

D.M. (MEDICAL ONCOLOGY)
[Syllabus Approved by Board of Studies, Medical & Health Sciences]

Programme Code	:	HLTH10A01
Programme Details	:	DM MEDICAL ONCOLOGY
Programme Learning Outcomes (PLOs/PSOs)	:	ANNEXED IN THE BELOW FORMAT
Eligibility Criteria	:	AS PER NMC NORMS
Duration of the Course	:	3 YEARS
Programme Structure (Credit-Based)	:	NA
Detailed Course Syllabus	:	ANNEXED IN THE BELOW FORMAT
Teaching–Learning Methodologies	:	3 YEARS RESIDENCY PROGRAM
Examination & Evaluation System	:	ANNUAL APPRAISALS FOLLOWED BY FINAL YEAR EXAMINATION AS PER NMC NORMS
Internship / Project / Dissertation Guidelines	:	1 YEAR MANDATORY BOND
Program In Charge	:	HEAD, DEPT OF MEDICAL ONCOLOGY Dr. Manju Sengar manju.sengar@gmail.com Academic Coordinator Dr. Anant Ramaswamy anant.ramaswamy@tmc.gov.in
Annexure (Books / Journals etc)	:	ANNEXUED

D.M. (MEDICAL ONCOLOGY)

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Program Outcome:

- To train the candidates in training on the basics of all aspects of oncology.
- To understand the role of associated specialties, i.e., surgical and radiation oncologic principles, basics of pathology basics of radiology and their role in the multidisciplinary management of cancer patients.
- To provide exposure to the comprehensive management, including diagnosis, planning treatment, being a part of the multidisciplinary team delivering treatment and follow-up of a patient with cancer.
- To understand and be able to practice relevant aspects of medical oncology in terms of patients selection for treatment, management of various treatment modalities including, chemotherapy, immunotherapy, targeted therapy and newer modalities
- To introduce aspects of clinical and translational research during the program
- To provide national and international platform for presentations of clinical/surgical research data
- The training should encourage trainees to become thought leaders in various aspects of practice in medical oncology across the country.
- The candidate should complete the training programme as per prespecified norms.
- All the necessary training and mandatory theory are specified in the syllabus of the DM Medical Oncology Course.
- The student is expected to participate in the regular appraisal examinations and academic programmes conducted in the institute.
- The purpose would be to acquire an understanding of the subject of medical oncology in specific and all aspects of oncology in general.
- The candidate's progress through the 3 years will also be assessed with feedback from all stake holders, including the candidate and work-based assessment.

DETAILED SYLLABUS

INTRODUCTION

The practice of oncology is in a period of significant change. There is an expansion of new information regarding the molecular and cellular biology, immunology and biochemistry of cancer and a steady increase in our ability to more effectively diagnose and treat human malignancies. 'Medical Oncology' as a specialty has assumed immense importance. Institute Rotary Cancer Hospital, All India Institute of Medical Science is one of the few centers in India that provides the prestigious postgraduate super specialty course-DM Medical Oncology. It is important that the candidates interested in pursuing their career in medical oncology, besides a good clinical acumen, possess a sound understanding of the related basic sciences. They should be able to comprehend the essentials of molecular biology, genetics, signal transduction and immunology and translate the knowledge into clinical practice.

GOAL OF THE PROGRAM

To ensure adequate supply of medical oncology experts who assume leadership role in their fields.

AIM OF THE PROGRAM

To produce a medical oncologist who:

- Is capable of providing an excellent patient care
- Possesses adequate knowledge base (both basic and applied) to effectively interact with medical colleagues in a wide range of disciplines.
- Is a good researcher
- Is a competent teacher

OBJECTIVES AND GUIDELINES TO THE CONDUCT OF PROGRAM

It is a 3-year course that imparts intense training to DM candidates into the field of medical oncology and related subjects with adequate exposure to clinical and laboratory based activities.

