

Effective for residents who enter training on or after July 1, 2022.

DEFINITION

Hematology is the branch of medicine concerned with the clinical and laboratory investigation, diagnosis, and medical management of diseases of blood, blood-forming tissues, and lymphatic tissues.

HEMATOLOGY PRACTICE

Hematologists provide medical care for adult patients with benign and malignant disorders of the blood, blood-forming tissues, and lymphatic tissues. This includes patients with hematologic manifestations of systemic disease. Patients may present with a life-threatening emergency, with an acute illness, or with asymptomatic or minimally symptomatic abnormalities of hematologic investigations and clinical findings.

Hematologists provide care and support to patients throughout the trajectory of their illness. This includes: initial assessment and diagnosis; active treatment; surveillance; follow-up; management of exacerbation, progression, or relapse of the disorder; symptom management; and end-of-life care. This also includes recognizing and managing immediate and long-term complications of the disorder or its treatment. Active treatment may include pharmacologic treatment, targeted therapeutics, cellular therapy, use of blood products and derivatives, and pheresis. Hematologists perform diagnostic bone marrow aspirates and biopsies, and administer intrathecal chemotherapy.

Hematologists provide interpretation of blood cell morphology, coagulation, and transfusion medicine investigations. They advise on the use of blood products and derivatives. Some hematologists provide medical leadership and quality management of hematology laboratory practice.

Hematologists work in academic and community settings, in inpatient, clinic, day hospital, or laboratory environments. A hematologist's practice may be focused on a specific area within the subspecialty. Hematologists work effectively within an interdisciplinary and interprofessional health care team to develop multi-modal, evidence-based plans for patient management.

ELIGIBILITY REQUIREMENTS TO BEGIN TRAINING

Royal College certification in Internal Medicine

OR

Eligibility for the Royal College examination in Internal Medicine

OR

Registration in a Royal College-accredited residency program in Internal Medicine (see requirements for these qualifications)

A maximum of one year of training may be undertaken during concurrent training for certification in Internal Medicine.

ELIGIBILITY REQUIREMENTS FOR EXAMINATION¹

All candidates must be Royal College certified in Internal Medicine in order to be eligible for the Royal College examination in Hematology.

HEMATOLOGY COMPETENCIES

Medical Expert

Definition:

As *Medical Experts*, hematologists integrate all of the CanMEDS Roles, applying medical knowledge, clinical skills, and professional values in their provision of high-quality and safe patient-centred care. Medical Expert is the central physician Role in the CanMEDS Framework and defines the physician's clinical scope of practice.

Key and Enabling Competencies: Hematologists are able to...

1. Practise medicine within their defined scope of practice and expertise

- 1.1. Demonstrate a commitment to high-quality care of their patients
- 1.2. Integrate the CanMEDS Intrinsic Roles into their practice of Hematology
- 1.3. Apply knowledge of the clinical, laboratory, and biomedical sciences relevant to benign and malignant hematologic disorders
 - 1.3.1. Hematopoiesis, normal and disordered, including changes related to age from the fetus to the older adult
 - 1.3.2. Hematopoietic cell structure and function, normal and disordered
 - 1.3.2.1. Red blood cells

¹ These eligibility requirements do not apply to Subspecialty Examination Affiliate Program (SEAP) candidates. Please contact the Royal College for information about SEAP.

HEMATOLOGY COMPETENCIES (2022)

- 1.3.2.2. White blood cells
 - 1.3.2.3. Platelets
 - 1.3.3. Bone marrow structure, function, histology and pathology
 - 1.3.4. Lymph node and splenic structure, function and pathophysiology
 - 1.3.5. Iron metabolism
 - 1.3.6. Red blood cell and platelet antigen systems
 - 1.3.7. Hemostasis pathways, normal and disordered
 - 1.3.8. Immune function, normal and disordered
 - 1.3.9. Human Leucocyte Antigen (HLA) system
 - 1.3.10. Pregnancy and post-partum physiological changes and hematologic disorders
 - 1.3.11. Mechanisms of oncogenesis
 - 1.3.12. Cancer epidemiology, staging, and prognostic factors
 - 1.3.13. Laboratory testing
 - 1.3.13.1. Automated blood cell counters, flow cytometry, and coagulation assays
 - 1.3.13.2. Cytogenetics
 - 1.3.13.3. Molecular testing, including polymerase chain reaction (PCR)
 - 1.3.14. Blood banking and transfusion medicine
 - 1.3.15. Treatments and therapies
 - 1.3.15.1. Blood products and derivatives
 - 1.3.15.2. Hematopoietic growth factors
 - 1.3.15.3. Hematopoietic stem cell transplantation (HSCT) and cellular therapy, including indications, donor selection, and potential complications
 - 1.3.15.4. Pheresis
 - 1.3.15.5. Radiation therapy
 - 1.3.15.6. Systemic therapy, including chemotherapeutic agents, targeted agents, immunotherapy, and monoclonal antibodies
 - 1.3.15.6.1. Mechanisms of action and toxicities of systemic therapeutic agents
 - 1.3.16. Epidemiology, clinical features, investigation, and management of the following:
 - 1.3.16.1. Qualitative and quantitative disorders of
 - 1.3.16.1.1. Red blood cells
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HEMATOLOGY COMPETENCIES (2022)

