General Pathology Residents’ Objectives for Morphologic Hematology, Coagulation and Transfusion Medicine

Morphologic Hematology: 2 months rotation (peripheral blood and bone marrow) (lymph node pathology is a separate one month rotation in the division of anatomical pathology)

Hemostasis/Coagulation: 2 months rotation

Transfusion Medicine: 2 months rotation

SPECIFIC OBJECTIVES
At the completion of training, the resident will have acquired the following competencies and will function effectively as:

Medical Expert/Clinical Decision-Maker in Morphologic Hematology

General Requirements

- Be able to provide supervision and clinical direction of a hematopathology laboratory as organized at the level of a regional or community hospital.
- The morphological assessment and diagnosis of blood, bone marrow based disorders with utilization of newer technologies as appropriate.
- The provision of consultation services with regard to appropriate and effective hematological investigation.
- Be able to recognize cases where consultation with a local pathology colleague may be advisable.
- Be able to recognize cases which, because of rarity, complexity or therapeutic implication require referral to a tertiary centre.

Specific Requirements

- Acquire a basic knowledge of:
  i) Normal hematopoiesis and cell biology as it pertains to the structure and function of all hematopoietic elements.
  ii) The structure and functional relationships of all components of the reticuloendothelial system.
  iii) The components of humoral and cellular immunity, the role of complement and its pathways of activation.
- Acquire knowledge of hematopathological disorders including:
  i) Common anemias including diagnostic strategies, morphological findings at the peripheral blood and bone marrow level, clinical associations, complications, and basic principles of management.
ii) Major causes of polycythemia including diagnostic strategies, morphological features, clinical associations, complications, and basic principles of management.

iii) Common non-neoplastic disorders of leukocytes including reactive, congenital and drug-related abnormalities.

iv) Common neoplastic disorders of leukocytes including diagnostic strategies, common classification schemes and the role of cytogenetics, molecular studies, and flow cytometry.

v) Major categories of lymphomas and leukemias involving peripheral blood and bone marrow including common diagnostic strategies, morphological features, ancillary investigations, and prognostic features.

vi) Common disorders of thrombocytes including diagnostic strategies, clinical associations and principles of management.

- Development of skills in the following:
  i) Bench level tests available in a community or regional hospital hematology laboratory. This will include manual, semi-automated, and automated tests in addition to the basic principles of test methodology and instrumentation.
  ii) Peripheral blood film and bone marrow interpretation. This must include all abnormalities likely to be encountered in a community/regional hospital laboratory practice.
  iii) Decision-making regarding appropriate use of newer diagnostic methodologies for hematological diagnosis.
  iv) Hematology Quality Assurance (QA) and Quality Control (QC) issues and laboratory safety practices.
  v) Bone marrow aspiration and biopsy technique.

Instructional Tools:

- Leukemia/Lymphoma Rounds every Tuesday morning, 8 – 9am
- Special Hematology Rounds every Friday morning, noon to 1pm, usually room 5100, General Campus, main wing
- Hematopathology Academic Half-day, currently Friday morning 9am to noon
- Exit morphology slide quiz at end of rotation
Medical Expert/Clinical Decision-Maker in Hemostasis/Coagulation

**General Requirements**

- Be able to provide supervision and clinical direction of a hematopathology laboratory as organized at the level of a regional or community hospital.
- The provision of consultation services with regard to appropriate and effective hematological investigation of disorders of hemostasis/coagulation.

**Specific Requirements**

- Acquire a basic knowledge of:
  i) The components and functional relationship of the hemostatic and fibrinolytic systems including control mechanisms.
  ii) Genetics as applicable to blood disorders.

- Acquire knowledge of hematopathological disorders including:
  i) Major disorders of coagulation, congenital and acquired, including strategies for investigation, clinical associations and principles of management.
- Development of skills in the following:
  i) Constructing test strategies to diagnose common disorders of hemostasis/coagulation.
  ii) Hematology Quality Assurance (QA) and Quality Control (QC) issues and laboratory safety practices.

**Instructional Tools**

- Thrombosis Rounds every Thursday, 1:30 to 3:30 pm, room 1492, General Campus
- Hematopathology Academic Half-day, currently Friday morning 9am to noon

Medical Expert/Clinical Decision-Maker in Transfusion Medicine

**General Requirements**

- Be able to supervise and provide clinical direction of a transfusion service in association with provincial and national blood agencies.
- Provide of consultation services regarding appropriate use of, and possible alternatives to, blood component therapy.
Specific Requirements

- Acquire a basic knowledge of:
  i) Immunohematology including major blood group systems and the role of the human leukocyte antigen (HLA) system.

- Acquire knowledge of hematopathological disorders including
  i) Common problems of blood banking including incompatible cross-match, auto- and alloimmune antibodies and their differentiation, neonatal blood banking issues, types and investigation of adverse reactions to blood component therapy and the appropriate use of blood components in the treatment of hematological and coagulation disorders.

- Development of skills in the following
  i) Bench level testing in the blood bank and recognition of standards as they apply to the testing and release of blood products.
  ii) Assessing transfusion orders in relation to appropriateness, risks of blood product transfusion, and alternatives to transfusion.
  iii) Transfusion reaction investigation.
  iv) Hematology Quality Assurance (QA) and Quality Control (QC) issues and laboratory safety practices.

