ Facilitate survivorship and volunteer in patient support program & out-reach program
- ✓ Information Technology & Cancer Research
- ✓ Critical appraisal of published material
- ✓ Participate in clinical governance and clinical audits
- ✓ Instrumental and familiar with JCIA Accreditation of cancer care services

Chief Resident: Team leader for residents and in-charge for residents administratively

## 2. Presentations and Tutorials

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Will be arranged twice weekly on medical physics, applied radiobiology, medical statistics covering basic topics and applied statistics for clinical research, and on epidemiology, risk factors, pathophysiology, histopathology, imaging, and management of different cancers.

The trainees are made to understand principles of oncologic and radiation management through; series of didactic lectures covering core topics in radiotherapy and oncology, based on CPSP regulations and syllabus i.e., simple, and complex radiation techniques, principles of radiotherapy, applied radiobiology, medical physics, chemotherapeutics, palliative care including pain management, cellular pathways and targeted therapy, cancer genetics, and hereditary basis of cancer.

### 3. Morbidity & Mortality Meetings (Intra-departmental meeting)

Held once a month in Department of Medicine through which the resident learns serious complications of treatment and consequent deaths therein. Errors and omissions are identified, and strategies enforced for improvement.

### 4. Journal Club (Intra-departmental meeting)

Trainees and staff will present recent articles from reputable indexed journals in journal club and discuss the findings. Trainee shall be taught literature search and appraisal and how to make appropriate practice changing recommendations based on the results.

### 5. Quality Meeting (JCIA)

Attend quality meetings facilitated by Medical Staff Affairs (MSA) to learn how to ensure smooth working in the radiation department and keep an eye on errors, error reporting and eradication. Residents are made familiar with JCIA standards and introduced to departmental key performance indicators by our Quality representative. It also includes peer review of radiation plans and management decisions. The residents are also made familiar with QA & QC of Linear Accelerators as well as that of the IMRT plans – See separate JCIA booklet on intranet.

### 6. Research Meeting

Trainees will be introduced to the scholarly activities to advance basic knowledge of the basic principles of research, including how research is conducted, evaluated, explained to the patients, and applied in clinical practice. It is pivotal to analyze and draw logical conclusions from scientific publications and give recommendations for practice changing. The supervisor, training faculty and guest faculty will provide mentoring and technical support for trainees' involvement in research activities. SHIFA Research Center (SRC) provides biostatistics and SPSS support for the program. CPSP Research Methodology workshop is mandatory.

### 7. Tumor Board & Multi-disciplinary Team (MDT) Meetings

Weekly meetings provide a platform for discussing pathology, radiology, nuclear medicine, and management of unique and interesting cancer presentation with consultants of relevant specialties. SHIFA Pathology-Oncology departments run 20 MDT meetings every month.

The schedule of weekly MDTBs is as follows and runs 9:00-10:30 a.m.

- *Weekly*
  - Multi-disciplinary Tumor boards (Monday)
  - GI MDT (Tuesday)
  - MDTBs in breast cancer (Thursday)
  - Hepato-biliary cancers (Monday)
- *Weekly* Head & Neck and Sarcoma MDT (Saturday)
- *Fortnightly* Hematology and BMT Meetings (11:00 am bimonthly)
- *Monthly* Uro-oncology MDTB meetings (Friday after noon 3:00-4:00 pm)
- *Monthly* Pakistan Molecular Tumor board

## 8. Intra-departmental Meetings

The residents are encouraged to present new, challenging, complex and interesting cancer cases seen in a week on every Friday between 9:00-10:30 a.m. and discuss them in-depth amongst the faculty.

## 9. In-patient and Emergency Room Rounds & Consults

Residents follow, manage oncology in-patients, and learn changes in management plan when needed. The instructions must be endorsed on patient files and, or EMR clearly and legibly. Residents are also expected to obtain timely consults from pertinent departments and ensure timely execution of their advice. Chart reviews are done by attending radiation oncology faculty and is part of assessment. JCIA format is instrumental in filling progress notes.

They will perform simple procedures like pleuro-peritoneal drainage, observe pleurodesis, Angioembolization of bleeding tumors, Liver directed therapy e.g., TACE, MWA, or RFA, and tumor directed Cryoablation. They should be able to provide central line or Port A Cath care, IV cannulation, DL & IDL, Ophthalmoscopy, NG intubation, Foley's catheterization, FNAC, pap smear, punch biopsy, etc. through core competencies.

## 10. Day care chemotherapy (2 weeks):

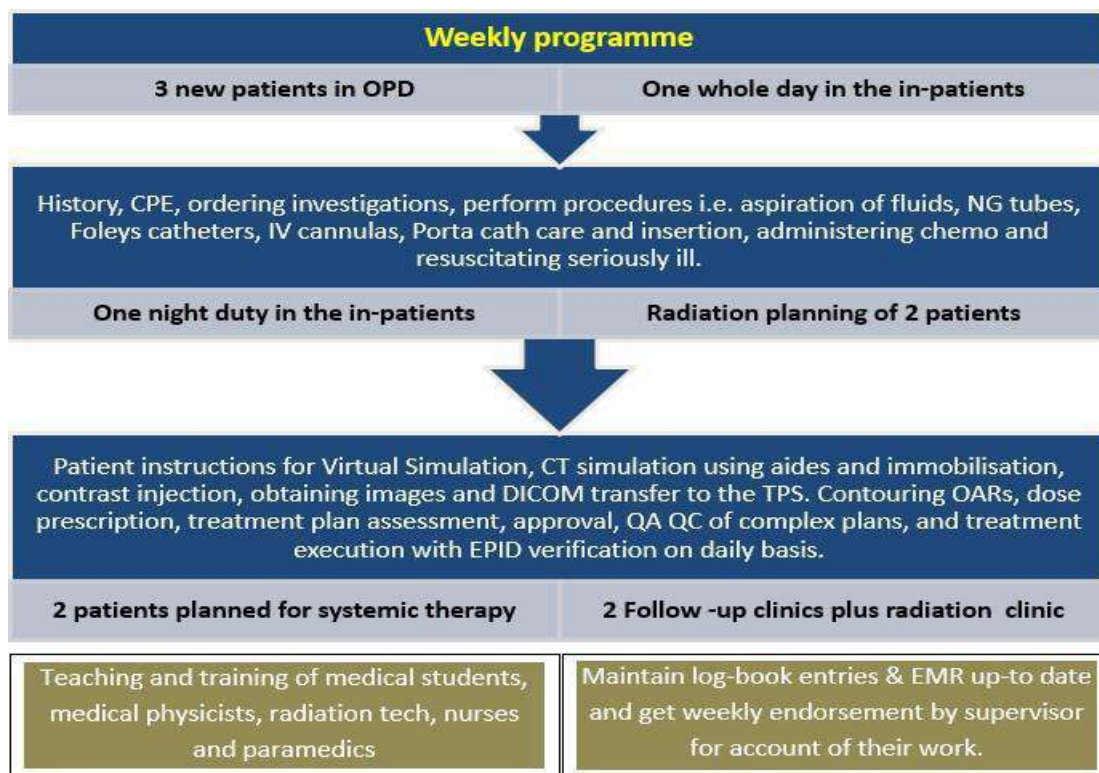
**The residents should be familiar with, and able to perform:**

1. Assessment of patient fitness for chemotherapy after reviewing essential labs
2. Learn to calculate body surface area, corrected calcium levels, able to calculate GFR and AUC and learn performing and interpretation of ECG findings and/ or ECHO
3. Prescription writing for chemotherapy and writing for obese and elderly patients and dose adjustments with deranged blood counts, renal and liver functions.
4. Administration of chemotherapy
5. Monitor chemotherapy and learn management of nausea, vomiting, anaphylaxis, extravasation, etc.
6. Insertion of cannulas, butterfly, and comprehensive care of IV lines e.g., CV catheters, Port-A- Cath, PIC lines, and stoma care), etc.
7. Seeking help in consult with the supervisor/ faculty where essential e.g., dietician, ID nurse, wound care nurse, dynamic compression sleeves (prevent lymphedema or for DVT prophylaxis), and related rehab staff including physiotherapy, orthotics, speech therapist, and clinical psychologist or psychiatrist, etc.

## 11. CME Activities

Residents shall be encouraged to participate in

- ✓ Scientific conferences, workshops, and symposia. The minimum credits shall be in accordance with the approved PMDC requirements.
- ✓ encouraged to arrange and organize CME activities and
- ✓ will be facilitated to conduct community awareness activities
- ✓ facilitated to act as patients advocate and participate and/ or lead patient support groups



## 12. Practice based learning

Practice based learning and improvement requires the residents investigate and evaluate their care of patients, appraise, and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning. Residents are expected to develop skills and habits to be able to:

- Identify strengths, deficiencies, and limits in one's knowledge and expertise
- Set learning and improvement goals
- Identify and perform appropriate learning activities
- Systematically analyze practice, using quality improvement methods, and implement changes with the goal of practice improvement
- Incorporate formative evaluation feedback into daily practice
- Locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems
- Use information technology to optimize learning and
- Participate in the education of patients, families, students, residents, and other health professionals, as documented by evaluations of a resident's teaching abilities by faculty and/or learners.

