

## Board of Studies Meeting

### 2.4: Program: Post Doctoral Certificate Course (PDCC) In Hemato-Oncology

**Program duration:** One academic year

**Program Objectives:** The objective of this training program is to train medical postgraduate students (Pediatrics & Internal Medicine speciality) in Hematology-Oncology. They will acquire the knowledge and skills in diagnosis and management of hematological malignancies occurring in pediatric and adults population and basic principles on bone marrow transplantation. They shall also have the intellectual and technical capabilities to setup and run hemato-oncology services in different academic and non-academic institutions and contribute to the growth of field of hemato-oncology.

#### Program Outcomes:

At the end of course the student should be able to:

1. Clinically diagnose, order investigations, interpret test results and thereby properly categorize various hemato-oncological disorders
2. Manage various hematological Malignancies
3. Manage complications of neutropenia and thrombocytopenia following cytotoxic therapy.
4. Appropriately counsel patients regarding bone marrow transplant (BMT).

#### Eligibility

MD/DNB Medicine

MD/DNB Pediatrics

Duration of the course:- 1yr

**Number of the students/Yr: 02/Yr.**


#### Selection of Candidate:-

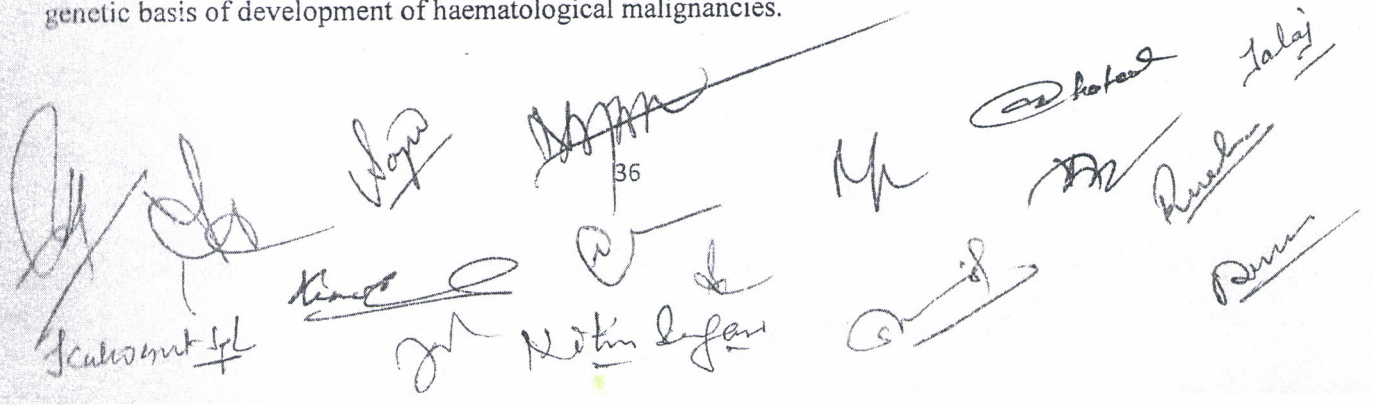
As per the entrance examination conducted by the institute

#### Courses Offered in the Program

##### Course I - Basic Hemato-oncology

**Course Objective** - The course at providing an in-depth knowledge of the basics of hemato-oncology. It will also aid in understanding the differences in adult and pediatric physiology, and genetic basis of development of haematological malignancies.

  
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### Course Outcome –

At the end of the training, the students would have acquired the following attributes –

6. Students will have gained fundamental knowledge of the physiology, haemostasis, and basics of Hemato-Oncology and BMT.
7. Understand the pathogenetic mechanisms of the different hematological malignancies
8. Development of clinical skills in Hemato- Oncology and BMT patients.
9. Development of skills in interpreting basic laboratory tests pertinent to hemato=oncology and BMT
10. The candidate will gain information on the different disorders like leukemia/lymphomas, plasma cell disorders and childhood malignancies.

### Course II - Applied & Recent advances in Hemato-Oncology

**Course Objective –** The course will focus on imparting students the skills to evaluate patients suffering from different hematological malignancies. They will develop diagnostic skills and learn to interpret various clinical and laboratory findings to provide the best patient care services. They will learn to counsel patients, and develop the rationale, principles and, procedures of Hematopoietic stem cell transplant.

