

Curriculum

DrNB Super Specialty



Medical Oncology

- ◆ Introduction
- ◆ Goals and Objectives of the Programme
- ◆ Teaching and Training Activities
- ◆ Syllabus
- ◆ Competencies
- ◆ Log Book
- ◆ Recommended Text Books and Journals

This page has been intentionally kept blank.

INDEX

S. No	Contents	Page No.
I	Introduction	5
II	Goals and Objectives of the Programme	5
III	Teaching and Training Activities	9
IV	Syllabus	11
V	Competencies	17
VI	Log Book	20
VII	Recommended Text Books and Journals	20

This page has been intentionally kept blank.

I. INTRODUCTION

The number of patients with malignancies in the world continues to increase. It is estimated that ten million new cases are diagnosed every year and that two million people are either receiving treatment or are living with their disease. The last decades have seen a rapid growth in medical technology and in the advances of fundamental knowledge of cancer cell biology with impact on genetics, screening, early diagnosis, staging, and overall treatment of cancer. This development has also led to a more coordinated, multi-disciplinary approach to the management of the individual malignancy and the need to establish formal training based on a set of guidelines or a curriculum in the various major specialties such as surgery, radiotherapy and medical oncology.

II. GOALS AND OBJECTIVES OF THE PROGRAMME

1. Programme Goal

- i. Provide specialized training in medical Oncology, including Hospital based oncology practice, Community Oncology development and Community Intervention Strategies.
- ii. Instill the concept of wholesome management of a cancer patient. Instill team spirit by involving the radiation oncologist, surgical oncologist, Nuclear medicine & allied imaging departments, palliative care specialists & pathologists as team players in all patients and other departments as & when necessary.

2. Programme Objectives

At the end of the training program the candidate should have: -

- i. Basic Scientific Principles – The trainee should have clear concepts regarding the basic principles of Biology of normal cells, basic processes of carcinogenesis, gene structure, expression and regulation, cell cycle and interaction with therapy, tumor cell kinetics, tumor cell proliferation, tumor immunology and molecular techniques.
- ii. Basic Principles in the Management and Treatment of Malignant Diseases – The trainee at the end of training program, should be thorough with the basic principles of malignant disease management including clear understanding of

pathologic techniques, serum markers, cell membrane and DNA markers, TNM staging systems, Indications for clinical, radiographic and nuclear medicine procedures, response assessment.

iii. **Management and Treatment of Individual Cancers and their associated complications** - The management of malignant diseases requires the expertise of many different medical subspecialties, and the majority of patients with malignant diseases are best managed in a multidisciplinary approach with integration of the various sub-specialties because of increasing complexity of modern treatment.

- The trainee should recognize the contributions of each of these subspecialties in making the diagnosis, assessing disease stage, and treating the underlying disease and its complications.
- The trainees should interact with each of these disciplines in order to gain an appreciation of the benefits and limitations of each modality.
- Participation of the trainees in interdisciplinary meetings is encouraged.
- After completion of the training program the trainee should be well versed with the management of all human cancers, chiefly Head and neck, Lung, Gastrointestinal, genitourinary, gynecological, breast, mesenchymal, skin, endocrine, neurological and hematological malignancies
- The trainee also needs to be competent in managing pediatric oncology patients

iv. **Psychosocial Aspects of Cancer** – The trainee should become skillful in handling cultural issues, spiritual conflicts, adaptive behavior, coping mechanisms, communication.

v. **Patient Education** – The trainee should learn to consciously involve in educating the patients in matters of genetic counseling (screening and assessment of risk), health maintenance (Diet, smoking, alcohol consumption), long term complications, risk of treatment induced cancer, endocrine dysfunctions. 6) Bioethics,

vi. **Legal, and Economic Issues** – The trainee should be fully proficient in dealing with issues of taking informed consent for research activities, ethical conduct of medical research, legal issues (Life support and its withdrawal), cost efficiency and professional attitude

-
- vii. **Skills** – During the training period the trainee should imbibe and develop the skills of anticancer agent administration (Prescribing, administering, Handling and disposal of chemotherapeutic and biologic agents), clinical procedures (bone marrow aspiration, biopsy, lumbar punctures, abdominal and thoracic paracentesis), ommaya reservoir management.
- viii. **Community responsibilities** – The trainee should be well versed with community aspects of cancer screening including cancer registry and other aspects of preventive oncology. The trainee should become competent to plan and implement community intervention strategies and should be well trained to link up with the existing health care system and be able to address screening, early detection and health awareness issues.
- ix. **Constant Development** – The trainee should be aware of the recent developments in the field of Medical Oncology, chemotherapeutics, preventive oncology, molecular biology. Communication Trainees should be able to communicate to patient and their family. They should be able to break bad news and act adequately in difficult situations. Trainees should learn to communicate and work together with other professional health care takers in a team.

