



Curriculum

DrNB Super Specialty

2025



Pediatric Haemato-Oncology



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A. OBJECTIVES OF THE PROGRAMME

The goal of course is to produce a competent pediatric hematologist-oncologist who:

- Recognizes the health needs of patients and carries out professional obligations in keeping the principles of National Health policy and professional ethics.
- Has acquired the competencies pertaining to Pediatric Hematology and Oncology that are required to be practiced in the community and at all levels of health care system. Has acquired skills in effectively communicating with the patients, family and the community.
- Is aware of the contemporary advances and developments in medical sciences.
- Acquires a spirit of scientific enquiry and is oriented to principles of research methodology.
- Has acquired skills in educating medical and paramedical professionals.
- Practice Pediatric Hematology and Oncology ethically and in step with the principles of primary health care.
- Diagnose and manage majority of conditions in the specialty of Pediatric Hematology and Oncology on the basis of clinical assessment, and appropriately selected and conducted investigations.
- Should be able to work in any hospital in India with minimum of facilities and should be able to diagnose and treat oncological and hematological diseases in children swiftly and efficiently both on an elective and emergency basis.
- Should be able to start a Pediatric Hematology and Oncology Unit with effective functioning with minimum inputs. Should be able to work effectively in National Program for the Prevention or Eradication of these conditions.



B. Eligibility Criteria for DrNB Pediatric Hematology and Oncology Course

- Admission to the 3 year DrNB Pediatric Hematology and Oncology course is only through NEET-SS conducted by National Board of Examination as per prescribed guidelines
- Any medical graduate with MD/DNB in Pediatrics qualification or equivalent, who has qualified the NEET SS conducted by NBEMS for particular admission session and fulfill the eligibility criteria for admission to Super Specialty courses at various NBEMS accredited Medical Colleges/ institutions/Hospitals in India is eligible to participate in the Centralized counseling for allocation of DrNB Pediatric Hematology and Oncology seats purely on merit cum choice basis.
- Every candidate admitted to the training programme shall pursue a regular course of study (on whole time basis) in the concerned recognized institution under the guidance of recognized post graduate teacher for assigned period of the course.



C. SYLLABUS

1. Biological Basis of Childhood Cancer
2. Epidemiology of Childhood Cancer
3. Cancer Surveillance and Descriptive Epidemiology and Analytic Epidemiology
4. Heredity and Childhood Cancer
5. Molecular and Genetic Basis of Childhood Cancer
6. Biology of Childhood Cancer
7. Tumour Immunology of Childhood Cancer
8. Diagnosis and Evaluation of the Child with Cancer
9. Clinical Assessment and Differential Diagnosis of Suspected Childhood Cancer
10. Pathology and Molecular Diagnosis of Leukemia and Lymphomas
11. Diagnostic Pathology of Pediatric Solid and Central Nervous System Malignancies
12. Imaging Studies in the Diagnosis of Childhood Cancer
 - ❖ Principles of Multimodal Therapy
 - ❖ General Principles of Chemotherapy
 - ❖ General Principles of Cellular Immunotherapy
 - ❖ General Principles of Targeted Therapy
 - ❖ General Principles of Radiation and Radiotherapy
 - ❖ General Principles of Surgery
13. Management of Common Cancers of Childhood



- ❖ Acute Lymphoblastic Leukemia
- ❖ Acute Myeloid Leukemia and Myelodysplastic Syndromes
- ❖ Myeloproliferative Neoplasms of Childhood
- ❖ Hodgkin Lymphoma
- ❖ Malignant Non-Hodgkin Lymphomas in Children
- ❖ Lymphoproliferative Disorders and Malignancies Related to Immunodeficiencies
- ❖ Histiocytoses
- ❖ CNS Tumours
- ❖ Neuroblastoma
- ❖ Renal Tumors
- ❖ Rhabdomyosarcoma
- ❖ Nonrhabdomyosarcoma Soft-Tissue Sarcomas
- ❖ Ewing Sarcoma
- ❖ Osteosarcoma
- ❖ Germ Cell Tumors
- ❖ Endocrine Tumors
- ❖ Liver Tumours
- ❖ Retinoblastoma
- ❖ Rare Tumors

14. Benign Hematology

- ❖ Physiology of hematopoiesis, and Interpretation of Hemogram
- ❖ Neonatal Hematology
- ❖ Bone Marrow Failure syndromes
- ❖ Disorders of Erythrocyte Production
- ❖ Hemolytic Anemias