### Course outcome –

The students would have acquired the following knowledge and skills –

1. Provide the clinical experience and educational opportunities necessary to build a solid foundation of medical knowledge, critical thinking abilities, literature review, diagnostic acumen and technical skills.
2. The candidates will learn the management of various malignant hematological disorders and their early diagnosis as well as the interpretation of various tests and procedures for optimal outcome.
3. Development of skills in preparing clinical presentations, discussions of cases, and case reports
4. Develop well-rounded, empathetic clinicians with the skills to successfully communicate and give counsel to patients and families.

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*[Handwritten signatures and initials are present at the bottom of the page, including names like Kulwant, Kishor, Nitin, and others.]*

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5. Provide trainees the research training and experience to develop careers as physician-scientists.
6. Impart the skills necessary to become lifelong learners, teachers, and leaders who can work effectively with team members.
7. They would perform specialized diagnostic and therapeutic procedures like bone marrow aspiration and trephine biopsy, FNAC, true cut biopsy, use and care of central venous access, lumbar puncture, pleurocentesis, pericardiocentesis, peritoniocentesis, stem cell harvest (PBSC and bone marrow) etc. wherever indicated and learn the use and maintenance of various equipment used for patient care.
8. Learn the use and maintenance of various equipment used for patient care.
9. Independently dispense outdoor patient care service and discuss cases with faculty concerned for guidance.
10. Day Care Centre work duties will enable the candidate to give chemotherapies, blood transfusions, and care of central venous lines conducting routine procedures.
11. The candidate will have acquired the knowledge of the stem cell procurement process, evaluation of the patient for suitability for the procedure, consenting process for the procedure, collection of the product (Bone Marrow harvest under general anesthesia or collection of the peripheral blood stem cells by apheresis procedure) and evaluation of the product collected, methods in which transplant recipients are conditioned, the rationale for the specific transplant conditioning regimen and design of the conditioning regimen.
12. The candidate would be introduced to research methodologies and would be expected to complete an independent research project under the supervision and guidance of the faculty.

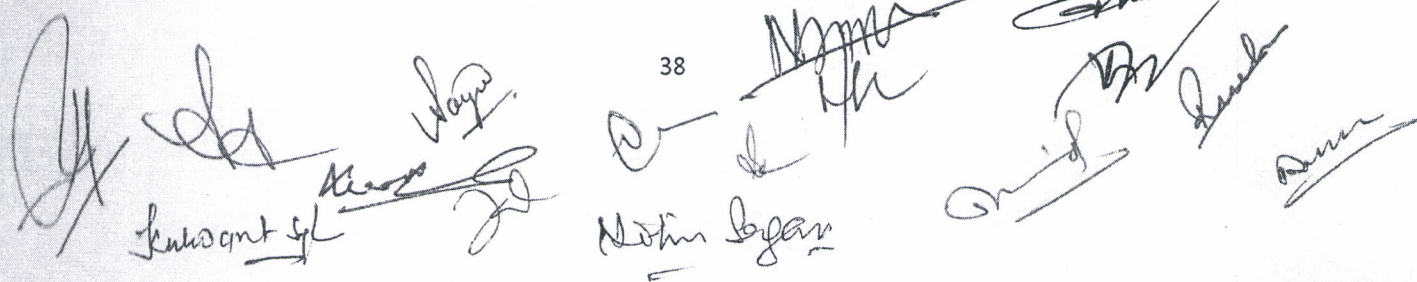
Needs: Local : Pink, National : Orange, Regional: light blue, International : green

### Detailed Course Curriculum

#### 1. **Basic Sciences**

- i. **Normal Hematopoietic System**
- ii. Hematopoiesis: Erythropoiesis, Granulopoiesis, Monocytopoiesis and Thrombocytopoiesis

  
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iii. Molecular basis of neoplasia

### 2. Cancer Chemotherapy

- i. Principal of Cancer Chemotherapy
- ii. Pharmacology, mechanism of action and side effect of the commonly used anti neoplastic drugs in hematological Malignancies

### 3. Malignant Hematological Disorders: Pathobiology, Clinical Manifestations, Diagnosis, Staging and Treatment

- i. Acute Lymphoblastic Leukemia
- ii. Acute Myeloid Leukemia
- iii. Chronic Lymphoblastic Leukemia
- iv. Chronic Myeloproliferative Disorders including Chronic Myeloid Leukemia
- v. Hairy Cell Leukemia
- vi. Plasma Cell Leukemia
- vii. Lymphomas: Hodgkins, Non Hodgkins, Cutaneous T-Cell Lymphomas, AIDS-Related Lymphomas
- viii. Atypical Lymphoid Neoplasias