Patient Education

Genetic Counseling: The trainee should be capable of assessing the increased risk of cancer in the patient and the patient's family.

- They should be aware of the principles for genetic screening and counseling. 6.2 Health Maintenance
- The trainee should be capable of counseling the patients and their family about known risk factors for subsequent malignancy: - diet - smoking - alcohol - sun exposure.
- Trainees should have an understanding of the aetiology of genetic and environmental factors in oncogenesis.
- They should have a basic knowledge in epidemiological factors and descriptors of disease.
- Trainees should understand the basic principles of screening and risk assessment.
- They should know the sensitivity and specificity of the test employed and the cost-benefit ratio.
- They should know the situations in which screening has a well-defined role and the situations in which the role of screening is unclear or not defined.

-
- They should be aware of the principles and indications for genetic screening and counseling.
 - They should know the value of prevention in cancer development and what primary, secondary and tertiary preventive measures may be taken to prevent cancer development
 - Clinical Research including Statistics Trainees must be provided an education in the design and conduct of clinical trials.
 - They must have an exposure to the development and conduct of these trials through international cooperative groups or in-house protocols.

 - basics of statistics: * statistical methods * requirements for patient numbers in designing studies * proper interpretation of data - toxicity assessment and grading - role and functioning of the Institutional Review Board and ethical committees - experience obtaining informed consent from patients - government regulatory mechanisms of surveillance - instruction in grant writing and information about mechanisms of support for clinical research - cost of therapy and the cost-effectiveness of therapy - instruction in preparing abstracts, oral and visual presentations and writing articles.
 - They should be able to critically evaluate the scientific value of published articles and their influence on daily clinical practice.

Basic Principles in the Management and Treatment of Malignant Tumours

- The trainees should be capable of assessing the patient's co-morbid medical conditions that may affect the toxicity and efficacy of treatment in order to formulate a treatment plan and be aware of the special conditions which influence the treatment of the growing population of elderly patients with malignant disorders.
- Pathology/Laboratory Medicine/Molecular Biology: The trainee should know that the definite diagnosis of cancer is based on a cytology or biopsy.

- The trainees should have the opportunity to review biopsy material and surgical specimens with a pathologist. They should appreciate the role of the pathologist in confirming the diagnosis of cancer and in determining the severity and extent of disease. Trainees should be familiar with newer pathologic techniques, and the contribution of these techniques to the staging and management of patients with cancer
- Trainees should be aware of the appropriate testing and intervals for follow-up.

-
- Bioethics, Legal, and Economic Issues.
 - Informed consent the trainee should know the requirements for obtaining informed consent.
 - Ethics The trainee should understand the ethics involved in the conduct of medical research.
 - Legal issues they should know the legal issues related to anti-cancer treatment, institution of life support and withdrawal of life support systems.
 - Cost efficiency Trainees should appreciate the cost effectiveness of medical intervention in the management of cancer. 7.5 Conflict of Interest Guidelines to define conflict of interest within professional activities.
 - Professional attitude Trainees must demonstrate professionalism and humanism in their care of patients and their families.

The main objective of these certification systems is to improve the quality of patient treatment and care, to set standards of clinical competence for the practice of medical oncology, and encourage a continued scholarship for professional excellence over a lifetime of practice

Professionalism – Ethics Professionalism must be fostered during medical oncology training. In addition to mastering the comprehensive clinical and technical skills of the consultant medical oncologist, trainees are expected to maintain the values of professionalism

III. TEACHING AND TRAINING ACTIVITIES

The fundamental components of the teaching program should include:

1. Case presentations & discussion- once a week
2. Seminar – Once a week
3. Journal club- Once a week
4. Grand round presentation (by rotation departments and subspecialties)- once a week
5. Faculty lecture teaching- once a month
6. Clinical Audit-Once a Month

-
7. A poster and have one oral presentation at least once during their training period in a recognized conference.