## YEAR WISE DESCRIPTION OF TRAINING

### A. First YEAR of Fellowship Training

Two (2) weeks of orientation, where trainees benefit from a focused orientation which includes introduction to the medical staff, physics team, therapy team and nursing staff, basic radiation safety, multi-disciplinary patient care, clinic structure, simulation, digitally reconstructed radiographs (DRRs) or electronic portal imaging device (EPID), radiation and support equipment at the site and interdepartmental and social interactions. He/ she will be made familiar with hospital policies, JCIA requirements, confidentiality, record keeping and IT as well as completing necessary patient related paperwork plus Electronic Medical Record (EMR) and get used to hospitals PACS system.

During the first year the trainee's rotation is dedicated to clinical services which provide a wide spectrum of basic oncology problems, including but not limited to:

- a. BLS certification within first year of induction
- b. The residents are required to master the art of relevant history taking, with special emphasis on past oncological intervention performing general physical and thorough systemic examination.
- c. Integrate the history and examination findings to construct an appropriate differential diagnosis and able to frame battery of appropriate tests.
- d. Able to interpret results of tests and review/ discuss radiology images with the faculty supervisor to draw conclusions.
- e. Able to stage the cancer according to latest AJCC cancer staging.
- f. Formulate appropriate treatment plans for discussion with senior residents or faculty.
- g. Maintain clinical and surveillance record in patients' chart on the EMR.
- h. The resident will also become accustomed to chemotherapy and radiotherapy prescriptions.
- i. Identify, prepare, and present case scenarios in the tumor board, case-based discussions, and morbidity & mortality meetings as well as in MDTB meetings.
- j. Residents shall be introduced to the working of:
  - Virtual Simulators, C-Arm (DRR), EPID, QA & QC tools, immobilization devices, patient aides, Linear accelerator, and its control panels, operating of treatment planning system after obtaining username and password from head of medial physics.
  - Able to prepare patients prior to virtual simulation
  - Learn patient position in the simulation through laser alignment and fucidal markers placement and necessary use of immobilization devices
  - Observe and assist contouring of target volumes, organs at risk and be part of discussion of simple and complex treatment plans.
- k. Maintain E-logbook through registration number and password obtained from the Registration & Research Cell (R&RC) of the CPSP.
- l. The resident should have identified the topic of clinical research and should have formulated an adequate synopsis for submission to Registration & Research Cell (R&RC) of the CPSP in consult with his/ her supervisor **OR**
- m. Submit topic/title of research papers to R&RC (CPSP) before submission of papers for publication in JCPSP
- n. Completed mandatory workshops of Department of Medical Education, before IMM.
  - 1. Introduction to computer and internet**
  - 2. Research methodology, biostatistics, and dissertation writing** (CPSP and SHIFA Clinical Research Centre)
  - 3. Communication skills**
  - 4. BLS** (SHIFA International Hospital or Advanced Skills Department of the CPSP) and
  - 5. Any other workshop** introduced by the CPSP
- o. Completed part course of medical physics, biostatistics, clinical pharmacology, radiobiology, cancer biology and acquired knowledge to handle all grades of cancer related pains and ability to recognize cancer and its treatment related complications.

## **B. Second YEAR of Fellowship Training**

The clinical rotation in the second year of training is intended to foster more in-depth learning by focusing on

site-specific services which interact with referral base, and other oncology and surgical specialties practice. Each resident enhances their knowledge in base in radiation oncology, pathology, radiology, medical oncology, and chemotherapeutics. It is expected that trainees take an increasingly active role in diagnosis, highlighting patient issues requiring management, recommending, and discussing treatment options, performing simulations and monitoring treatment. Residents’ supervisors ensure hands on training to the trainees.

- a. The resident should be able to write chemotherapy and radiotherapy prescriptions independently after obtaining the informed consent.
- b. Be familiar with the operation of all radiotherapy machines, simulators, treatment planning systems, phantoms, and dosimeters
- c. Learn about different patient positions during simulation and use of immobilizing devices and fucidil tattoo marking on the patient
- d. Contouring of the CT scans for different target volumes and organs at risk.
- e. Ability to evaluate, interpret, verify, and approve the radiation plan in accordance with the IAEA ICRU Reports 50-62-83 and 38 where applicable
- f. The resident should be familiar with radiotherapy side effects and effective counseling of the cancer patients regarding prognosis and risk benefits of the intervention
- g. Develop communication skills to break bad news, counsel patient and/ or families, shared decision making, recognize impact of ailment on patient and their families. Communicate effectively with seniors, peers, juniors, learners, and other health professionals.
- h. Ensures patient and staff safety and completed compulsory JCIA drills
- i. Present well in OPDs, inpatient rounds, MDTs, and conferences
- j. Able to write comprehensive discharge summaries, medical report, referrals, and concise progress notes as well as patient hand-over during shift change
- k. Demonstrate conflict resolution, management skills and leadership
- l. Should have completed the entire course of medical physics, medical statistics, clinical pharmacology, radiobiology, cancer biology and acquired knowledge to independently handle all grades of cancer related pains and ability to manage cancer and its treatment related complications.
- m. Sub-specialty Rotations:

• <b>Pathology</b>	4 weeks
• <b>Radiology and IR</b>	4 weeks
• <b>Medical Oncology</b>	8 weeks
• <b>Palliative care, Pain Clinic &amp; procedures</b>	1 week
• <b>Chemo day-care</b>	2 weeks
• <b>Surgical Oncology</b>	Case based rotation
• <b>Combined Military Hospital</b>	Weekly IMM class i.e., Cell biology, Biostatistics, Radiobiology

### C. Third YEAR of Fellowship Training

- a. During the rotations the residents should be able to
- b. Identify the anatomical structures on US, CT or MRI scans, and bone/ renal/ liver/ thyroid scintigraphy scans and able to interpret mammograms, scintigraphy scans, and other imaging scans.
- c. Aspirate peritoneal and pleural fluids and able to prepare procedural instruments, documentation with time

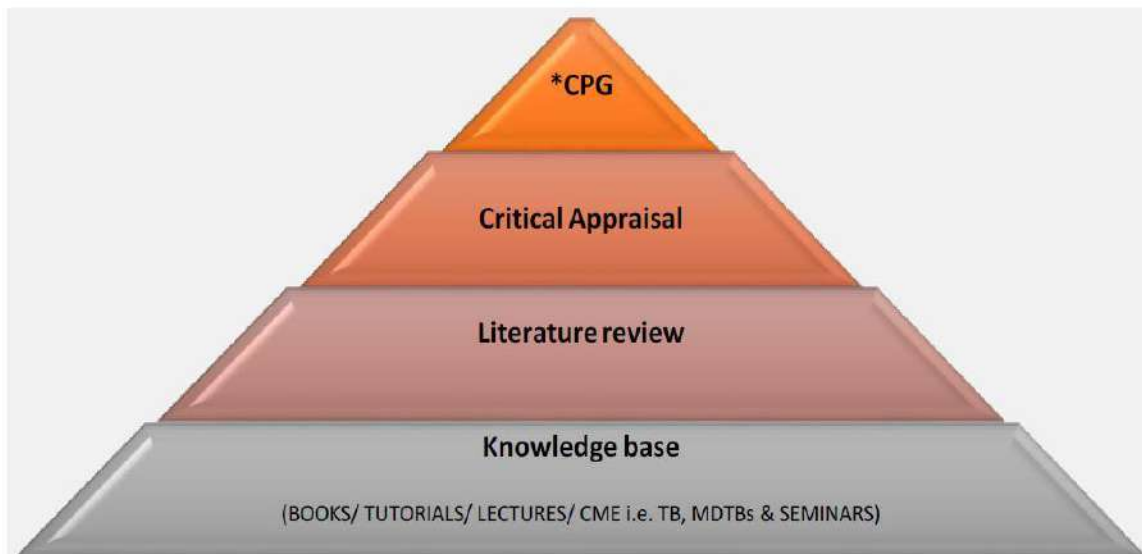
- d. out-date-authorized signatures and ensure counter sign from attending physician.
- e. Insert catheters (Foleys', IV Cannula, Port A Cath care) Resuscitate seriously ill patients
- f. Perform gynecological examination and able to take a pap smear Able to do an ENT examination
- g. Able to do FNAC and prepare a bed side slide/ punch biopsy
- h. Able to understand necessity of tumor sub-typing on H&E staining, IHC, Flow cytometry, PCR, FISH and learn concepts of genetic testing and interpretation, as well as next generation sequencing (Foundation One testing). Able to prescribe supportive treatment including severe pain management; includes opiate conversion and knowledge on adverse events and their management.
- i. Able to do a comprehensive geriatric assessment through performance status (WHO, ECOG or KPS) activities of daily living (ADLs), IADL, Charlson's age co-morbidity index (CACI) and assess fitness for therapeutic interventions (surgery, systemic therapy, and radiation therapy); account for visual/ hearing, gait problems, falls or incontinence, dementia, depression, or delirium. Assess psychological state, social-family and financial support.
- j. Teaching and mentoring role with-in the training program, helping to organize and lead discussions in the various inter-departmental, Multi-disciplinary Tumor board meetings.
- k. Teaching junior residents, undergraduate medical and nursing students, radiation technologists and trainee medical physicists