CLINICAL TRAINING

The objectives of the clinical training are:

- To develop clinical judgment and technical skills in diagnosis and the total management of patients with neoplastic diseases, with various modalities of treatment individually or in combination
- To make the student expert in handling all kinds of medical emergencies arising either due to cancer spread or problems related to therapy. The latter include: a) infections secondary to severe neutropenia, leading to respiratory distress/failure, renal insufficiency, hepatic insufficiency, and neurological disturbance, b) hemorrhagic complications, c) electrolyte disturbance, d) other toxicities.
- To impart full knowledge concerning cancer chemotherapy, hormone therapy, biologics, gene therapy, immune therapy; their mechanism of action, side effects, mode of administration, inter- relation with other drugs and their therapeutic effects.
- To make the candidate familiar with all the modern diagnosis aids including ultrasound, CT scan, NMR, MRI, PET scans, mammography, endoscopy, and radionuclide scans.
- To make the candidate conversant with the indications and application of blood component therapy, newer antibiotics, newer antifungal and antiviral agents and other supportive measures.
- To make the candidate fully conversant with and trained in various aspects of high dose chemotherapy and stem cell transplantation (both allogeneic and autologous) including schedule of treatment, indication for the use of growth factors, GVHD prophylaxis and management of various complications including acute and chronic GVHD.
- To provide an insight into clinical trials (design, data collection, analysis and interpretation of related statistics), cancer epidemiology, preventive and community oncology.
- To make the candidate understand the psychology of his patients, which is often disturbed with the knowledge that he or she has a cancer. The candidate will be made to learn to understand and tackle these psychological issues with compassion and gentle behaviour.
- To teach the candidate about effective communication skills and how to impart bad news to

the patients.

- To make them expert in managing the terminally ill patients. They would be given knowledge regarding pain management and other palliative care measures.

GUIDELINES:

The candidate works in the department of medical oncology as following

Indoors Postings

This may vary from **8 to 12 months**

The candidate is allotted certain beds and he is required to work up patients admitted on those beds. He plans out a diagnostic work up and treatment plan, discusses it with the concerned consultants. presents it on the grand rounds and assumes complete responsibility of the patients during their hospital stay. He should work in harmony with the ward nurses.

Out Patient Department (OPD) Posting

Duration is **16 months**. The candidate is posted to **chemotherapy evaluation clinics** and various specialty clinics including *breast cancer, gastrointestinal, urology, lymphoma-leukemia, pain evaluation, bone and soft tissue, pediatric tumors, head and neck, gynecology oncology, pulmonary oncology*.

The candidates posted to these clinics work under the supervision of consultants. They are expected to see new as well as follow-up patients so as to plan out the management and assess the therapeutic responses of a particular patient.

Day Care and OPD Procedures (MINOR OT) Posting :

Duration is 4 months. During this posting a candidate is expected to learn skills -

- In introducing per cutaneous subclavian, internal jugular, and femoral vein catheters
- Familiarity with different venous access devices likes Hickman catheter, subcutaneous port etc.
- Institution of chemotherapy and supervision of side effects
- Procedures like bone marrow biopsy, liver biopsy, trucut biopsy, lumbar puncture, intrathecal chemotherapy and aspiration of fluids.

BMT Unit Posting

Duration is **2 months**. The candidate works under the supervision of concerned consultants and assumes responsibility of managing the patients undergoing high dose chemotherapy.

Elective Posting

It is for **6 weeks**. The candidate selects the area of his or her interest, it may be training within the institute or at other specialized centers within or out side India. The candidate is required to seek acceptance from the concerned departments/centers where he wishes to work and also permission from the Chief IRCH.

Ancillary Posting

It will be for 3 months as follows:

- Surgical oncology (3 weeks)
- Radiation oncology (3 weeks)
- Laboratory (4 weeks)
- Rotation to blood bank and nuclear medicine department (1 week each)
- Radiodiagnosis (2 weeks)

LABORATORY TRAINING

The candidate, apart from understanding the value of laboratory tests in a given malignancy must possess the basic knowledge of interpreting the laboratory data and correlating it with clinical data. For this purpose, candidate is posted in various laboratories through laboratory posting or dissertation topic.

- The candidate are posted to various laboratories, some o which are attached to medical oncology itself, such as cytogenetics laboratory, in-vitro tissue culture laboratory. In addition, candidate is posted in immunology, microbiology, HLA and pathology laboratory.
- These postings enable the candidate to understand histopathology, immunopathology, histochemsity, cytopathology, genetics of tumors, their functional properties and modes of spread etc. He is also made familiar with the various types of stem cell mobilization, harvesting, and cryopreservation techniques.