Instructional Tools

- University of Toronto Transfusion Medicine Rounds, third Thursday of every month (Videolinked)
- CBS TM fellowship weekly lecture/journal club (weekly Webinar)
- Hematopathology Academic Half-day, currently Friday morning 9am to noon

Communicator

General Requirements

- Obtain and synthesize relevant history from other members of the health care team, patients, families, communities.
- Discuss information/cases with other members of the health care team in terms of diagnosis and prognosis.
- Discuss appropriate information with patients/families.
- Listen effectively.

Specific Requirements
Acquire effective communication skills, both verbal and written with clinical colleagues in order to interpret hematopathology/coagulation/transfusion medicine findings in the clinical context.

Acquire skill in communicating directly with patients, families, and other health care providers in both verbal and written form, in a manner appropriate to the intended recipient.

Understand and acquire skill in effective clinical history taking.

Appropriately advise clinicians regarding test strategies and interpretation and must have a broad knowledge of the laboratory basis of diagnosis in order to do this.

Formulate comprehensive and clinically meaningful hematopathology pathology reports, prioritizing the features of importance. Diagnostic uncertainty must be clearly expressed with appropriate differential diagnoses and suggestions regarding further studies or ancillary investigations. There must be an awareness of ethical and medico-legal issues regarding the release and dissemination of confidential patient information.

Demonstrate awareness of the importance of timeliness, clarity and accuracy in all verbal and written communications.

Assist in the continuing education of physicians and other members of the hospital staff by participating in educational/clinical review forums such as leukemia/lymphoma rounds.

Act as consultants to clinical colleagues on the interpretation and relevance of hematology, hemostasis or transfusion medicine findings, with particular regard to their significance in the management of the patient.

Collaborator

General Requirements

- Consult effectively with other physicians and health care professionals.
- Contribute effectively to other interdisciplinary team activities.

Specific Requirements

- Be aware of the strong interface between the laboratory and clinical disciplines.
- Develop skills in supporting educational and/or research endeavours of clinical and laboratory colleagues through individual opportunities or group learning experiences.
• To be able to assist in optimal laboratory utilization appreciating the diagnostic limitations of laboratory tests and the importance of control of pre-analytic variables.
• Understand the clinical requirements for turnaround time in specimen reporting, the range of testing which should be continuously available in the community/regional hospital and the appropriate laboratory response to critical values.
• Understand the value of interdisciplinary and intradisciplinary collaboration in patient management decisions. This includes the need for case review including review by external institutions and agencies. The residents must demonstrate a willingness to seek consultation opinions if so requested by clinical colleagues with modification of subsequent diagnostic impressions if appropriate.

Manager

General Requirements

• Utilize resources of the laboratory effectively to achieve an accurate diagnosis.
• Allocate finite health care resources wisely.
• Work effectively and efficiently in a health care organization.
• Utilize information technology to optimize patient care, life-long learning and other activities.

Specific Requirements

• At the end of training, the residents will understand the basic principles of laboratory management.
• Specifically the residents will have some knowledge of:
  • Staffing and personnel management.
  • Budgeting (personnel, materials, capital equipment)
  • Workload measurements.
  • Funding structures for laboratories.
  • Hospital medical staff organization and roles.
  • Quality control, quality assurance and continuous quality improvement.
  • Laboratory safety and the transportation of dangerous goods.
  • Management styles.
  • Principles of optimal laboratory utilization.
  • Equipment purchasing and selection.
• Relevant legislation and/or regulations governing the operation of laboratories, including issues of informed consent.
• Laboratory information systems and components (hardware and software).

Health Advocate

**General Requirements**

• Identify the important determinants of health affecting patients.
• Contribute effectively to improved health of patients and communities.
• Recognize and respond to those issues where advocacy is appropriate.

**Specific Requirements**

• As part of an interdisciplinary team of professionals responsible for patient and community health care, the residents will understand those components of the laboratory and its services that are required to:
  i) Respond adequately to community, and hospital service demands including the need for population screening.
  ii) Respond to hospital, community and regional public health needs to detect and control infectious disease.
  iii) Provide sufficient and safe blood bank resources.
  iv) The residents will demonstrate the ability to recognize and respond to situations where health advocacy and application of health care resources is required. This will include the introduction of improved instrumentation and methodologies to augment community health care.

Scholar

**General Requirements**

• Develop, implement and monitor a personal continuing education strategy with respect to continuing education in hematopathology, coagulation/hemostasis and transfusion medicine.
• Critically appraise sources of medical information.
• Facilitate learning of patients, house staff/students and other health professionals at rounds.
• Contribute to development of new knowledge.

**Specific Requirements**

• A case or an educational topic will be presented by the resident at one of the departmental rounds.
Professional

General Requirements

- Deliver highest quality care with integrity, honesty and compassion.
- Exhibit appropriate personal and interpersonal professional behaviours.
- Practice medicine ethically consistent with obligations of a physician.
- Demonstrate the knowledge, skills and attitudes relating to gender, culture, and ethnicity pertinent to general pathology.

Specific Requirements

- Act as an appropriate role model for students and others.
- Demonstrate a professional attitude to colleagues, as well as to other laboratory staff.
- Have an appreciation of the crucial role of the general pathologist in providing quality patient care. This will include knowledge of individual professional limitations and the necessity of seeking appropriate second opinions.