- 1.3.16.1.2. Neutrophils
- 1.3.16.1.3. Eosinophils, basophils, and monocytes
- 1.3.16.1.4. Lymphocytes
- 1.3.16.1.5. Platelets

- 1.3.16.2. Lymphadenopathy
- 1.3.16.3. Splenomegaly and splenic dysfunction
- 1.3.16.4. Bleeding disorders, congenital and acquired
- 1.3.16.5. Thrombotic disorders, congenital and acquired
- 1.3.16.6. Iron metabolism disorders, including iron overload
- 1.3.16.7. Transfusion reactions
- 1.3.16.8. Hematologic malignancies, including
 - 1.3.16.8.1. Leukemias
 - 1.3.16.8.2. Lymphoproliferative disorders
 - 1.3.16.8.3. Myelodysplastic syndromes
 - 1.3.16.8.4. Myeloproliferative neoplasms
 - 1.3.16.8.5. Plasma cell neoplasms and paraprotein disorders
- 1.3.16.9. Marrow insufficiency, inherited and acquired
 - 1.3.16.9.1. Aplastic anemia
- 1.3.16.10. Hematologic emergencies

- 1.4. Perform appropriately timed clinical assessments with recommendations that are presented in an organized manner
- 1.5. Carry out professional duties in the face of multiple competing demands
- 1.6. Recognize and respond to the complexity, uncertainty, and ambiguity inherent in hematology practice

2. Perform a patient-centred clinical assessment and establish a management plan

- 2.1. Prioritize issues to be addressed in a patient encounter
 - 2.1.1. Recognize and respond to patient presentations that require emergency treatment

HEMATOLOGY COMPETENCIES (2022)

- 2.2. Elicit a history, perform a physical exam, select appropriate investigations, and interpret their results for the purpose of diagnosis and management, disease prevention, and health promotion
 - 2.2.1. Elicit a history relevant to the hematologic disorder
 - 2.2.2. Perform a physical exam tailored to the patient's symptoms and diagnosis, taking into consideration possible toxicities and effects of treatment
 - 2.2.3. Assess and grade toxicities of therapy
 - 2.2.4. Plan and coordinate an appropriate diagnostic workup
 - 2.2.5. Select diagnostic investigations and apply the results
 - 2.2.6. Interpret peripheral blood films and bone marrow aspirates
 - 2.2.7. Diagnose patients using currently accepted diagnostic criteria
 - 2.2.8. Evaluate diseases using currently accepted staging systems and prognostic indices
 - 2.2.9. Assess patient candidacy for HSCT and cellular therapy
- 2.3. Establish goals of care in collaboration with patients and their families², which may include slowing disease progression, treating symptoms, achieving cure, improving function, and palliation
 - 2.3.1. Recognize and respond to changes in a patient's clinical status that indicate a need to reassess goals of care
- 2.4. Establish a patient-centred management plan
 - 2.4.1. Develop and implement cancer treatment plans
 - 2.4.1.1. Select appropriate systemic therapy
 - 2.4.1.2. Integrate radiation therapy into the patient care plan
 - 2.4.2. Coordinate comprehensive multidisciplinary care for patients with chronic hematologic conditions
 - 2.4.3. Adjust management and treatment based on toxicity of therapies, response to treatments, unanticipated circumstances, and other emerging relevant clinical data
 - 2.4.4. Manage medical emergencies and complications that may arise as a result of cancer or non-malignant hematologic disorders and their treatment
 - 2.4.5. Provide supportive care, including the prevention and management of pain, nausea, vomiting, and infections, and the use of blood products and derivatives and hematopoietic growth factors
 - 2.4.6. Provide end-of-life care

² Throughout this document, references to the patient's family are intended to include all those who are personally significant to the patient and are concerned with his or her care, including, according to the patient's circumstances, family members, partners, caregivers, legal guardians, and substitute decision-makers.