### 4. Bone Marrow Failure Syndromes

### 5. Myelodysplastic Syndromes

### 6. Infections in Neutropenic patient

### 7. Growth Factors

### 8. Nutritional Support of Patients with Hematological Malignancies

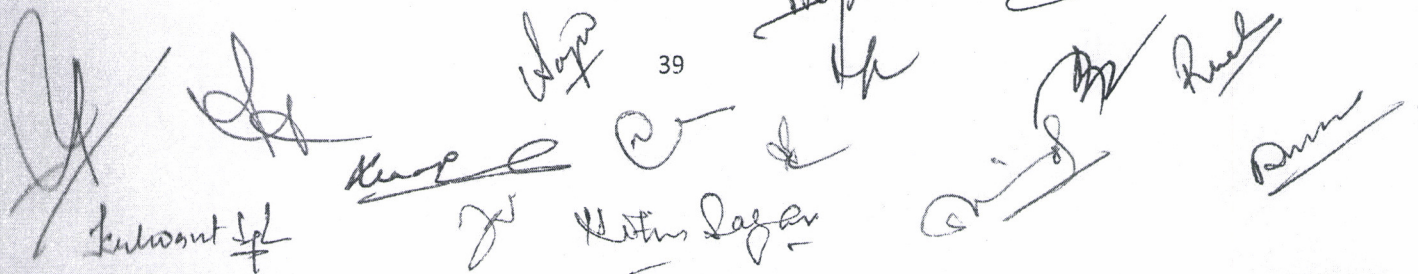
### 9. Pain Management and antiemetic therapy

### 10. Transfusion Medicine

- i. Transfusion Support in patients with hematological malignancies
- ii. Diagnosis and management of transfusion related complications

### 11. Bone Marrow Transplantation

  
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Kulwant  
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Hitesh Jagan  
Ramesh  
Dhanu

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- i. Indications and outcome of allogenic and autologous BMT in various malignant hematological disorders
- ii. Indications for Cord Blood Banking and Transplantation
- iii. Complications of BMT
- iv. HLA Typing for donor selection

### 12. Practical Skills


- i. Central line insertion
- ii. Bone Marrow aspiration and trephine Biopsy
- iii. Platelet and stem cell pheresis
- iv. Administration of various chemotherapy drugs
- v. Administration of intrathecal chemotherapy

### 13. Laboratory Skills: Basic Understanding and interpretation of reports

- i. Automated Analysis of Blood Cells
- ii. Morphological analysis of bone marrow and peripheral blood smears
- iii. Electrophoretic and immunochemical analysis of human immunoglobulins
- iv. Immunophenotyping of leukemias/lymphomas by Flow Cytometry
- v. Use of molecular techniques in the analysis of hematological malignancies

### Posting Schedule

S.No	Area of Posting	Duration of posting
1.	Ward/OPD including OPD Chemotherapy	09 months
2.	BMT Unit	02 months
3.	Laboratory	03 weeks
4.	Transfusion Medicine	01 weeks

  
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### Method for Computing Course Outcome

#### Course I - Basic Hemato-Oncology

Assessment of the student will be done base on the following academic activities.

1. Seminar presentation
2. Journal Club
3. Micro-teaching
4. Case discussion during academic hours
5. Case presentation and Discussion during ward rounds

#### Course II - Applied & recent advances related to Hemato-Oncology

1. Seminar presentation
2. Journal Club
3. Micro-teaching

### Method for Computing Program Outcome

The assessment of the fellow will be done base on

**B. Log Book:** Every candidate shall maintain a work dairy and record his/ her participation in the training programs conducted by the department such as journal reviews, seminars, etc. Special mention should be made of the presentations and procedures performed by the candidate. The student's monthly performance will be recorded by the faculty of the department/laboratory where he / she has worked. The logbook shall be scrutinized and certified by the Head of the Department and presented in the university examination.

