

**Hamdard Institute of Medical Sciences and Research**  
**Medical Education Unit**

**Electives in Pathology**

**CYTOPATHOLOGY MODULE**

1	Name of the Electives	Cytopathology
2	Block	I
3	Department /Area	Pathology
4	Name of the Mentor/ Supervisor/ Incharge	Prof. Sabina Khan
5	Co Supervisor/s	Dr. Nihal Ahmad
6	No. of students' intake	03 -05
	Method of selection (if applicable)	Previous prof Exam results and attendance
7	Objectives	At the end of elective posting student should be able to 1 Understand the indications of FNAC 2. Assist in the entire procedure of FNAC including needling and preparation of smears 3. Observe staining of wet and dry smears and be conversant with the principles and preparation of stains 4. Correlate clinical findings with cytological findings so as to formulate a diagnosis
8	Expected outcomes	To understand the basics of Fine Needle Aspiration Cytology and its role in Diagnostic pathology
9	Assessment	1. Day to day interaction, assignments and attendance 2. Viva-Voce
10	Log book	Regular logbook entry of the daily activities

**Hamdard Institute of Medical Sciences and Research**  
**Medical Education Unit**  
**Electives Pathology**  
**BLOOD BANKING**

1	Name of the Electives	Blood Banking
2	Block	I
3	Department /Area	Pathology
4	Name of the Mentor/ Supervisor/ Incharge	Prof Sujata Jetley
5	Co Supervisor/s	1. Dr Sabina Khan 2. Dr Durre Aden
6	No. of students' intake	3- 5
	Method of selection (if applicable)	Previous Prof Exam results and attendance
7	Objectives	1.To enumerate all donor deferral criteria and perform donor screening 2.To perform donor phlebotomy under supervision 3.To describe the methods of testing for transfusion transmitted infections 4. To understand indications, principle and procedure of blood compatibility testing 5 To be able to perform different methods of blood grouping independently (ie ABO grouping and Rh grouping)
8	Expected outcomes	1.Understand all the basic procedures done in a Blood bank. 2. Conversant with all steps involved in issue of blood.
9	Assessment	1.Attendance and day to day participation in blood bank activities 2. Documentation of entries in portfolio and log book 3. MCQ/SAQ/Structured Viva-Voce
10	Log book	Regular logbook entry of the daily activities

**Hamdard Institute of Medical Sciences and Research**  
**Medical Education Unit**

**Electives**

1	Name of the Electives	Haematology
2	Block	I
3	Department /Area	Pathology/ Clinical Pathology
4	Name of the Mentor/ Supervisor/ Incharge	Prof Zeeba Jairajpuri
5	Co Supervisor/s	Dr Shaan Khetrupal
6	No. of students' intake	2
	Method of selection (if applicable)	Interview to assess interest and basic knowledge
7	Objectives	<ol style="list-style-type: none"> <li>1. To provide the students with an exposure to basic haematological processes in Haematology section of Pathology Dept.</li> <li>2. To enable the student to actively participate in Haematology services and gain knowledge in automated haematology processes and their utility in the functioning of the haematology section.</li> <li>3. To interpret laboratory findings in evaluation of patients with common hematological disorders like anemia, coagulation disorders and haematological malignancies</li> <li>4. Elaborate a differential diagnosis and strategy for evaluation of common hematological abnormalities.</li> <li>5. The student will gather pertinent clinical history on assigned cases and review the slides with the resident rotating in the hematopathology service.</li> <li>6. To learn functioning of High-performance liquid chromatography (HPLC), interpretation of results and clinical implication.</li> <li>7. To enable participation in bone marrow procedure.</li> <li>8. To understand the principles of Quality control in the Haematology section.</li> </ol>
8	Expected outcomes	The student will learn how to approach and evaluate some of the typical haematological diseases common in

		tropical countries include anemia secondary to parasitemia, B12 deficiency and hemolytic anaemias, haematological complications of Malaria, Dengue and HIV infection and some typical haematological-oncological diseases taking into account clinical history and disease mechanisms.
9	Assessment	An evaluation is completed by the faculty who directly worked with the student in the form of <ul style="list-style-type: none"> <li>• Case presentation.</li> <li>• Professionalism</li> <li>• Attendance</li> </ul>
10	Log book	Regular logbook entry of the daily activities

**Hamdard Institute of Medical Sciences and Research  
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**Electives**