**D. Fourth YEAR of Fellowship Training** continuation of 3<sup>rd</sup> year with emphasis on the following:

- a. ACLS certification
- b. The resident/s should be able to manage the patient independently and be able to verify the radiation treatment plans for any disease site.
- c. Provides accurate and up to date information to guide support patients/ families in making informed decisions
- d. Provides both good and bad news in a sensitive and professional manner
- e. Handles patient and family emotional response or calls in appropriate help as needed
- f. He/ she must be able to correctly prescribe, order and administer systemic therapies.
- g. Able to approximate prognosis including response rates (RR), local control rates (LCR), and forecast progression (PFS) and disease free (DFS) and overall survivals (OS) for each cancer sub-type and intervention.
- h. Serves as a mentor for junior level fellow, rotation fellows from sister departments and radiation/ medical oncology residents.
- i. Teaching undergraduate medical and nursing students, radiation technologists and trainee medical physicists
- j. Facilitate thorough presentations at a level of quality appropriate for meetings or multidisciplinary audiences
- k. He/she should have completed the dissertation for research.
- l. The trainees should be able to communicate with the residents and consultants working in other oncology centers to expand the areas of knowledge particularly for procedures, radiation skills and techniques not practiced at the parent department.
- m. The resident/s must submit dissertation or evidence of publication and or acceptance of research papers 6 months prior to their final FCPS examination.
- n. Formulates and prioritizes a differential diagnosis based on patient information and/or current scientific evidence and/or sound clinical judgment
- o. Utilizes the appropriate laboratory tests and imaging studies to evaluate medical problems and interprets the results
- p. Synthesizes evidence in making diagnoses and therapeutic decision



- q. Employs the therapeutic management of choice for a given working diagnosis
- r. Identifies and accesses available resources (medical literature, consultants) to support the chosen therapeutic path
- s. Recognizes limitations of the level of training and seeks help appropriately
- t. Utilizes subspecialty consultation appropriately
- u. Demonstrates responsibility and accountability for decisions
- v. Demonstrates compassion for the hardships faced by patients/families because of the laboratory or imaging studies ordered in the work-up
- w. Demonstrates sensitivity to the preferences of patients and their families when arriving at a management plan
- x. Defines the need for appropriate follow-up based on age, diagnosis, and psychosocial issues
- y. Counsels and educates patients and families regarding diagnosis and management plans
- z. Develops written patient instructions appropriate to the clinical situation and caregiver/patient comprehension
- a. Transfers information to another provider when necessary and appropriate
- b. Uses information technology to practice evidence-based medicine – more so – able to customize and individualize treatment
- c. Uses information technology tools (e.g., PDA, interactive web sites, computer-based order entry system, hospital data bases) to enhance patient care



*\*CPG Clinical Practice Guidelines*

### **13. Assessments and in-house Examinations:**

This will be done in accordance with CPSP recommendations, based on overall conduct of the resident, improvement in clinical and technical skills, complemented with ability to make vital management decisions. End of 2 months rotation assessment is done using mini-CEX, Case Based Discussions, Direct Observation of Procedural Skills, assessing Portfolios, and this is followed by quarterly 360-degree evaluation (10% weightage) amongst the faculty members in direct liaison with the resident Supervisors and the Program Director.

A formal written (MCQs > C1, C2 & C3 (IMM Only) and > C2 & C3 Part II FCPS 100 MCQs = 100 marks, 50% weightage) and an oral examination (TOACS x 10 stations = 100 marks, 40% weightage) are conducted twice per year to subjectively assess the resident and results discussed with the trainees to high-light areas of deficiency and those requiring improvement. Residents feedback on training, exam as well as supervision are also reviewed through on-line Performa's. All exams undergo ANGOFF method of standard setting.

### Potential Assessment Tools Used In Evaluating Competence in Practice Based Learning

- Portfolio
- Direct observation of Procedural Skills (DOPS)
- Mini-CEX and CBD
- 360 degree evaluation
- Written examination
  1. MCQs C1, C2 & C3 cognitive level for IMM and
  2. MCQs C2 & C3 for Final FCPS examination
  3. TOACS (Task-Oriented Assessment of Clinical Skills) examination

*CBD Case Based discussions*

#### 14. Training and Assessment Feedback:

- Feedback by residents on 1-2 monthly rotation and On-line feedback for bi-annual written examination
- Feedback by faculty on residents' performance during rotation
- Feedback by faculty on syllabus, teaching, and training during the course and on the process of examination
- The Program Director gives feedback to the faculty on the examination process and result.

<b>IMM-FCPS II Written Exam - Quarter 3 Dec. 10, 2022.</b>					
	<b>Total Marks (%) (MCQs) 100 Marks</b>	<b>Radiobiology</b>	<b>Medical Physics</b>	<b>General Oncology</b>	<b>TOACS 20 Marks</b>
Resident A	48%	52.2%	52%	45%	14.5
Resident B	46%	52.2%	64.5%	40%	15.4
Resident C	57%	74%	79%	47%	14.2
Resident D	60%	65%	87.5%	48.5%	14
Resident E	45.7%	50%	45.8%	44.3%	12

<b>TOACS Stations x 10</b>	<b>M. Furrukh</b>	<b>Asif M.</b>	<b>Uzma Q.</b>	<b>Hira A.</b>	<b>Mariya I.</b>	<b>Score</b>	<b>20% weightage</b>
Resident A	(9+6)	(7+9)	(8+8)	(5+6.5)	(8+6)	72.5%	14.5
Resident B	(7+6)	(6+10)	(6+6)	(10+9)	(8+9)	77%	15.4
Resident C	(4+6)	(6+10)	(10+5)	(9+7)	(7+7)	71%	14.2
Resident D	(8+9)	(6+6)	(8+5)	(7+9)	(7+8)	73%	14.6
Resident E	(5+5)	(6+6)	(6+4)	(8+8)	(5+7)	60%	12

<b>IMM-FCPS II Written Exam - Quarter 3 Dec. 10, 2022</b>					
	<b>Weightage</b>		<b>100%</b>	<b>Status</b>	<b>Training Month</b>
	<b>60% (MCQs)</b>	<b>40% (TOACS)</b>			
<b>Dr. Fazal ur Rehman</b>	30	29	59%	Pass	54 m
<b>Dr Damman e Zehra</b>	28	30.8	59%	Pass	36 m
<b>Dr. Maryam N. Awan</b>	34.2	28.4	63%	Clear Pass	24 m
<b>Dr. Hiba Khalid</b>	36	29.2	65%	Clear Pass	12 m
<b>Dr. Huma Hanif</b>	27.3	24	51.3%	Pass	06 m

**Exam Feedback by Students:** The on-line link is <https://forms.gle/j3vbV1pZUk7GZ9Mq5>

The on-line feedback forms are available for residents through the link above. These must be filled at the end of each written bi-annual examination.

- The environment: disturbing, peaceful, adequate
- Allotted time: More than required, adequate, less than required
- Part I: Use the following codes to answer the questions, you may tick more than one options.
- ✓ The questions on breast cancer were a,b,c,d,e,f,g,h
  - a. *Easy to answer*
  - b. *Difficult to understand*
  - c. *Adequately structured*
  - d. *Not well formatted*
  - e. *Some were out of course*
  - f. *Not according to my expectations*
  - g. *Tested my knowledge effectively*
  - h. *Helped identify limitations of my knowledge*
- ✓ The questions on Radiobiology were a,b,c,d,e,f,g,h
- ✓ The question on Physics were a,b,c,d,e,f,g,h
- Part II: Use the following codes to answer the questions, you may tick more than one options
  - a. *Easy to answer*
  - b. *Difficult to understand*
  - c. *Adequately structured*
  - d. *Not well formatted*
  - e. *Some were out of course*
  - f. *Not according to my expectations*
  - g. *Tested my knowledge effectively*
  - h. *Helped identify limitations of my knowledge*
- ✓ The questions on breast cancer were a, b, c, d, e, f, g, h
- ✓ The questions on Lung cancer were a, b, c, d, e, f, g,h
- ✓ The questions on gynecologic malignancies were a, b, c, d, e,f,g,h
- ✓ The questions on CA Rectum were a, b, c, d, e,f,g,h
- Suggestions for improvement

Resident A > I just want more frequent exams like these, definitely very helpful for exam preparation

Resident B > Can be conducted bi-weekly in a single system in a less formal manner to gain expertise in that system more effectively

Resident C > I believe we are lucky for this opportunity to be tested. For Medical Physics team though, further refinement for structure of question is required.