- ❖ Disorders of the Immune System
 - ❖ Hemostasis
 - ❖ Supportive Therapy
 - ❖ Hematologic Manifestations of Systemic Diseases.
-
15. Hematopoietic Stem cell transplantation
 16. Immunotherapy
 17. Cellular therapy: CAR-T cells
 18. Supportive Care of Children with Cancer
 19. Oncologic Emergencies
 20. Hematologic Supportive Care
 21. Infectious Complications in Children with Underlying Disorders of Hematology/Oncology
 22. Nursing Support of the Child with Cancer
 23. Nutritional Supportive Care
 24. Rehabilitation of the Child with Cancer
 25. Pain and Symptom Management
 26. Psychosocial Support for the Child and Family
 27. Palliative Care for the Child with Cancer
 28. Adolescents and Young Adults with Cancer and Transitional Care to Adulthood
 29. Late Effects of Childhood Cancer and its Treatment
 30. Cancer Clinical Trials: Design, Conduct, Analysis, and Reporting
 31. Ethical Considerations in Pediatric Oncology
 32. Economic Issues in Pediatric Cancer
 33. Maximizing Safety in Cancer Treatment
 34. Pediatric Oncology in Low- and Middle-Income Countries





D. TEACHING & TRAINING ACTIVITIES

The fundamental components of the teaching program should include:

<u>Activity</u>	<u>Frequency</u>
Journal club	Once in 2 weeks
Clinical case discussion	Once a week
Pathology/Lab hematology discussion	Once a week
Pediatric surgery discussion	Once a month
Radiotherapy discussion	Once a month
Radiology discussion	Once a month
Grand rounds	Once in 2 months
Seminar	Once in 2 weeks
Mortality audit	Once a month
Statistics	Once in 2 months
Interesting/ difficult cases	Once a month
Faculty teaching	Once a month

Teaching methodology

It will include case presentations, demonstrations, didactic lectures, seminars, journal clubs, and combined conferences with allied departments. Department will also



encourage webinars conducted at various platforms.

Departmental training schedule and posting of residents, essential rotations.

The total period of the DrNB course is 36 months.

DrNB training and posting schedule:

<u>Posting</u>	<u>Duration</u>
<u>First Year</u>	
IPD	6 months
OPD and daycare	5 months
BMT	1 month
<u>Second Year</u>	
IPD	4 months
OPD and daycare	3 months
Clinical Hematology	1 month
Hematopathology, Histopathology and Cytology	2 months
Radiotherapy	15 days
Transfusion medicine	15 days
BMT	1 month
<u>Third Year</u>	
IPD	3.5 months
OPD and daycare	3 months
BMT	3 months
Hematology, Histopathology and Cytopathology	1 month



Palliative care medicine	15 days
Medical Oncology	15 days
Nuclear medicine	15 days

Mandatory Number of Procedures

The following is the list of mandatory number of minimum procedures the resident is expected to perform during his/her tenure. These should be reflected in the log book also.

Minimum number of procedures to be performed

<u>S. No.</u>	<u>List of Procedures</u>	<u>No. of procedures to be done</u>
1.	CSF analysis and intrathecal therapy	75
2.	Bone Marrow aspiration and biopsy	50
3.	Central Venous Access Device Insertion (any one) [Observe /Assist/ Manage] Hickman's tunneled catheter OR Chemo port OR Peripherally Inserted Central Catheter OR	10-20



		Femoral catheter	
4.	BoneMarrow Transplant related procedures [Observe /Assist/ Manage]	Stem cell collection Stem cell cryopreservation Stem cell thawing and preservation High dose chemotherapy administration	10 each
5.	Chemotherapy and immunotherapy administration		100
6.	Counseling		50



E. COMPETENCIES

- Possess complete Clinical Diagnostic Skills for the recognition of common hematological and oncology cases.
- Possess a complete knowledge of all the commonly done procedures like Lumbar puncture, Bone marrow aspiration and Biopsy, PICC line, Central line insertion, knowledge about transfusion of blood products.
- Able to apply sound clinical judgement and rational cost-effective investigations for the diagnosis and management of Hematology-Oncology Cases in the OPD, Wards, Emergency Room and Intensive Care unit.
- Possess some understanding of the recent advances in the subject of Hematology-Oncology and all its allied specialties and working knowledge of the sophisticated and routine equipment, consumables used in Pediatric Hematology-Oncology.
- Possess knowledge of research work in the field of Pediatric Hematology-Oncology in both the Clinical and experimental field with the ability to usefully analyze data.
- Be able to teach Post Graduate Students of MD/DNB Medicine/ Pediatrics about Clinical as well as investigative Hematology-Oncology.
- Be able to perform Clinical and Investigative studies and to present in Seminars etc.
- Have the ability to organize specific teaching and training programme for para medical staff, associated professionals and patient education programme. Should be able to develop good communication skills and give consultations to all other departments of the institution.



F. 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 Formative Assessment Test 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.