1	Name of the Electives	Surgical Pathology
2	Block	I
3	Department /Area	Pathology/ Histopathology
4	Name of the Mentor/ Supervisor/ Incharge	Dr Safia Rana
5	Co Supervisor/s	Dr Rubeena Mohroo & Dr Monal Trisal
6	No. of students' intake	3-5
	Method of selection (if applicable)	Interview to assess interest and basic knowledge
7	Objectives	<ol style="list-style-type: none"> <li>1. To enable the student to actively participate in surgical pathology services and gain an appreciation of the significant role surgical pathologists play on the tissue diagnosis of disease and patient care at large.</li> <li>2. To enable participation in gross examination, observe and describe gross findings in organs, differentiate between normal and abnormal gross findings.</li> <li>3. To microscopically evaluate surgical pathology specimens, formulate a histological diagnosis</li> </ol>

		<p>and correlate clinical manifestation with histological findings.</p> <ol style="list-style-type: none"> <li>4. To recognize microscopic characteristics of common lesions.</li> <li>5. To be able to review cases with residents and attending pathologists at daily consensus meeting.</li> <li>6. To participate in the preparation of frozen sections for immediate diagnosis during intra operative consultations.</li> <li>7. To assist residents in obtaining case related clinical data and communication.</li> <li>8. To demonstrate clinical interpretation and judgment in surgical pathology specimens</li> </ol>
8	Expected outcomes	<ol style="list-style-type: none"> <li>1. To learn surgical pathology procedures and methods in the practice of diagnostic pathology and its key role in clinical decision making through rotations of surgical division in the Pathology Department.</li> <li>2. The student will learn how to approach specimen evaluation on both the gross and microscopic level, taking into account clinical history, disease mechanisms.</li> <li>3. To give students first hand knowledge of the central role pathologist play in the diagnosis of disease and the implications of that diagnoses in patient management..</li> </ol>
9	Assessment	<p>Evaluation performed on the following skills:</p> <ul style="list-style-type: none"> <li>• Gross examination of surgical specimens.</li> <li>• Microscopic examination of slides.</li> <li>• Assistance in the performance of frozen sections.</li> <li>• Case presentation.</li> <li>• Professionalism and Attendance</li> </ul>
10	Log book	Regular logbook entry of the daily activities

## Electives in Department of Pathology

**Name of Supervisor/Guide: Dr. Shaan Khetrpal**

Associate Professor

**Head of the Department: Dr. Sabina Khan**

**Name of Co- Supervisor: Dr. Rubeena Mohroo**

**Department:**

Department of Pathology

**Course Title:**

Elective Posting on Hemoglobin Electrophoresis

**Block:** Old building HAH Centenary Hospital (Block 1/ Block 2)

**No. of Students:** 5

**Course Overview:**

This elective posting aims to provide MBBS students with a comprehensive understanding of hemoglobinopathies, with a special focus on Hemoglobin Electrophoresis (Hb Electrophoresis) as a diagnostic tool. Students will gain hands-on experience in the laboratory technique, interpret electrophoretic patterns, and understand its role in diagnosing various hemoglobin disorders.

**Learning Objectives:**

By the end of this elective, students will be able to:

1. Understand the principles of electrophoresis and its applications in clinical hematology.
2. Describe the pathophysiology of common hemoglobinopathies (e.g., sickle cell disease, thalassemia).
3. Identify different hemoglobin variants using electrophoretic techniques.
4. Analyze and interpret hemoglobin electrophoresis results.
5. Understand the clinical relevance and limitations of Hb electrophoresis in the diagnosis of hematological disorders.
6. Discuss treatment options and management for patients with hemoglobinopathies.
7. Understand the role of genetic counseling in hemoglobinopathy management.

**Teaching Methods:**

- **Lectures:** Overview of hemoglobin structure, genetics, and electrophoresis principles.
- **Practical Sessions:** Hands-on experience with Hb electrophoresis techniques (e.g., cellulose acetate electrophoresis, agar gel electrophoresis).
- **Case Studies:** Discussion of real-life cases of hemoglobinopathies and interpretation of electrophoresis results.
- **Interactive Discussions:** Q&A sessions on clinical management, genetic counseling, and related diagnostic techniques.