The rounds should include bedside sessions, file rounds & documentation of case history and examination, progress notes, round discussions, investigations and management plan) interesting and difficult case unit discussions.

The training program would focus on knowledge, skills and attitudes (behavior), all essential components of education. It is being divided into theoretical, clinical and practical in all aspects of the delivery of the rehabilitative care, including methodology of research and teaching.

Theoretical: The theoretical knowledge would be imparted to the candidates through discussions, journal clubs, symposia and seminars. The students are exposed to recent advances through discussions in journal clubs. These are considered necessary in view of an inadequate exposure to the subject in the undergraduate curriculum.

Symposia: Trainees would be required to present a minimum of 20 topics based on the curriculum in a period of three years to the combined class of teachers and students. A free discussion would be encouraged in these symposia. The topics of the symposia would be given to the trainees with the dates for presentation.

Clinical: The trainee would be attached to a faculty member to be able to pick up methods of history taking, examination, prescription writing and management in rehabilitation practice.

Bedside: The trainee would work up cases, learn management of cases by discussion with faculty of the department.

Journal Clubs: This would be a weekly academic exercise. A list of suggested Journals is given towards the end of this document. The candidate would summarize and discuss the scientific article critically. A faculty member will suggest the article and moderate the discussion, with participation by other faculty members and resident doctors. The contributions made by the article in furtherance of the scientific knowledge and limitations, if any, will be highlighted.

Research: The student would carry out the research project and write a thesis/ dissertation in accordance with NBE guidelines. The trainee would also be given exposure to partake

in the research projects going on in the departments to learn their planning, methodology and execution so as to learn various aspects of research.

IV. SYLLABUS

Section 1: Hallmarks of Cancer

1. The hallmarks of cancer
2. Growth factors and uncontrolled proliferation
3. Cell signaling pathways
4. Cell cycle control
5. Cancer cell death
6. Angiogenesis
7. Invasion and metastases
8. Genetic instability
9. DNA repair after oncological therapy
10. Biology of cancer stem cells
11. Biomarker identification and clinical validation
12. Cancer, immunity, and inflammation
13. Cancer and metabolism

Essentials of Molecular Biology

- Basic Principles. Genomics and Cancer, signal transduction, Immunology, Cytogenetics, Cell Cycle, Apoptosis, invasion and metastases, angiogenesis and carcinogenesis, - Genetics, viral physical and Chemical.
- Principles of cancer management surgical Oncology, Medical Oncology, Radiation Oncology and Biologic therapy.

-
- Cancer Chemotherapy
 - Pharmacology of Cancer Biotherapeutics – interferons, interleukins, anti-hormonal therapy, differentiating agents, monoclonal antibodies, antiangiogenic factors.
 - Clinical Trials
 - Cancer Prevention - tobacco related cancers, diet chemoprevention.
 - Cancer Screening
 - Cancer Diagnosis - Molecular pathology and Cytology, Imaging, Endoscopy, Laparoscopy
 - Principles of Cancer Management – Surgical Oncology, Radiation Therapy, Chemotherapy, Biologic therapy
 - Pharmacology of Cancer Chemotherapy
 - Clinical trials in cancer
 - Cancer prevention Tobacco related cancer, Diet & Risk reduction Chemopreventive Agents, Hormones 9. Cancer Screening
 - Imaging Techniques of Cancer Diagnosis & Management
 - Specialized techniques of Cancer Diagnosis and Management
 - Vascular Access and Specialised Techniques of drug delivery

Section 2: Etiology and Epidemiology of Cancer

- Epidemiologic methods, descriptive and analytical epidemiology
- Smoking and cancer
- Viruses
- Chemical carcinogens
- Radiation
- Body fatness, physical activity, diet, and other lifestyle factors

Section 3: Principles of Oncology

- Practice points for surgical oncology
- Practice points for radiation oncology
- Principles of chemotherapy
- Delivery of multidisciplinary cancer care
- Principles of clinical pharmacology: Introduction to pharmacokinetics and pharmacodynamics
- Design and analysis of clinical trials
- Medical ethics in oncology

-
- Health economic assessment of cancer therapy

Section 4: Population Health

- Cancer control: The role of national plans
- Cancer prevention: Vaccination
- Cancer prevention: Chemoprevention
- Population cancer screening
- Familial cancer syndromes and genetic counseling

Section 5: Support for the cancer patient

- Supportive palliative care, hospice care, home care, bereavement counselling
- Pain management
- End of life care
- Quality of life: metrics and measures
- Cancer survivorship and rehabilitation

Biologic Therapy

Trainees should be familiar with the activities and indications for biologic therapy including cytokines and haematopoietic growth factors.

basic concepts of targeted molecular therapies, such as monoclonal antibodies, tumour vaccines, cellular therapy, and gene-directed therapy.