Resident D > I felt the syllabus was a bit lengthy considering long duty hours (especially in the OPD)

## Examination Feedback to the Faculty:

### FCPS IMM Written Exam Quarter1, April 2022

MCQ Cognition level	%age of Q	Required %age
C1	= 44%	0%
C2	= 46%	70%
C3	= 10%	30%

#### Questions provided by examiners (based on table of specifications=TOS)

Topic	%age of Q	Required %age
Management	42%	20%
Diagnosis	24%	20%
Complications	8%	10%
Basic physics	8%	10%
Pathophysiology	6%	10%
Staging	4%	5%
Prognosis	4%	5%
Prevention	2%	5%
Investigations	2%	5%
Etiology	Nil	5%
Rehab	Nil	5%
		100%

#### MCQs single best answer = 50

Candidate	Residency Year	Score	Result
Resident A	3	50%	Fail
Resident B	2	71%	Pass
Resident C	1 (Quarter 1)	57%	Pass

#### TOACS TOS

Static	10
Interactive	2

System/s	No of Q	C level	TOS
Breast Genetics	1	C3	Diagnoses Management
Hereditary GI CA	1	C3	Diagnoses Management
Anemia	1	C3	Diagnoses Management
Chemo prescription & Side effects	1	C3	Management Side effect
Cord compression	1	C2	Management
Skin CA	1	C3	Management
Bone SA	2	C2	Diagnoses DD
SCLC	1	C2	Investigation/ Diagnoses
GBM	1	C2	Diagnoses Management
Hypopharynx	1	C2	Management
Prostate CA	1	C2	Investigation Management

Candidates	TOACS St. #	Examiner 1	Examiner 2	Examiner 3	Examiner 4	Result
<b>Resident A</b>						<b>73,4% Pass</b>
<b>TOACS St. #</b>	<b>1</b>	<b>2</b>	<b>3</b>			
Examiner 1	6	7	8			24/30
Examiner 2	7	9	8			24/30
Examiner 3						22/30
Examiner 4	8	4.5	8			20.5/30
<b>Resident B</b>						<b>76.6% Pass</b>
<b>TOACS St. #</b>	<b>1</b>	<b>2</b>	<b>3</b>			
Examiner 1	7	6	5			18/30
Examiner 2	9	9	7			24/30
Examiner 3						23.5/30
Examiner 4	8	9	10			27/30
<b>Resident C</b>						<b>52.9% Pass</b>
<b>TOACS St. #</b>	<b>1</b>	<b>2</b>	<b>3</b>			
Examiner 1	5	5	5			15/30

## IMM-FCPS II Examiners Feedback - Quarter 3 Dec. 10, 2022.

MCQs Contributions	60	M. Furrukh	Asif M.	Uzma Q.	Hira A.
<b>General Oncology</b>					
C1	33,34%	10	4	2	5
C2	58.3%	22	1	7	4
C3	8.3%	5	0	0	0
<b>MCQs Contributions 18</b>					
<b>Radiobiology</b>					
C1	61%	6	0	1	4
C2	39%	2	2	3	0
C3	0%	0	0	0	0
<b>MCQs Contributions 22</b>					
<b>Medical Physics</b>					
C1	77%	10			7
C2	23%	2			3
C3	0%	0			0

### 15. Interpersonal and communication skills

Interpersonal Skills and Communication requires the resident/fellow to skills that are effective in the exchange of information and collaboration with patients, their families, and health professionals.

Residents are expected to develop skills and habits to be able to:

- Communicate effectively with patients and their families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds
- Communicate effectively with peers, faculty, colleagues, fellow residents, physicians, other health professionals, and health care staff and agencies
- Work effectively as a member or leader of a health care team
- Act in a consultative role to other physicians and health professions, and health related agencies
- Work effectively as a member or leader of a health care team or other professional group
- Act in a consultative role to other physicians and health professionals and
- Maintain comprehensive, timely and legible medical records.

#### Potential assessment tools used in evaluating competence:

Portfolio

Direct observation of benchmark

TOACS Examination – Interactive or Counselling stations

Written examination

**16. The residents should be able to follow a Professional development plan**, through desirable attribute taught. It is integral for our programs to define the specific knowledge, skills, behaviors, and attitudes required, as well as provide educational experiences as needed for our residents and fellows to demonstrate competency in Professionalism.

It is important for residents to demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles.

**Residents are expected to demonstrate:**

- Compassion, integrity, and respect for others
- Responsiveness to patient needs that supersedes self-interest
- Respect for patient privacy and autonomy
- Accountability to patients, society, and the profession
- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation

*Role model, humility, honesty, responsibility, reliability, accountability, punctuality, wisdom, farsightedness, respectfulness, compassion, loyalty, sympathy/empathy, tactfulness, and ownership.*

*Adapted from \*University of Maryland, collaborative program for primary care education*

**17. Departments (JCIA standards) Key Performance Indicators:**

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- Consultants signature on radiation plan approval (DVH) before treating the patients
- Q&A of Head and Neck IMRT Plans
- V. Simulation double cheque by two radiotherapists (one should be a senior Tech.)
- Informed consent before chemotherapy administration

**18. Outcome of the program**

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Program educational objectives are the CPSP statements that describe the career and professional accomplishments that the program is preparing the residents to achieve. The penultimate goal of the program is what is expected to know and what the residents can do by the time they complete this academic program.

The first 2 residents completed the initial two years of training at our Institute. However, they migrated to other cities due to personal reasons to complete the remaining training in CPSP accredited Institute:

1. **Dr. Atiqa Arjumand** (late) *FCPS Radiation Oncology, FRCR Clinical Oncology (UK)*
2. **Dr. Fariha Razzaque** *FCPS Radiation Oncology (Migration due to Marriage)*

**19. Strength of the Program**

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- Highly skilled and professional faculty
- State-Of-The-Art-Equipment
- Structured teaching and assessment
- Objectivity in training
- Close liaison and shadowing of mentors (faculty)
- Formal academic sessions
- Quarterly assessments and prompt feedback

**20. Internal Evaluation for the Program:**

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The Departmental Program Evaluation Committee (DPEC) members meet every 3-4 months to devise strategy for new set of academic challenges, evaluate short comings, make appropriate improvements, and adapt modernization of teaching methodology and the examination process. The program works in close liaison with

Director PGME and/ or her nominees and sends the internal evaluation for the program report to the DG PGME by November 30<sup>th</sup> for each year in its detailed questionnaire.

## 21. Conflict resolution and lack of meeting the required level of knowledge or ability

- Verbal feedback to residents at the end of each rotation
- Faculty addresses Residents and staff issues through monthly Departmental meeting
- Residents having problems are dealt with guidance, counselling, and in extreme cases in writing to their corresponding Supervisors, Program Director, or the Section Head.
- Incidence reports through intranet to the Quality department.

*The members meet 3-4 times a year; Dec. 14, 2022; April 29, 2023; Aug. 31, 2023; Dec. 30, 2023*

## Objectives for satisfactory completion of fellowship training

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### Basic:

1. BLS & ACLS certification
2. Satisfactory performance review by program supervisor in consult with the faculty
3. Satisfactory attendance of weekly training schedule
4. Taking an active teaching role in the department
5. Aware of the CCCP of SHIFA International Hospital
6. Passed all the written and TOACS examination for each year

### Clinical:

1. Ability to handle on call situations under faculty supervision
2. Ability to handle moderate-complex clinical scenarios independently
3. Successful completion of required rotations with satisfactory feedback
4. Continued development of clinical skills, critical thinking, decision making and treatment planning and execution.
5. Ability to demonstrate competency as general practitioner in radiation oncology
6. Completion of logbook
7. Completion and final submission of dissertation
8. Ability to formulate valid critique of treatment, radiation plans for quality assurance purposes
9. Ability to perform clinical audit
10. Ability to break bad news, counsel patients & family
11. Sufficient experience and ability to perform precision radiotherapy, brachytherapy and write orderly chemotherapy prescriptions
12. Able to understand importance of secondary prevention using available resources and on- site screening tools.

### Academics:

1. Completed essential CPSP workshops
2. Ability for self-learning
3. Obtained CME credits, as per PMDC requirements
4. Demonstrate ability to design (abstract/ synopsis/ or real form) clinical trials and understanding for Institution review boards and medical ethics committee
5. Confident in teaching and presenting through lectures, tutorials, National/ International seminars, and meetings.
6. Generating case-based discussions
7. Able to assist and organize scientific meetings

## 22. Chief Residents' experience of our program

I am a third year post graduate resident at Radiation Oncology Dept., recently entrusted with responsibilities of a CR. I completed 5 years of MBBS at Rawalpindi Medical University. After 1 year house job at Holy Family Hospital, I joined Dept. of Neurosurgery SIH as a medical officer where I worked for 1-1/2 years.

This year marks completion of my 2 years training at Radiation Oncology Dept. SIH. As a resident what remained important for me was my goal of covering the devised learning objectives for basic sciences and clinical oncology, allocated as per the program. I am glad we were successful in achieving most of them and I feel confident and prepared to take my intermediate module (IMM) exam in coming months.

Looking back at my experience here, I feel driven. As a learner, I believe my residency program has helped me in honing self-directed learning. We get to shadow mentors, which has led to meaningful improvement in our foresight. We learn standardized teaching and training, safe practices as per JCI recommendations contrary to what I saw in many government based/JCIA non accredited set-ups. We get the chance of first-hand interactions with patients which has helped us polish our clinical acumen and skill set. We are regularly assessed and given prompt feedbacks. We have allocated teaching hours per week and execution is for strict compliance.

As a CR, I aim to lead a team of self-directed learners under guidance of my mentors, practice team-work and positive interdependence, and sharpen our clinical foresight. It also brings my administrative and leadership abilities to the forefront. We are aiming to focus more on conducting research-based activities. This remains a challenge for us, and we plan to devise a strategy for that.

I believe the key to learning is the urge to stay a life-long student and to stay motivated. A conducive working environment is paramount for that. I can proudly say we as a team of young to-be-consultants are at the right place that brings the best out of all of us. A sound work- life balance is also something to cherish.