G.RECOMMENDED BOOKS & JOURNALS

Recommended Books

<u>S. No.</u>	<u>Title</u>	<u>Author/Editor</u>	<u>Ed./Vol</u>	<u>Year</u>	<u>Subject</u>
1.	Williams hematology	Kenneth Kaushansky	8th ed.	2010	Hematology
2.	De Gruchy's clinical haematology in medical practice	Saxena, Renu	6th ed	2013	Hematology
3.	Dacie and Lewis practical haematology	Barbara J. Bain	11th ed.	2012	Hematology
4.	Bethesda handbook of clinical hematology	Rodgers, Griffin P.	3rd ed.	2013	Hematology
5.	Nathan and oski's hematology of infancy and childhood	Orkin, Stuart H	8th ed.	2015	Pediatric Hematology
6.	Principles and practice of pediatric oncology	Pizzo, Philip A.	8th ed.	2020	Pediatric Oncology
7.	WHO Classification of Tumors of Haematopoietic and Lymphoid Tissues	D.N. Louis		2016	Pathology
8.	Who classification of tumors of soft tissue and bone	Fletcher, Christopher D. M.		2016	Pathology
9.	Wintrobe's atlas of clinical hematology	Tkachuk, Douglas C.		2007	Tkachuk, Douglas C.



10.	Postgraduate hematology	Hoffbrand, A. Victor	6th ed.	2005	Hematology
11.	Clinical hematology	Turgeon, Mary Louise	15th ed.	2012	Clinical Hematology
12.	Essentials of palliative medicine	Nayak, Sukdev	2nd	2013	Palliative Care
13.	Pediatric Intensive Care	Saha, Nitin K.	2nd ed.	2014	Pediatrics
14.	Basic Immunology	Abbas, Abul K. Lichtman, Andrew H. Pillai., Shiv	First South Asia Edition	2016	Immunology
15.	Nelson's essentials of paediatrics	Marcdante, Karen J.	7th ed.	2016	Pediatrics
16.	Paediatric oncology	Imbach, Paul	3rd ed.	2014	Paediatric oncology
17.	Hematology, immunology and infectious diseases	Ohls, Robin K.	2nd ed.	2012	Hematology
18.	Textbook of interdisciplinary pediatric palliative care	Wolfe, Joanne		2011	Pediatrics



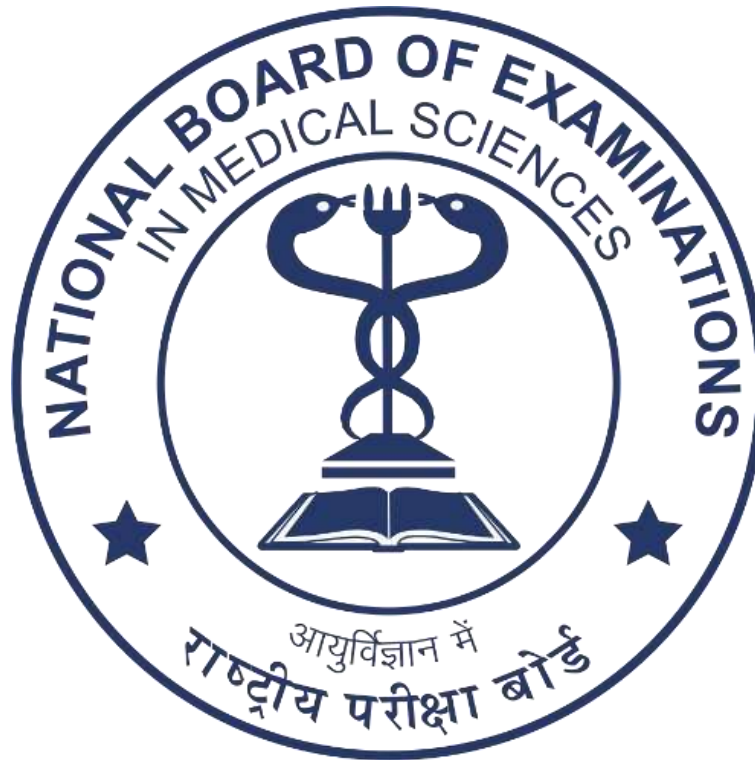
19.	Paediatric nutrition support handbook	Baker		2007	Baker
20.	Pediatric Hematopathology	Collins, R. D.		2001	Hematopathology
21.	Thomas' Hematopoietic Cell Transplantation	Frederick R. Appelbaum	5th ed	2020	BMT
22.	Haemoglobinopathy diagnosis	Bain, Barbara J.	2nd ed.	2006	Hematology
23.	Principles and practice of chemotherapy	Baig, Mirza Qaiser.	1st ed.	2012	Chemotherapy

Recommended journals

- Journal of Clinical Oncology
- Pediatric Blood and Cancer
- Journal of Pediatric Hematology Oncology
- Pediatric Hematology Oncology Journal
- Lancet Oncology
- Lancet Hematology
- JAMA Oncology
- JAMA Hematology
- Leukemia



- The Seminars in Oncology
- British Journal of Hematology
- Bone Marrow Transplantation
- Seminars in Hematology
- Annals of oncology
- Nature Reviews
- New England Journal of Medicine
- Cancer
- Blood
- Supportive care in Cancer
- Cancer Treatment Review
- Oncology Current Opinion in Oncology
- Transplantation and cellular therapy
- Nature Reviews Cancer
- Clinical Cancer Research
- Oncology Clinics of North America



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