Disease

Cancer of the head and neck. the risk factors for head and neck cancers

- Natural histories of the individual primary tumour sites.
- Staging of head and neck cancers as the proper evaluation for therapeutic recommendations. Panendoscopy is needed for staging.
- Selecting surgery and/or radiation therapy as definitive treatment.
- Role of chemotherapy and palliation of advanced disease

- Organ preservation long term management of these patients and of risks of second malignancies.
- Oesophageal cancer

-
- Gastric cancer
 - Rectal cancer
 - Colon cancer
 - Pancreatic cancer
 - Hepatobiliary cancer
 - Peritoneal mesothelioma
 - Cancer of the breast
 - Gynaecological cancers
 - Genitourinary cancer
 - Lung cancer / Mesothelioma

Risk factors for developing lung cancer or mesothelioma.

1. Small-Cell Lung Cancer: Multi-modality approach to limited-stage disease and the role of chemotherapy in patients with advanced disease.
2. Non-Small-Cell Lung Cancer: Criteria of inoperability and the surgical and non-surgical staging of patients with localized disease. Value of surgery, chemotherapy, and radiation therapy in localized disease often given as combined modality treatment, and the role of chemotherapy and/or radiation therapy in the palliation of advanced disease.
 - Neoplasms of the thymus
 - Pleural mesothelioma
 - Skin cancer: melanoma
 - Skin cancer: non-melanoma
 - Acute leukemia
 - Chronic leukemias
 - Myeloma
 - Lymphomas
 - Sarcomas of the soft tissue
 - Cancer of the central nervous system
 - Cancer of the eye and orbit
 - Endocrine cancers
 - Cancer of unknown primary site
 - Para-neoplastic syndromes
 - Cancer in immunosuppressed host
 - Oncologic emergencies – SVC syndrome, spinal cord compression, metabolic emergencies, urologic emergencies

-
- Treatment of metastatic cancer - brain, lung, bone, liver, malignant effusions and ascites
 - Haematopoietic therapy - transfusion, growth factors, autologous, allogenic, haplo identical and matched unrelated stem cell transplantation
 - Infections in the cancer patient
 - Supportive care and quality of life - pain management, nutritional support, sexual problems, genetic counselling,
 - Psychological issues
 - Community resources
 - Care of the terminally ill patient
 - Adverse effects of treatment - nausea and vomiting.
 - Oral complications, pulmonary toxicity, cardiac toxicity, hair loss, genital dysfunction, second cancers, miscellaneous toxicity.
 - Rehabilitation of the cancer patient.
 - Oncology nursing including venous access.
 - Ethical issues in oncology
 - Information systems in Oncology.
 - Alternative methods of cancer treatment.
 - Newer approaches in cancer treatment – Immunotherapy, Gene therapy, molecular therapy, cancer vaccines, image guided surgery, heavy particles in radiation therapy.
 - Reconstructive surgery
 - Cancer prevention
 - Tobacco related cancer,
 - Diet & Risk reduction Chemopreventive Agents
 - Hormones
 - Cancer Screening
 - Imaging Techniques of Cancer Diagnosis & Management
 - Specialized techniques of Cancer Diagnosis and Management
 - Vascular Access and Specialised Technique of drug delivery
 - Cancers of childhood

Rehabilitation

- The role of physical therapy particularly in the postoperative setting, occupational therapy, speech therapy and swallowing therapy

Supportive and Palliative measurements.

-
- The indications of the different supportive treatments, their limitations and side effects and its indications.

Supportive measurements -- Nausea and vomiting:

- Pain: They should have a working knowledge of the World Health Organization (WHO) pain ladder and an understanding of the pharmacology and toxicity of the opiate narcotics and other analgesics
- Infections and neutropenia: They should know the indications and contraindications of the use of haematological growth factors.