*Dr. Maryam Noor Awan, 3<sup>rd</sup> year Resident*

## 23. Faculty Meeting Minutes Dec 14, 2022: Radiation Oncology: FCPS Residency Training Program

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Time: 9:15 am

Date: Dec. 14, 2022

Venue: TPS/ Conference room of Radiation Oncology department

### Present

- |                            |   |
|----------------------------|---|
| 1. Dr. Muhammad Ali Afridi | Consultant                                  |
| 2. Dr. Muhammad Furrukh    | Program Director & Consultant               |
| 3. Dr. Asif Masood         | Section Head & Consultant                   |
| 4. Dr. Uzma Qasim          | Consultant & Deputy PD                      |
| 5. Dr. Hira Asim           | Associate Consultant                        |
| 6. Ms. Rehana              | In-charge OPD nursing staff                 |
| 7. Ms. Maria Ishfaq        | Sr Medical Physicist and JCI Representative |

### Residents:

- |   |                                      |
|---|--------------------------------------|
| 8. Dr. Mariyam N. Awan  | Chief Resident (CR), Resident year 3 |
| 9. Dr. Hiba Khalid  | Resident year 2                      |
| 10. Dr. Huma Hanif  | Resident year 1                      |
| 11. Ms. Raheela   | Nursing T.L. (Radiation Oncology)    |
| 12. Ms. Saima   | U.R. Rad Oncology                    |
| 13. O.P.D. PA's including Mr. Umair, Mr. Saif, Ms. Sara, Ms. Zubia, Ms. Saliha. |                                      |



## Apology

- |                        |                           |
|------------------------|---------------------------|
| 1. Mr. Haseebullah     | Head Medical Physics      |
| 2. Mr. Noroz Gul       | Sr Medical Physicist      |
| 3. Mr. Arshad Shaeen   | Sr Medical Physicist      |
| 4. Dr. Fazal-ur-Rehman | Sr Resident year 5 (exit) |
| 5. Dr. Daman-e-Zehra   | Sr Resident year 4        |

## Agenda:

- 1- Educational program interval review.
- 2- Quarter 3rd exam syllabus and exam results
- 3- Change of CR – CR lead teaching
- 4- On call evening duties of PG (after 5 pm with the consultants and on machines)
- 5- Residents feedback
- 6- Faculty feedback

## Minutes of the meeting:

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1. Dr. Furrukh told the entire faculty regarding change in the **Chief Resident** in consult with the Section Head and that Dr. Maryam Noor Awan has been assigned the new responsibility with immediate effect. The faculty has no objection on her nomination and endorsed the position unanimously. Dr. Hiba Khalid shall assist her (Deputy CR) and be responsible during leave absence for all times. A Job Description can be obtained from DG PGME office to understand the nature of leadership required in this connection.
2. He also gave an in-depth update on the various academic accomplishments, policies and working of the department. It was with reference to the detailed questionnaire sent by PGME office **Educational Program** “Internal Review document” at the end of session 2022. It was re-emphasized that most of the answers to PGME questionnaire are already in-place in the revised booklet **Radiation Oncology Residency Training Program (2023-2026)**
3. He emphasized that all curriculum related aspects of the training are given in the context of this booklet and encouraged the faculty to go through it. It was mandatory for residents to know the basis and scope of training described in the booklet.
4. It was stressed that the student should complete their miniCEX and DOPs forms at the end of 2 monthly rotation with each faculty within the department. CR shall be responsible for ensuring on-time feedback on each rotation by each resident and vice versa faculty feedback through a. CPSP Portfolio b. mini CEX and c. DOPs.
5. Residents shall now be assessed every Faculty meeting (3-4 monthly) through 360-degree evaluation and 10% weightage shall be given to it as contribution to the bi-yearly written exams.
6. Dr Uzma asked the residents to improve the quality of the IPD documentation taking help from the seniors.
7. Dr. Furrukh gave a detailed tabulation of the result of the recently concluded written IMM FCPS Q3 Exam, Dec 10, 2022, explaining how it was formulated, also specifying the number of C1, C2, and C3 questions in the exam by each faculty including individual contributions, and stressing the need for making more C3 type of questions in accordance with CPSP requirements in future.
8. He emphasized on pre-examination meetings to decide not only the table of specifications (done partly by Dr. Uzma in this exam) but, also discuss standardization of the entire exam by reviewing syllabus collectively, allocating TOS, weightage and ANGOFF the written examination paper before the exam. This contribution is vital and automatically reflects in the exam as well as on the faculty performance as a group.
9. It was decided prior to the announcement of the recently concluded exam result to give 60% weightage to the MCQs and 40% to the TOACS part of the exam.
10. Dr Maryam N. Awan gave a presentation on the duties and responsibilities of the chief resident and gave a brief outline of some of the targets and ways to accomplish them.

11. She also gave a brief on CR lead teaching and training commencing from January 1, 2023. The quarterly syllabus, identification of areas for self-learning, group discussions, presentations, tutorials, faculty led discussions, and identifying focus person in the faculty who shall be responsible for carrying out the desired teaching or training.
12. She also reminded everyone that Radiobiology and Cancer biology classes are regularly attended by the group of residents in CMH every Friday, and a fair written assessment is done at the conclusion of each class.
13. The attendees were also informed that Sr. Resident led Radiobiology classes shall commence from January 2023. This is a great initiative.
14. Dr Uzma gave an update of her discussion with Dr Bilqees regarding students' rotation to the Radiology department. It was decided that 1 student at a time would be sent to the department on weekly basis after the IMM, for which weekly LOs shall be defined.
15. It was also decided that the weekly oncology lectures would re-commence by next week and topics would be defined accordingly.
16. Feedback by students on page 18
17. Feedback to faculty Page 17,19,20

The meeting concluded at 11:00 a.m

Sincerely,

**DR. Muhammad Furrukh**

*Program Director Radiation Oncology Residency Program*

*Consultant Radiation Oncology SIH*


*Associate Professor Clinical Oncology (Medicine) SCM*

#### **24. Outline for FCPS Radiation Oncology Examination**

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##### **A. IMM Examination:** End of second year

The CPSP holds IMM examination twice a year which comprises of two parts.

1. **Part-1 Theory examination:** in Medical Physics, Medical Statistics, Clinical Pharmacology, Radiobiology, Cancer biology, and Practice of Oncology (basic to intermediate levels)
  - a. **Paper I: 10 short answer questions (SAQs) 3 hours**
  - b. **Paper II: 100 single best answer (MCQs) 3 hours**
2. **Part-2 Clinical Examination:** after passing written the candidate is allowed to sit for clinical section of TOACS.
  -  **Task oriented assessment of clinical skills (TOACS)** format x 10-15 stations. "Interactive" session where candidate performs a task and examiner tests critical thinking and problem solving)
3. Candidate fills a mandatory self-explanatory **Feedback form** at the end of examination

##### **B. Part II FCPS Examination:** End of 4<sup>th</sup> year

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The CPSP holds final-FCPS Radiotherapy theory examination twice a year followed by an oral/ practical examination.

4. **Part-1 FCPS Theory examination:** is a written examination which comprises of two papers covering Practice of Oncology (advanced and complex levels)
  - a. **Paper I: 100 single best answer (MCQs type R Cognition level C2 & 3) 3 hours**
  - b. **Paper II: 100 single best answer (MCQs type R Cognition level C2 & 3) 3 hours**

5. **Part-2 Clinical Examination:** after passing the written, candidate is allowed to sit for clinical exam over 2 days.
  - **Task oriented assessment of clinical skills (TOACS)** format x 14 stations (Interactive session where candidate performs a task and examiner tests critical thinking and problem solving)
  - **4 short cases** (10 min for each station – takes informed consent after personal introduction, uses correct systematic clinical methods, gives correct findings, logical interpretation, and justification of diagnosis to set of two examiners).

#### Eligibility requirements:

1. Passed FCPS Part-1 Radiology, Medicine & Allied, Surgery & Allied, or been granted official exemption.
2. Completed 2 years training for IMM Radiotherapy
3. Certificate of having passed the IMM radiotherapy
4. Completed next level of 2 years training in Radiotherapy, under a supervisor and Institute accredited with the CPSP.
5. Log-book completion through supervisor's on-line validation.
6. Provide certificate of attendance of mandatory workshops
7. Certificate of approval of dissertation or acceptance of two research papers

#### 25. Resources:

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##### A. Medical Physics:

- a. Medical Physics-Faiz Khan
- b. Radiation Oncology Physics: A handbook for teachers and students
- c. Radiotherapy in Physics: Physics for clinical oncology

##### B. Cancer Biology & Radiobiology

- a. Cancer Biology-Roger JB King, Mike W Robins
- b. Basic clinical radiobiology-Joiner and Van der Kogel
- c. Cancer Biology-Knowels and Selby
- d. Help may be sought from ASTRO questions and examinations

##### C. Clinical Pharmacology

- a. British Columbia cancer agency drug manual (<http://www.bccancer.bc.ca/health-professionals/clinical-resources/cancer-drug-manual>)
- b. Website for cancer therapy advisor.com and clinical care options

##### D. Statistics:

- a. Medical statistics at a glance-Petrie & Sabin (Blackwell Science UK)
- b. Clinical trials in cancer: Principals & Practice-Girling, Parmer, Stenning, Stephens & Stewart (Oxford University Press)

##### E. Textbooks

- a. CANCER, Principles & Practice of Oncology- Devita, Hellman and Rosenberg's
- b. Principles & Practice of RADIATION ONCOLOGY- Perez & Brady
- c. External Beam Therapy-Peter Hoskins
- d. Practical Radiotherapy Planning – Dobbs and Barrett
- e. Radiation Toxicity: A Practical Guide

- f. Radiation Oncology: Difficult Cases and Practical Management-William Small, Tim R, EricD
- g. Target Volume Delineation & Field Setup;A practical guide for conformal & IMRT-Nancy Y lee, Jiade J Lu