#### **C. Research:**

- v. Participate in ongoing Departmental projects/plan a new study
- vi. Original paper published/presented in national Conference

### Method for Computing program outcome;

The summative assessment examination shall be done in two components

- C. Theory examination: will comprise of two papers of 100 marks each and representing the two courses included in the program. The passing percentage will be 50%.

  
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**Theory -**

**Total marks - 200**

S No.	Papers	Max. Marks
1	Basic Hemato-Oncology	100
2	Applied & Recent advances related to Pediatric Hematology	100
<b>Total Marks</b>		<b>200</b>

**D. Practical -**

**Total marks - 300**

S No.	Exercise	Max. Marks
1	<b>Clinical Competence</b> Long Clinical Cases (01) Marks 80 Short cases (02) Marks 70 (35+35)	150
2	<b>Practical Skin</b> Laboratory Spots (05) 25 marks Microscopy Slides (05) 25 marks Clinical Ward Rounds 50 marks	100
3	Viva - Voce	50
<b>Total Marks</b>		<b>300</b>

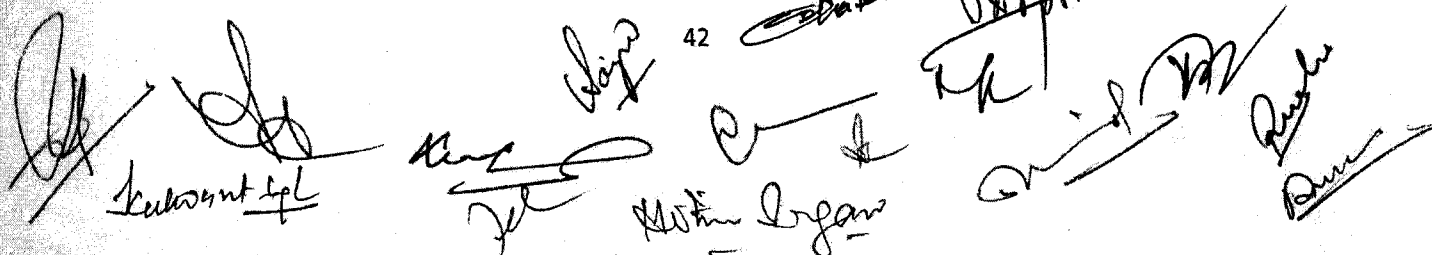
**Marks required to pass the examination:** The candidate should obtain a minimum of 50% separately in theory, clinical and laboratory examination. Viva will be added to the theory.

In addition to the above mentioned formal examination, each student will be evaluated for the competence obtained in the six areas listed below on day to day basis:

- v. **Patient care:** about appropriate and effective for management of health problems and health promotion. Compassionate in patient care
- w. **Medical Knowledge:** about established and developing clinical and cognate( eg. Epidemiological and socio-behavioral) sciences and its application to patient care.
- x. **Practise based learning and improvement.** That involves investigations evaluation of their own patient care.
- y. **Interpersonal and communication skills:** that result in effective communication and information exchange with patients, their families and other health care givers.
- z. **Professionalism:** as manifested through a commitment to carrying out professional responsibilities and adherence to ethical principles.
- aa. **System-based practise:**
- bb. as manifested by actions that demonstrate an awareness and responsiveness to the larger context and system of health care.

  
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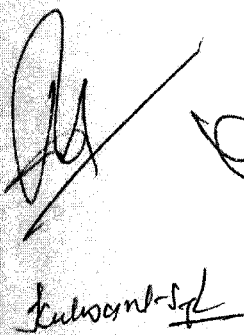
### Revision in the Syllabus:

The following topics have been included in the curriculum.

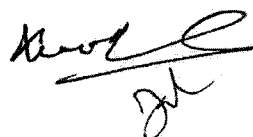
1. Principles of gene therapy
2. Revised classification of Hematolymphoid malignancies
3. Recent advances in immunotherapy of hematological malignancies
4. Application of New generation sequencing (NGS) in diagnosis of hematological malignancies
5. Newer drugs in management of patients with congenital bleeding disorders
6. Long-term management of cancer survivor patients.



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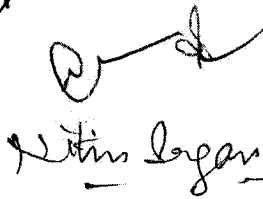
Kulwinder Singh



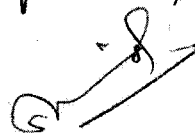
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