Anaemia:

- Thrombocytopenia: Marrow and Peripheral-Blood Progenitor Cells (PBPC)

Organ protection

- Gonad preservation to ensure the fertility of the patient (cryopreservation techniques)

Oncologic Emergencies:

- Trainees should recognize the clinical presentations that require immediate intervention (e.g. spinal cord compression, pericardial tamponade)

Nutritional Support: Indications for and complications of enteral and parenteral support

- They should be able to manage cancer pain with the available modalities and recognize when referral for an invasive palliative intervention

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 patient
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

Research Methodology and Data Base

1. Clinical Trial Protocol designing.
2. Statistical evaluation & Kaplan-Meyer plot, etc.
3. Bioethics.

Biostatistics, Research Methodology and Clinical Epidemiology Ethics

Medico legal aspects relevant to the discipline

Health Policy issues as may be applicable to the discipline

V. COMPETENCIES

The candidate works in the department of medical oncology as following

1. **INPATIENT POSTING** This may vary from 8 to 12 months: the candidate is allotted certain beds and the trainee is required to work up patients admitted on those beds. The trainee 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 hospitalization. The trainee should work in harmony with the ward nurses.
2. **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.
3. **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.

-
4. **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.
 5. **ELECTIVE POSTING** It is for 6 weeks. The trainee 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 the trainee wishes to work and also permission from the Chief IRCH.
 6. **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)
 - Radio diagnosis & nuclear medicine (2 weeks)
 7. **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 trainees are posted to various laboratories, some of 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, histochemistry, cytopathology, genetics of tumors, their functional properties and modes of spread etc.
 - The trainee 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.
 8. **RESEARCH TRAINING** The candidate is introduced to the field of research in medical oncology; both at clinical and laboratory level.

9. PRACTICAL HAND ON TRAINING

- i. Anti-cancer agent administration. The trainee should have knowledge how to prescribe and safely administer anticancer agents. The trainee should be able to care and access indwelling venous catheters. The trainee should have knowledge about the handling and disposal of chemotherapeutic and biologic agents.
- ii. Bone Marrow Aspiration, Biopsy, and Interpretation: Trainees should be able to perform a marrow aspiration and biopsy. They should have an experience in the interpretation of marrow aspirations and biopsies. Trainees should have a fundamental knowledge about marrow interpretation
- iii. Lumbar Puncture Training must demonstrate an ability to perform a lumbar puncture and to administer chemotherapy by that route.
- iv. Administration of medication by subcutaneous device. The trainee should be able to use a subcutaneous device to administer medication. The trainee should be able to recognize and solve complication of such device. Trainees must be capable of administering chemotherapy through an Ommaya reservoir.
- v. Paracentesis: ascitic fluid tapping, indications, fluid analysis and interpretation
- vi. Intraperitoneal chemotherapy: indications and practical aspects
- vii. Intravesical chemotherapy with BCG, mitoxantrone, etc: Indications and complications
- viii. Thoracocentesis and chest tube placement for drainage along with pleurodesis using talc, tetracycline and chemotherapeutic agents
- ix. PICC line placement
- x. Central venous access, including tunneled catheter placement and chemoport placement

VI. LOG BOOK

A candidate shall maintain a log book of operations (assisted / performed) during the training period, certified by the concerned post graduate teacher / Head of the department / senior consultant.

This log book shall be made available to the board of examiners for their perusal at the time of the final examination.

The log book should show evidence that the before mentioned subjects were covered (with dates and the name of teacher(s)) The candidate will maintain the record of all academic activities undertaken by him/her in log book.

1. Personal profile of the candidate
2. Educational qualification/Professional data
3. Record of case histories
4. Procedures learnt
5. Record of case Demonstration/Presentations
6. Every candidate, at the time of practical examination, will be required to produce performance record (log book) containing details of the work done by him/her during the entire period of training as per requirements of the log book. It should be duly certified by the supervisor as work done by the candidate and countersigned by the administrative Head of the Institution.
7. In the absence of production of log book, the result will not be declared.