**F. Miscellaneous**

- a. IAEA: ICRU Reports no. 50,62,83,91, 38
- b. RTOG/ QUANTAC Data for dose restraints
- c. EORTC-Common toxicity criteria, RTOG-EORTC Acute and Late toxicity Criteria, Quality Questionnaire and
- d. AJCC Cancer Staging

**G. Journals & Clinical Practice Guidelines**

- a. Red Journal (IJROBP), JCO, Lancet Oncology, JJCO, NEJM
- b. BCCA, NCCN, ESMO, NCI, ASTRO, ESTRO

- H. CPSP booklet \*Radiotherapy; Requirements for fellowship training\*** provides in-depth training, Syllabus, relevant forms, and entry/ exit requirements



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## MINI CLINICAL EVALUATION EXERCISE (CEX)

Specialty: \_\_\_\_\_

Time Duration = 20 mins (15 mins assessment and 5 mins feedback)

**PLEASE COMPLETE THE QUESTIONNAIRE BY FILLING/CHECKING APPROPRIATE BOXES**

Assessor: \_\_\_\_\_ Assessment Date: \_\_\_\_\_

Resident's Name: \_\_\_\_\_

Hospital Name: \_\_\_\_\_ R&RC Number: \_\_\_\_\_

Year of Residency:     R1             R2             R3             R4

Quarter:                 1st             2nd             3rd             4th

Setting:                  Ward             Outdoor (Hospital/Community)

Diagnosis of Patient: \_\_\_\_\_ Patient Age: \_\_\_\_\_ Sex: \_\_\_\_\_

Clinical Area: \_\_\_\_\_

Complexity of Case/ Procedure:     Low/Easy    Moderate/Average    High/Difficult    N/A

Focus of Clinical Encounters:

History taking     Physical Examination     Communication Skills     Other

Please grade the following areas on the given scale:	Not Observed / Applicable	Below Expectations		Satisfactory	Above Expectation	Excellent
		1	2	3	4	5
Informed Consent of patient						
Interviewing Skills						
Systematic Progression						
Presentation of positive & significant negative findings						
Justification of actions						
Organization/Efficiency						
Overall clinical skills						

Assessor's Satisfaction with Mini-CEX:

(Low) 1    2    3    4    5    (High)

Resident's Satisfaction with Mini-CEX:

(Low) 1    2    3    4    5    (High)

Strengths	Suggestions for Improvements

Encounter to be repeated  YES  NO



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SURGEONS PAKISTAN

**DIRECT OBSERVATION OF PROCEDURAL SKILLS (DOPS)**

Specialty: \_\_\_\_\_

Time Duration = 20 mins (15 mins assessment and 5 mins feedback)

**PLEASE COMPLETE THE QUESTIONNAIRE BY FILLING/CHECKING APPROPRIATE BOXES**

Assessor: \_\_\_\_\_ Assessment Date: \_\_\_\_\_

Resident's Name: \_\_\_\_\_

Hospital Name: \_\_\_\_\_ R&RC Number: \_\_\_\_\_

Year of Residency:  R1  R2  R3  R4

Quarter:  1st  2nd  3rd  4th

Setting:  CT/ Digital Simulator  TPS  RT Equipment  Brachytherapy  Chemotherapy bay/  
Indoor

Diagnosis of Patient: \_\_\_\_\_ Patient Age: \_\_\_\_\_ Gender: \_\_\_\_\_

Name of Procedure: \_\_\_\_\_

Complexity of Case/ Procedure:  Low/Easy  Moderate/Average  High/Difficult  N/A

Number of times procedure performed by Resident: \_\_\_\_\_

Please grade the following areas on the given scale:	Not Observed / Applicable	Below Expectations		Satisfactory	Above Expectation	Excellent
		1	2	3	4	5
Knowledge of Anatomy						
Image acquisition						
Contouring of Volumes/ OARs						
Discussion on DVH						
Knowledge of tolerance doses						
Knowledge of curative/ Palliative doses						
Use of imaging for treatment field verification						
Preparation of drugs						
Patient's consent						
Duration and sequence of administration of drugs						
Premedication /hydration for chemotherapy						
Assessment of patient with regard to fitness						
Ascitic/ pleural Tap						
Lumbar puncture/ Intrathecal Chemotherapy						
Overall ability to perform whole procedure						

Assessor's Satisfaction with DOPS:  
(Low) 1      2      3      4      5 (High)

Resident's Satisfaction with DOPS:  
(Low) 1      2      3      4      5 (High)

Strengths	Suggestions for Improvements

Encounter to be repeated  YES  NO

Signature



STRUCTURED VISUAL CURRICULUM DISPLAY (SVCD) CHART

RADIOTHERAPY IMM

COMPETENCIES	FIRST YEAR					SECOND YEAR												
	3 Months	6 Months	9 Months	12 Months	Total # of Cases Per Year	3 Months	6 Months	9 Months	12 Months	Total # of Cases Per Year								
	Level	Cases	Level	Cases	Level	Cases	Level	Cases	Level	Cases								
<b>PATIENT MANAGEMENT - PRACTICE OF ONCOLOGY</b>																		
<b>PATIENT ENCOUNTER</b> History taking, Physical examination, Ordering appropriate Investigations, Interpreting the results of Investigations and maintaining follow up records	3	24	3/4	24	4	24	4	24	96	4	24	4	24	4	24	4	24	96
<b>RADIOTHERAPY PLANNING</b> Radiotherapy prescription, Contour taking, Simulation Conventional / CT, Making moulds, Marking of fields for 2-D planning, Defining Volumes 3-D, Defining Volumes IMRT / IGRT / VMAT, Treatment planning on the computers, Familiar with LAN local area networking, record & verify systems, Identification: application of DICOM (Digital Imaging and Communication in Medicine), Treatment on radiotherapy machines, Identification: application of EPID (Electronic Portal Imaging Device), OBI (On Board Imager), software used in these kind of tools for image acquisition, registration, corrections and verification, Informed Consent taking, Acute & chronic side effects of radiation therapy. General and region specific side effects.	1	24	1/2	24	2	24	2	24	96	2/3	24	2/3	24	3/4	24	3/4	24	96
<b>SYSTEMIC TREATMENT PLANNING</b> Administration of Chemotherapy/ Hormonal Therapy/ Targeted Agents/ Immunotherapy/ Other biologic agents: Patient fitness for systemic therapy, Indication of systemic therapy, Writing prescription orders, Dose, days, Frequency etc, Response assessment, Side effects of the therapy used, Management of side effects.	1	24	1/2	24	2	24	2	24	96	2/3	24	2/3	24	3/4	24	3/4	24	96
<b>PROCEDURE</b>																		
Aspiration of peritoneal fluids:	1	1	1/2	1	1/2	1	2	1	4	3	1	3/4	1	3/4	1	3/4	1	4
Nasogastric intubation	1	1	1/2	1	2	1	2/3	1	4	3	1	3	1	3/4	1	4	1	4
Insertion of catheters	1	1	1/2	1	2	1	2/3	1	4	3	1	3	1	3/4	1	4	1	4
Aspiration of pleural fluids	2	1	1/2	1	2	1	2/3	1	4	3	1	3/4	1	3/4	1	4	1	4
Dosimetry	1	1	1/2	1	1/2	1	2	1	4	2/3	1	2/3	1	2/3	1	3	1	4
Intracavitary and interstitial brachytherapy	1	1	1/2	1	1/2	1	2	1	4	2/3	1	2/3	1	2/3	1	3	1	4
Intrathecal chemotherapy/Lumbar puncture	1	1	1/2	1	1/2	1	2	1	4	3	1	3	1	3/4	1	3/4	1	4
Pleurodesis	1	1	1/2	1	1/2	1	2	1	4	2	1	2	1	2	1	3/4	1	4
Bone marrow Aspiration	1	1	1/2	1	1/2	1	2	1	4	2	1	2	1	2	1	3	1	4
Bone marrow Biopsy	1	1	1/2	1	1/2	1	2	1	4	2	1	2	1	2	1	3	1	4
Insertion of long line	1	1	1/2	1	1/2	1	2	1	4	2	1	2	1	2	1	2/3	1	4
Indirect Laryngoscopy	1	1	1/2	1	1/2	1	2	1	4	2	1	2	1	2/3	1	2/3	1	4
Fibreoptic Direct laryngoscopy	1	1	1/2	1	1/2	1	2	1	4	2	1	2	1	2/3	1	3	1	4
Gynaecological Examination	1	1	1/2	1	1/2	1	2	1	4	2	1	2/3	1	2/3	1	3	1	4
E.N.T Examination	1	1	1/2	1	1/2	1	2	1	4	2	1	2/3	1	2/3	1	3	1	4
Use of Endoscope	1	1	1/2	1	1/2	1	2	1	4	2	1	2	1	2	1	2/3	1	4
FNA / Punch Biopsy	1	1	1/2	1	1/2	1	2	1	4	2	1	2	1	2	1	2/3	1	4
<b>MEDICAL PHYSICS: PRACTICALS</b>																		
To draw the plateau of a Geiger-Muller counter and determine its operating voltage	1	1	2	1	2/3	1	3/3	1	4	3	1	3/4	1	4	1	4	1	4
To measure the "dead" time of a Geiger-Muller Counter	1	1	2	1	2/3	1	2/3	1	4	3	1	3/4	1	4	1	4	1	4
To study the effect of the following on the dose-rate of an x-ray machine filament current, Kilo-voltage, Filtration, distance	1	1	2	1	2/3	1	2/3	1	4	3	1	3/4	1	4	1	4	1	4
To measure the half value thickness of an x-ray beam	1	1	2	1	2/3	1	2/3	1	4	3	1	3/4	1	4	1	4	1	4
To perform radiation survey of controlled and uncontrolled areas in a radiation treatment facility.	1	1	2	1	2/3	1	2/3	1	4	3	1	3/4	1	4	1	4	1	4
To obtain a port film on a simulator	1	1	2	1	2/3	1	2/3	1	4	3	1	3/4	1	4	1	4	1	4
To find the magnification factor in radiographic films	1	1	2	1	2/3	1	2/3	1	4	3	1	3/4	1	4	1	4	1	4
To check the gantry angles of radiotherapy equipment	1	1	2	1	2/3	1	2/3	1	4	3	1	3/4	1	4	1	4	1	4
To use optical range finder of radiotherapy equipment	1	1	2	1	2/3	1	2/3	1	4	3	1	3/4	1	4	1	4	1	4
To align the light field with radiation field in a radiotherapy machine	1	1	2	1	2/3	1	2/3	1	4	3	1	3/4	1	4	1	4	1	4
To perform collimator field size calibrator on a radiotherapy equipment	1	1	2	1	2/3	1	2/3	1	4	3	1	3/4	1	4	1	4	1	4
To locate the radiation isocenter in a radiotherapy machine	1	1	2	1	2/3	1	2/3	1	4	3	1	3/4	1	4	1	4	1	4
To define the depth of maximum dose buildup in a given radiotherapy machine	1	1	2	1	2/3	1	2/3	1	4	3	1	3/4	1	4	1	4	1	4
To define the field flatness and symmetry of high energy x-ray machine	1	1	2	1	2/3	1	2/3	1	4	3	1	3/4	1	4	1	4	1	4
To measure the penumbra at treatment depth in a radiotherapy machine	1	1	2	1	2/3	1	2/3	1	4	3	1	3/4	1	4	1	4	1	4
To calculate the dose-rate and output of Cobalt-60 machine	1	1	2	1	2/3	1	2/3	1	4	3	1	3/4	1	4	1	4	1	4
To check the leakage radiation in a Cobalt-60 machine.	1	1	2	1	2/3	1	2/3	1	4	3	1	3/4	1	4	1	4	1	4
To operate radiotherapy equipment (Linear accelerator, Cobalt-60 and simulator)	1	1	2	1	2/3	1	2/3	1	4	3	1	3/4	1	4	1	4	1	4
To make customized cerrobend (Lead) blocks for electrons and photons	1	1	2	1	2/3	1	2/3	1	4	4	1	3/4	1	4	1	4	1	4
To use immobilization devices, preparing vacuum locks, body fix and thermoplastic sheet.	1	1	2	1	2/3	1	2/3	1	4	4	1	3/4	1	4	1	4	1	4