## Content Outline:

1. **Introduction to Hemoglobin Electrophoresis**
  - Basic principles of electrophoresis
  - Components and apparatus used
  - Mechanism of hemoglobin migration
2. **Hemoglobin Structure and Variants**
  - Normal hemoglobin (HbA, HbA<sub>2</sub>, HbF)
  - Abnormal hemoglobins (HbS, HbC, HbE, etc.)
  - Genetic basis of hemoglobinopathies
3. **Techniques in Hb Electrophoresis**
  - Preparation of samples and loading on gels
  - Running electrophoresis
  - Staining and visualizing hemoglobin bands
4. **Interpretation of Results**
  - Identification of normal vs. abnormal hemoglobin patterns
  - Diagnosing common hemoglobinopathies: Sickle Cell Disease, Thalassemia, Hemoglobin C, and more
  - Limitations of the technique
5. **Clinical Correlation**
  - Patient history and presentation of hemoglobinopathies
  - Role of Hb electrophoresis in diagnosis and follow-up
  - Management and treatment options for patients with hemoglobinopathies
6. **Genetic Counseling and Prenatal Testing**
  - Importance of genetic counseling for families with hemoglobinopathies

## Assessment:

- **Practical Exam:** Hands-on assessment of electrophoresis techniques and interpretation of results.
- **Written Test:** A short multiple-choice questionnaire covering theoretical knowledge, interpretation of results, and clinical applications.
- **Case Presentation:** Presentation and discussion of a case study based on real patient data or scenarios involving hemoglobinopathies.

## Logbook Format for Hemoglobin Electrophoresis Elective Posting

**Student Name:** \_\_\_\_\_

**Roll Number:** \_\_\_\_\_

**Year:** \_\_\_\_\_

**Elective Posting Duration:** \_\_\_\_\_

**Department:** Department of Pathology

**Supervisor:** \_\_\_\_\_

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**Logbook Sections:**

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### 1. Introduction & Objectives

- **Date:** \_\_\_\_\_
  - **Session:** Introduction to Hemoglobin Electrophoresis
  - **Learning Objectives:**
    - Understand the principles of electrophoresis.
    - Learn about hemoglobin structure and genetic variants.
    - Overview of the types of hemoglobinopathies.
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### 2. Techniques & Methodology

- **Date:** \_\_\_\_\_
  - **Session:** Practical – Electrophoresis Procedure
  - **Summary of Activity:**
    - Description of equipment used: (e.g., electrophoresis chamber, gel, stain).
    - Preparation of hemoglobin samples.
    - Running electrophoresis and troubleshooting.
    - Staining and visualization of hemoglobin bands.
  - **Learning Outcomes:**
    - Performing sample loading and electrophoresis.
    - Observing hemoglobin separation patterns.
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### 3. Interpretation of Results

- **Date:** \_\_\_\_\_
- **Session:** Interpretation of Hemoglobin Electrophoresis Results



- **Summary of Activity:**
    - Observing various hemoglobin patterns (normal, sickle cell, thalassemia, etc.).
    - Interpreting clinical significance of bands.
    - Understanding the migration of different hemoglobin types (e.g., HbA, HbS, HbF).
  - **Learning Outcomes:**
    - Correct identification of normal vs abnormal hemoglobin types.
    - Ability to correlate electrophoresis results with clinical presentation.
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#### 4. Case Studies Discussion

- **Date:** \_\_\_\_\_
  - **Session:** Case Study – Sickle Cell Disease
  - **Case Summary:**
    - [Include brief details of the patient’s presentation, electrophoresis results, and diagnosis]
  - **Key Learning Points:**
    - Clinical presentation of sickle cell disease.
    - Diagnosis based on Hb electrophoresis and genetic counseling.
    - Treatment approaches and prognosis.
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#### 5. Review of Hemoglobin Variants

- **Date:** \_\_\_\_\_
  - **Session:** Review of Hemoglobin Variants (HbS, HbC, HbE, etc.)
  - **Summary of Activity:**
    - Detailed study of various abnormal hemoglobin types and their electrophoretic patterns.
  - **Learning Outcomes:**
    - Distinguish between different hemoglobinopathies.
    - Identify rare hemoglobin variants.
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#### 6. Practical Exam & Reflection

#### 7. Final Report & Case Presentation

- **Date:** \_\_\_\_\_
  - **Session:** Final Case Presentation
  - **Summary:**
    - Present a case study (real or hypothetical) involving a patient with a hemoglobinopathy, detailing diagnosis, electrophoresis results, and management.
  - **Feedback from Faculty:**
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**Student's Reflection/ Feedback:**

- **Overall Learning Experience:**
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**Signature of Student:** \_\_\_\_\_

**Signature of Supervisor:** \_\_\_\_\_

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This elective posting will be a valuable experience for MBBS students interested in understanding hematological disorders and diagnostic laboratory techniques, equipping them with the necessary skills for clinical practice and further academic pursuit in the field of hematology.