- The candidate is required to learn the basic techniques of tissue culture, cytogenetics, staining and study of peripheral/bone marrow smears, operation of blood cell counter and cell separator machine.

RESEARCH TRAINING

The candidate is introduced to the field of research in medical oncology; both at clinical and laboratory level.

DISSERTATION

The candidate is required to work on **2 projects clinical and laboratory based**. The research proposals are to be submitted within 6 months of joining the course and completed report 6 months before the final exam. Every 6 months the candidate should present the progress report on the thesis work.

The candidate can either design a prospective study or do retrospective analysis related to his thesis work. The candidate should see to it that the study is published in a national or international journal. Besides the dissertation work, the candidate is encouraged to work on and publish case series and case reports in peer reviewed journals and send papers for presentation to national and international conferences. He is also be encouraged to design new clinical as well as laboratory based protocols, to write research proposals for granting of funds and to establish new laboratory techniques.

TRAINING ORIENTED TOWARDS MAKING THE CANDIDATE AN EXPERT TEACHER

Academic Schedule

Integrated teaching program to expose the candidate to various fields of oncology are provided by regular clinico-pathologic conferences, seminars, case discussion sessions, and radiology conferences. Following academic activities are planned through out the year except during summer and winter vacations. The candidate will be encouraged to actively participate in these meetings, carefully listen to the topics, ask questions, critically analyze and give his/her comments and suggestions.

Monday: Teaching program, 8-30 to 9-30AM. Faculty from IRCH and from other departments at

AIIMS discusses topics related to basic and clinical oncology, biostatistics, making an effective presentation etc.

Tumor Board, 4-30 to 5-30 PM. By rotation senior resident working with each of the faculty members brings some interesting/difficult case/es for discussion. After taking into consideration view points of various members, a consensus is reached as to the best treatment plan for the patient.

Tuesday: Radioconference, 8-30 to 9-30 AM. The radiographs, CT/MRI/bone scans and GI series of patients seen in the OPD and wards are discussed with the radiologist. If present, serial films are discussed. This helps in diagnosis, staging, prognosis and response evaluation. It is preferable that the senior resident reads the films and then asks for the expert opinion.

Oncopath Conference, 12 noon to 1 PM. The senior residents provide the clinical history of the cases and the histopathology slides are discussed with the expert pathologists.

Wednesday: Journal club/mortality meeting, 8-30 to 9-30 AM. Alternatively journal club and mortality meeting are planned. In the journal club, the senior resident reviews relevant studies published in the latest journals, presents them and critically analyze the design of the study, the results, drawbacks and feasibility of carrying out the study in our set up. In the morality meeting, the treatment course and probable cause of death of the patients expired recently in the IRCH ward is discussed. The senior resident also discusses a related topic in detail.

Thursday: Seminar, 8-30 to 9-30 AM. Candidate presents a given topic and discusses it. He should be able to review the topic critically and make independent observations.

Friday: 8-30 to 9-30 AM. During this session, the candidates present their research proposals and update on their projects. Also case discussions are held, whereby the candidate presents the case history, examination and management plan of the patient.

CONDITIONS FOR CERTIFICATION:

The candidate will be guided and judged as regards his/her abilities to provide competent care to his patients through various means like ward rounds, discussions held in OPD/clinics and weekly academic activities. Internal assessment through internal examination held in March and September

every year will be done and this record will be made available at the time of final examination.

EXAMINATION:

The examination will be conducted in three parts.

▪ Theory paper

○ Paper I

- Basic Science: Cancer Biology, Tumor Immunology, Cancer Etiology, Pharmacology, Radiation Biology, Tumor Pathology

○ Paper II

- Solid Tumors: Principle of Medical Oncology, Management of Solid Tumors

○ Paper III

- Medical Oncology: Hemato-Oncology

○ Paper IV

- General Oncology: Cancer Epidemiology, Prevention, Psycho-Oncology, Rehabilitaion, Societal Oncology

▪ Clinical and practical

- Long case 1
- Short cases 4
- Spotters 4

▪ Viva-voce

- Grand viva, histopathology, hematology slides, CT scans and X rays.