### TRAINING DURATION

**TOTAL DURATION OF THE TRAINING IS FOUR YEARS AS UNDER:**  
 Intermediate Module (IMM) in Radiotherapy Two Years  
 Advanced Training in Radiotherapy Two Years  
 The first two years of training (Intermediate Module) will cover concepts from basic to intermediate levels of complexity in the field of Radiotherapy/Oncology.  
 The last two years of training will comprise of concepts from intermediate to advance level of complexity in the field of Radiotherapy/Oncology.

### RESEARCH (DISSERTATION / TWO PAPERS)

One of the training requirements is a dissertation or two research papers on topics related to the field of specialization.  
 Synopsis of the dissertation must be submitted to Registration & Research Cell (RRRC) by the end of first year and should be approved before starting the research work.  
 Topic/title of the papers should be submitted to Registration & Research Cell (RRRC) before starting the research work.  
 The dissertation or evidence of publication /acceptance of research paper must be submitted six months prior to the final FCPS II examination for which the residents intend to sit in.

### ROTATIONS

**NO MANDATORY ROTATIONS**  
 However, it will be the discretion of the supervisor to arrange and send the residents to other departments, if he/she thinks it necessary for acquisition of specific competencies.

### MANDATORY WORKSHOPS

**ALL MANDATORY WORKSHOPS SHOULD BE ATTENDED DURING FIRST TWO YEARS OF INTERMEDIATE MODULE TRAINING.**  
 1. Introduction to Computer and Internet  
 2. Research Methodology, Biostatistics and Dissertation Writing  
 3. Communication Skills  
 4. Basic Life Support Course  
 Any other workshop/s as may be introduced by the CPSP.  
**NOTE:**  
 1) The workshops are conducted by the Department of Medical Education and the candidates are advised to get registered online. The BLS course is conducted by the Advanced Skills Department (ASD) and the registration form is to be submitted with the ASD separately.  
 2) No candidate will be allowed to appear in IMM examination without attending the above mentioned workshops and BLS course.

### KEY FOR ASSESSING COMPETENCIES

1. Observer Status
2. Assistant Status
3. Performed Under Supervision
4. Performed Independently



## STRUCTURED VISUAL CURRICULUM DISPLAY (SVCD) CHART

### RADIOTHERAPY FCPS-II

COMPETENCIES	THIRD YEAR									FOURTH YEAR									
	3 Months		6 Months		9 Months		12 Months		Total # of Cases Per Year	3 Months		6 Months		9 Months		12 Months		Total # of Cases Per Year	
	Level	Cases	Level	Cases	Level	Cases	Level	Cases		Level	Cases	Level	Cases	Level	Cases				
<b>PATIENT MANAGEMENT - PRACTICE OF ONCOLOGY</b>																			
<b>PATIENT ENCOUNTER</b>																			
History taking:	4	24	4	24	4	24	4	24	96	4	24	4	24	4	24	4	24	96	
Physical examination																			
Ordering appropriate Investigations																			
Interpreting the results of Investigations and maintaining follow up records																			
<b>RADIOTHERAPY PLANNING</b>	3/4	24	3/4	24	3/4	24	3/4	24	96	3/4	24	3/4	24	4	24	4	24	96	
Radiotherapy prescription																			
Contour taking:																			
Simulation conventional / CT																			
Making moulds																			
Marking of fields for 2-D planning																			
Defining Volumes 3-D																			
Defining Volumes IMRT / IGRT / VMAT																			
Treatment planning on the computers																			
Familiar with LAN local area networking, record & verify systems.																			
Identification: application of DICOM (Digital Imaging and Communication in Medicine). Treatment on radiotherapy machines.																			
Identification: application of EPID (Electronic Portal Imaging Device).																			
OBI (On Board Imager), software used in these kind of tools for image acquisition, registration, corrections and verification.																			
Informed Consent taking.																			
Acute & chronic side effects of radiation therapy. General and region specific side effects.																			
<b>SYSTEMIC TREATMENT PLANNING</b>	3/4	24	3/4	24	3/4	24	3/4	24	96	3/4	24	3/4	24	4	24	4	24	96	
Administration of Chemotherapy/ Hormonal Therapy/ Targeted Agents/ Immunotherapy/ Other biologic agents:																			
Patient fitness for systemic therapy																			
Indication of systemic therapy																			
Writing prescription orders																			
Dose, days, frequency etc.																			
Response assessment																			
Side effects of the therapy used																			
Management of side effects																			
<b>PROCEDURE</b>																			
Aspiration of peritoneal fluids	3	1	3/4	1	3/4	1	3/4	1	4	3/4	1	4	1	4	1	4	1	4	
Nasogastric Intubation	3	1	3	1	3/4	1	4	1	4	4	1	4	1	4	1	4	1	4	
Insertion of catheters	3	1	3	1	3/4	1	4	1	4	4	1	4	1	4	1	4	1	4	
Aspiration of pleural fluids	3	1	3/4	1	3/4	1	4	1	4	4	1	4	1	4	1	4	1	4	
Dosimetry	2/3	1	2/3	1	2/3	1	3	1	4	3/4	1	3/4	1	4	1	4	1	4	
Intracavitary and interstitial brachytherapy	2/3	1	2/3	1	2/3	1	3	1	4	3/4	1	3/4	1	4	1	4	1	4	
Intrahepatic chemotherapy/Lumbar puncture	5	1	3	1	3/4	1	3/4	1	4	3/4	1	4	1	4	1	4	1	4	
Pleurodesis	2	1	2	1	3	1	3/4	1	4	3/4	1	4	1	4	1	4	1	4	
Bone marrow Aspiration	2	1	2	1	2	1	3	1	4	3	1	3/4	1	3/4	1	3/4	1	4	
Bone marrow Biopsy	2	1	2	1	2	1	3	1	4	3	1	3/4	1	3/4	1	3/4	1	4	
Insertion of long line	2	1	2	1	2	1	2/3	1	4	2/3	1	3	1	3/4	1	3/4	1	4	
Indirect Laryngoscopy	2	1	2	1	2/3	1	2/3	1	4	3	1	3	1	3/4	1	3/4	1	4	
Fibreoptic Direct laryngoscopy	2	1	2	1	2/3	1	3	1	4	3	1	3	1	3/4	1	3/4	1	4	
Gynaecological Examination	2	1	2/3	1	2/3	1	3	1	4	3	1	3	1	3/4	1	3/4	1	4	
E.N.T Examination	2	1	2/3	1	2/3	1	3	1	4	3	1	3	1	3/4	1	3/4	1	4	
Use of Endoscope	2	1	2	1	2	1	2/3	1	4	2/3	1	3	1	3/4	1	3/4	1	4	
FNA / Punch Biopsy	2	1	2	1	2	1	2/3	1	4	2/3	1	3	1	3/4	1	3/4	1	4	

#### TRAINING DURATION

**TOTAL DURATION OF THE TRAINING IS FOUR YEARS AS UNDER:**

Intermediate Module (IMM) in Radiotherapy Two Years

Advanced Training in Radiotherapy Two Years

The first two years of training (Intermediate Module) will cover concepts from basic to intermediate levels of complexity in the field of Radiotherapy/Oncology.