VII. RECOMMENDED TEXT BOOKS AND JOURNALS

1. American Journal of Paediatrics
2. ActaOncologicaHematologica/Ontologica
3. British Journal of Cancer
4. Cancer
5. CA.A Cancer Journal for Clinicians
6. Cancer Detection & Prevention
7. Cancer Genetics and Cytogenetics
8. Cancer Journal (Scientific American) (NP)
9. Cancer Survey (NP)
10. Cancer Treatment Review
11. Clinical Oncology
12. Current Problem in Cancer
13. Current Opinion in Oncology
14. European Journal of Cancer
15. European Journal of Surgical Oncology
16. Genes, Chromosomes and Cancer
17. Gynecologic Oncology
18. Haematological Oncology
19. Haematology Oncology Clinics of North America

-
20. Indian Journal of Medical & Paediatric Oncology
 21. Indian Journal of Cancer (Indian)
 22. International Journal of Cancer (UICC)
 23. International Journal of Gynecological Cancer
 24. International Journal of Radiation Oncology Biology/Physics
 25. Journal of Cancer Education (NP)
 26. Journal of Clinical Oncology
 27. Journal of National Cancer Institute (Gift)
 28. Journal of Psycho social Oncology
 29. Journal of Surgical Oncology
 30. Medical & Paediatric Oncology
 31. Nutrition and Cancer
 32. Oncology (NP)
 33. Psycho-Oncology
 34. Radiotherapy & Oncology
 35. Seminars in Oncology
 36. Seminars in Oncology Nursing
 37. Seminars in Radiation Oncology
 38. Seminars in Surgical Oncology
 39. Surgical Oncology Clinics of North America
 40. Blood
 41. British J. Hematology
 42. Seminars in Haematology
 43. Haematology& Oncology Clinics
 44. Bone Marrow Transplantation

BOOKS FOR READING (LATEST EDITION)

1. Molecular Diagnosis of Cancer, COTTER.F.E.
2. Molecular Biology for Oncologists, YARNOLD..J.R. et al
3. Cancer Chemotherapy Handbook, BAQUIRANJ DELIA~
4. The Lymphomas, CANELLOS,G.P.et al
5. Chemotherapy source book, PERRY,M.C,
6. Leukemia, HENDERSON,E.S.et al
7. Cancer Medicine, HOLLAND, J .F. et al.
8. Atlas of clinical Haematology, BEGEMANN
9. Text book of Malignant Haematology, Degos.L et al
10. Clinical Haematology, ROCHARD Lee. et al

-
11. Clinical Oncology, ABELOFF et al
 12. Important Advances in Oncology, .DEVITA, V.T.
 13. Cancer Principles and Practice of Oncology, DEVITA , V. T. et al,
 14. Decision Making in Oncology Evidence Based Management, . DJULBEGOVIC. B & SULLIVAN.
 15. AJCC Cancer' Staging Manual (American Joint Committee on Cancer Cancer Treatment, HALNAN E .K
 16. Cancer' Treatment, HASKEL • Oncology for' Palliative Medicine, HOSKIN PETER & MAKING WENDY)
 17. Regional Therapy of Advanced Cancer, RUBIN,J.T
 18. MAGRATH, I. The Non-Hodgkin's Lymphoma,
 19. Comprehensive Text book of Oncology, Vol 1-2,.MOSSA, A.R
 20. Oxford textbook of Oncology PECKHAM, M. et al I
 21. A Multi-disciplinary Approach for Physicians and Students, RUBIN Clinical Oncology.
 22. Atlas of diagnostic oncology, SKARIN, A.T
 23. Basic Science of Oncology, TANNOCK,E.I
 24. Pediatric oncology ,Philip LANSZOWSKY
 25. William's Haematology[Beutler, Lichtman, Collier&Kipps]
 26. Wintrobe's Clinical Haematology [Greer et al]
 27. Haematology – Basic Principles & Practice [Hoffman, Benz, Shattil, Furie, Cohen & Silberstein]
 28. Practical Haematology [Dacie& Lewis]
 29. Bone Marrow Transplantation. [Forman, Blume & Thomas]
 30. Clinical bone marrow and blood stem cell transplantation [Atkinson et al]
 31. The molecular basis of Blood Diseases [Stamatoyannopoulos, Neinhuis, Leder& Majerus].
 32. Paediatric Haematology by [Nathan &Ozaskie] F.



आयुर्विज्ञान में राष्ट्रीय परीक्षा बोर्ड
स्वास्थ्य एवं परिवार कल्याण मंत्रालय, भारत सरकार
मेडिकल एन्क्लेव, अंसारी नगर, नई दिल्ली – 110029

NATIONAL BOARD OF EXAMINATIONS IN MEDICAL SCIENCES

Ministry of Health & Family Welfare, Govt. of India
Medical Enclave, Ansari Nagar, New Delhi- 110029