BOARD OF EXAMINATION

Two internal and two external examiners

Assessment of Candidate

1. Assessment of the three parts of the examination shall be done jointly by the members of the respective board of examiners.
2. Assessment of theory papers will be done individually by each examiner. The average of marks will be taken into consideration
3. A candidate will be declared to have qualified for the DM degree in medical oncology if the candidate has satisfied the members of the respective boards of examiners individually and collectively that he/she had an adequate knowledge in all aspects of the three parts of examination. The candidate is required to score at least 50% of marks in theory separately and 50% of marks in clinical and viva-voce examination taken together.
4. A candidate whose thesis/research work has not been approved or who is unsuccessful in any part of the examination will be followed up as per institute rules.
5. The examination is conducted generally twice a year in the months of May and December.

SYLLABUS

Paper I: Basic Science in Oncology

1. Cell cycle
2. Pathology, Invasion & Metastasis
3. Etiology of Cancer
 - a. Viral
 - b. Chemotherapy
 - c. Physical
 - d. Hormonal
4. Epidemiology of Cancer
5. Principles of Cancer Management -- Surgical Oncology, Radiation Therapy, Chemotherapy, Biologic therapy
6. Pharmacology of Cancer Chemotherapy
7. Clinical trials in cancer
8. Cancer prevention Tobacco related cancer. Diet & Risk reduction Chemopreventive Agents, Hormones
9. Cancer Screening

10. Imaging Techniques of Cancer Diagnosis & Management
11. Specialized techniques of Cancer Diagnosis and Management 12. Vascular Access and Specialised Technique of drug delivery

Paper - II: Clinical Oncology (Medical)

1. Cancer of Head and Neck
2. Cancer of Lung and Mediastinum
3. Cancer of Gastro Intestinal Track
4. Cancer of Genito Urinary System 5. Cancer of the Breast
6. Cancer of Endocrine System
7. Sarcomas of Soft Tissues & Bone
8. Benign & Malignant Mesotheliomas
9. Cancer of skin
10. Malignant Melanoma
11. Neoplasms of CNS
12. Cancers of childhood
13. Lymphomas
14. Leukemias and other Haematological Malignancies
15. Paraneoplastic Synddromes
16. Cancers of unknown primary site
17. A.L.D.S-related malignancies
18. Oncological Emergencies
19. Treatmetn of Metastatic Cancers
20. Gynaecological Cancers
21. High Dose Chemotherapy & Transplantation

Paper – III: Recent Advances in Oncology

1. Essentials of Molecular Biology
2. Molecular Biology of Cancer: Oncogenes Cytogenetics
3. Bone Marrow dysfunction in cancer patient
4. Infections in cancer Patients and neutropenic patients

5. Adverse effects of treatment
6. Supportive Care and Quality of Life
7. Rehabilitation of Cancer Patient
8. Newer approaches in cancer treatment
9. Newer drugs in cancer treatment

References

- Cancer Principles and Practice of Oncology edited by Vincent T. Devita,
- Principles and Practice of Pediatric Oncology edited by Philip A. Pizzo
- Decision Making in Oncology edited by Benjamin Djubegovic
- Current Medical Diagnosis and Treatment Lange edited by Medical Book International
- edition
- The Basic Science of Oncology edited by Ian F. Tannock
- Cancer Treatment Charles edited by M Haskell
- Cancer Chemotherapy edited by Chabner
- Principles of Internal Medicine edited by Harrison
- Text Book of Pediatrics edited by Nelson
- Text Book of Oncology edited by Abeloff and Armitage
- Cancer Treatment Review
- Journals of Pediatric Hematology/Oncology
- Current Opinion in Oncology
- The Indian Journal of Cancer
- The Seminars in Oncology
- Haematology/Oncology Clinics of North America
- Medical and Pediatric Clinic of North America
- Cancer
- Current Problems in cancer
- Journal of Clinical Oncology
- Lancet
- NEJM (New England Journal of Medicine)

- Blood
- British Journal of Hematology
- Bone Marrow Transplantation
- Seminars in Hematology