The last two years of training will comprise of concepts from intermediate to advance level of complexity in the field of Radiotherapy/Oncology.

#### ROTATIONS

**NO MANDATORY ROTATIONS**

However, it will be the discretion of the supervisor to arrange and send the residents to other departments, if he/she thinks it necessary for acquisition of specific competencies.

#### KEY FOR ASSESSING COMPETENCIES

1. Observer Status
2. Assistant Status
3. Performed Under Supervision
4. Performed Independently

#### RESEARCH (DISSERTATION / TWO PAPERS)

One of the training requirements is a dissertation or two research papers on topics related to the field of specialization.

Synopsis of the dissertation must be submitted to Registration & Research Cell (R&RC) by the end of first year and should be approved before starting the research work.

Topic/title of the papers should be submitted to Registration & Research Cell (R&RC) before starting the research work.

The dissertation or evidence of publication /acceptance of research paper must be submitted six months prior to the final FCPS II examination for which the residents intend to sit in.

#### MANDATORY WORKSHOPS

**ALL MANDATORY WORKSHOPS SHOULD BE ATTENDED DURING FIRST TWO YEARS OF INTERMEDIATE MODULE TRAINING.**

1. Introduction to Computer and Internet
2. Research Methodology, Biostatistics and Dissertation Writing
3. Communication Skills
4. Basic Life Support Course

Any other workshop/s as may be introduced by the CPSP.

**NOTE:**

1) The workshops are conducted by the Department of Medical Education and the candidates are advised to get registered online. The BLS course is conducted by the Advanced Skills Department (ASD) and the registration form is to be submitted with the ASD separately.

2) No candidate will be allowed to appear in IMM examination without attending the above mentioned workshops and BLS course.



## Breast Cancer; Learning Objectives

At the end of each quarterly rotation, the resident should be well versed, trained, and able to comprehend the following.

### Year 1: 1<sup>st</sup> & 2<sup>nd</sup> quarter

1. Regional and surface anatomy pertinent to breast with comprehensive knowledge of lymphatic drainage and hematogenous spread.
2. Epidemiology and pathological basis of the disease process including genetics and syndromes associated with it
3. Should exactly know the natural history and patterns of spread using atlas of CT imaging - students should be able to draw level 1-3 AXLN, identify critical structures and OARs, delineate Pec muscles, draw CTV of breast and the lump cavity, or chest wall based on current CG - RTOG, ESMO, etc. They must know basis for TD5/5 and TD 50/5 for each OARs.
4. Clinical presentation: Residents should be able to identify s/s pertinent to local, regional area and distant sites of spread including ability to take a systematic relevant history
  - A- able to examine and interpret findings
  - B- able to establish a proper list of d/d

### 3<sup>rd</sup> and 4<sup>th</sup> Quarter

5. Essentials for diagnosis i.e. order essential and optional labs, residents should also be able to correctly interpret mammography, sono-mamography, understand triple assessment, basis for screening guidelines, advanced imaging (MRI) and its' interpretation, Tc<sup>99m</sup> bone scintigraphy, role of NaF PET and FDG<sup>18</sup>PET SCANS.
6. Final diagnosis using breast immune profiling as a basis with its prognostic & predictive implications.
7. Residents must be able to accurately draw a TNM Stage (UICC); including clinical; radiological, pathological; post therapy (ypT) staging.

### Year 2: 1<sup>st</sup> and 2<sup>nd</sup> quarter

8. Should be able to plan multidisciplinary management of early, locally advanced, and metastatic breast disease
9. Radiotherapy/systemic therapy Information:
  - Radiation indications
  - Contouring
  - Planning including dose constraints (RTOG and QUANTAC data)
  - Plan evaluation and verification
  - Physics involved in planning Including Q&A
  - Patient setup and verification
  - Course during and immediately after therapy; acute and late sequelae
  - Follow up
10. Systemic therapy indications
  - Regimens and dose alterations
  - IV chemotherapy in day care
  - Discharge medications and
  - Follow up

### Year 2; 3<sup>rd</sup> and 4<sup>th</sup> quarter

11. Selection of primary /adjuvant and neo-adjuvant treatment options- scientific evidence and basis for suitable options

building the clinical guidelines including pivotal trials - published data from journals and articles

12. Incorporations of validated scientific data into clinical practice to standardise management in the department

13. Presentation in MDTB of active cases, following their course, outcomes and surveillance strategies.

### **Year 3; 1st and 2nd quarter**

14. Critical appraisal and discussions with peers and tutors - including journal clubs, presentations, CBD, medical web sites, CMEs.

15. Indications, prescription writing, intent of treatment in different stages of cancers

16. Response evaluation using various tools; RECIST, iRECIST criteria and other relevant tools in response evaluation after therapeutic interventions

17. Measuring toxicity using tools like RTOG and CTC, etc., and appropriate management

18. Familiar with Rehabilitation measures including physiotherapy, diet and nutrition, orthotics, breast plastic and oncoplastic reconstruction, management and prevention of lymphoedema, etc.

### **Year 3; 3rd and 4th quarter**

19. Residents should be able to make suitable referrals to support services

20. Familiar with palliative strategies and QoL issues

21. Residents should be familiar with the disease prognosis and ability in breaking bad news

22. Well versed with surveillance plans and instruments

23. Novel therapy ; brachytherapy implants, breast IMRT, proton beam, etc.

24. Research avenues

*\*Topics from each quarter are carried forwards into teaching*

### **Teaching tools:**

- Textbooks
- Websites
- Journal papers
- MDTB CME points
- CME seminars; National & International with CME points
- Tutorials
- Resident presentations and Journal clubs
- Hands on training by tutors

### **Thoracic Surgical Oncology LOs ( Cardiothoracic surgery rotation)**

- **The learning objectives for Oncology trainees during thoracic rotation**
- Thorax is the main site where majority of tumors habitat whether being primary or secondaries. Lung cancer is the second most commonly diagnosed cancer and the leading cause of cancer-related deaths in the world according to CDC (Centre for disease control USA) <sup>i</sup>. Thorax especially mediastinum is relatively difficult area due to a number of anatomical structures and their complexities. These neoplasms are for the most part aggressive malignancies that exhibit a broad range of imaging manifestations. We have made significant advances in early detection (lung ca screening), diagnosis (image guided, EUS, EBUS, Mediastinoscopy, VATS) and treatment (complex resections, uniportal VATS, Robotic surgery, targeted therapies, Immuno-oncology etc) of thoracic cancers.

- The learning objectives of oncology trainees during thoracic rotation is to increase their knowledge base to understand the spectrum of thoracic malignancies, diagnostic strategies, and management options. Among thoracic malignancies, lung cancer (NSCLC, SCLC, Carcinoid etc) has significant worldwide impact due to its incidence and high mortality. Other malignancies include mediastinal tumours (e.g. thymoma, germ cell tumours, lymphoma), tracheal tumours, oesophageal tumours, mesothelioma, neurogenic tumours, chest wall tumours (e.g. Ewing sarcoma), pericardial tumours and metastatic lesions. One important aim is to enhance their understanding of thoracic imaging and staging particularly focusing on the mediastinum. Thoracic surgery has evolved and progressed from large coast-to-coast incisions to minimally invasive (e.g. VATS) but in current era embraced the technology now performing Endobronchial, uniportal VATS and Robotics. Trainees should be able demonstrate the concepts about the surgical diagnostic and therapeutic options / procedures most commonly performed for thoracic malignancies as outlined below.

- **Surgical Interventions:**

- Bronchoscopy: Rigid and flexible bronchoscopy for sampling, dilatation, debulking, stent, laser, APC
- Mediastinoscopy, EBUS, EUS for diagnostic & staging
- Diagnostic VATS

- **Surgical Operative approaches:**

- Open/Conventional
- Thoracotomy, Sternotomy, Clamshell
- Minimal access
- VATS (multiport VATS, Uniportal VATS, Subxiphoid VATS)
- Robotic assisted surgery

- **Surgical Operative procedures**

- ***Lung resections***

- Wedge, segmentectomy, lobectomy, bi-lobectomy, sleeve lobectomy, Pneumonectomy

- ***Mediastinal***

- Thymectomy, germ cell tumour resections, neurogenic tumour resections

- ***Airways***

- Tracheal resections, Carinal resections

- ***Chest wall resections and reconstructions***

- ***Surgery for mesothelioma and diaphragmatic tumours***

- ***Esophagectomies***

- Trainees will spend some time in evaluating patients in clinic / wards, assessing the fitness criteria (PS, PFTs, Echo), diagnostic modalities in endoscopy / theatre and observing for the operative procedures/operations in theatres suites.

# ANNUAL LEAVE RESIDENTS

# 2023

## January

su	mo	tu	we	th	fr	sa
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## February

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## March

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## October

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## November

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## December

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