3. Plan and perform procedures and therapies for the purpose of assessment and/or management

- 3.1. Determine the most appropriate procedures or therapies
 - 3.1.1. Blood products and derivatives
 - 3.1.2. Systemic therapy
 - 3.1.2.1. Cytotoxic chemotherapy
 - 3.1.2.2. Antibody therapy and other targeted therapy
 - 3.1.2.3. Immunotherapy
 - 3.1.3. Radiation therapy
 - 3.1.4. HSCT and cellular therapy
 - 3.1.5. Immunosuppressive agents
 - 3.1.6. Anticoagulants, thrombolytic agents, and hemostatic agents
 - 3.1.7. Pheresis
 - 3.1.8. Supportive care, including analgesics, antiemetics, antimicrobials, hematopoietic growth factors, and prevention of tumour lysis
 - 3.1.9. Immunization
- 3.2. Obtain and document informed consent, explaining the risks and benefits of, and the rationale for, a proposed procedure or therapy
- 3.3. Prioritize procedures or therapies, taking into account clinical urgency and available resources
- 3.4. Perform procedures in a skilful and safe manner, adapting to unanticipated findings or changing clinical circumstances

Diagnostic

- 3.4.1. Bone marrow aspirate and biopsy
- 3.4.2. Microscopic examination of peripheral blood and marrow aspirate samples

Therapeutic

- 3.4.3. Prescription and administration of intrathecal chemotherapy, including performing lumbar puncture
- 3.4.4. Prescription and supervision of
 - 3.4.4.1. Therapeutic phlebotomy
 - 3.4.4.2. Transfusion of blood products and derivatives
 - 3.4.4.3. Pheresis
 - 3.4.4.4. Exchange transfusion
 - 3.4.4.5. Systemic therapy

4. Establish plans for ongoing care and, when appropriate, timely consultation

- 4.1. Implement a patient-centred care plan that supports ongoing care, follow-up on investigations, response to treatment, and further consultation
 - 4.1.1. Develop and implement plans to monitor the response to therapy and the course of the patient's illness
 - 4.1.2. Provide referral for specialized care, including HSCT or cellular therapy
 - 4.1.3. Recognize complications of HSCT and cellular therapy, including infections, graft versus host disease, and late complications
 - 4.1.4. Manage immediate and late complications of therapy, including recognition of the psychosocial challenges faced by cancer survivors

5. Actively contribute, as an individual and as a member of a team providing care, to the continuous improvement of health care quality and patient safety

- 5.1. Recognize and respond to harm from health care delivery, including patient safety incidents
- 5.2. Adopt strategies that promote patient safety and address human and system factors
 - 5.2.1. Follow standard procedures when prescribing, administering, and supervising systemic or intrathecal therapy

Communicator

Definition:

As *Communicators*, hematologists form relationships with patients and their families that facilitate the gathering and sharing of essential information for effective health care.

Key and Enabling Competencies: Hematologists are able to...

1. Establish professional therapeutic relationships with patients and their families

- 1.1. Communicate using a patient-centred approach that encourages patient trust and autonomy and is characterized by empathy, respect, and compassion
- 1.2. Optimize the physical environment for patient comfort, dignity, privacy, engagement, and safety
- 1.3. Recognize when the perspectives, values, or biases of patients, patients' families, physicians, or other health care professionals may have an impact on the quality of care, and modify the approach to the patient accordingly
- 1.4. Respond to a patient's non-verbal behaviours to enhance communication
- 1.5. Manage disagreements and emotionally charged conversations

- 1.6. Adapt to the unique needs and preferences of each patient and to the patient's clinical condition and circumstances

2. Elicit and synthesize accurate and relevant information, incorporating the perspectives of patients and their families

- 2.1. Use patient-centred interviewing skills to effectively gather relevant biomedical and psychosocial information
 - 2.1.1. Gather information about a patient's beliefs regarding the acceptance of therapeutic interventions, including blood products and derivatives
- 2.2. Provide a clear structure for and manage the flow of an entire patient encounter
- 2.3. Seek and synthesize relevant information from other sources, including the patient's family, with the patient's consent

3. Share health care information and plans with patients and their families

- 3.1. Share information and explanations that are clear, accurate, and timely, while assessing for patient and family understanding
 - 3.1.1. Convey information about diagnosis and prognosis clearly and compassionately
- 3.2. Disclose harmful patient safety incidents to patients and their families

4. Engage patients and their families in developing plans that reflect the patient's health care needs and goals

- 4.1. Facilitate discussions with patients and their families in a way that is respectful, non-judgmental, and culturally safe
 - 4.1.1. Facilitate discussions about end-of-life issues, including the transition from treatment with curative intent to palliative and supportive therapy, and withdrawal of therapy such as transfusions and/or systemic therapy
- 4.2. Assist patients and their families to identify, access, and make use of information and communication technologies to support their care and manage their health
 - 4.2.1. Facilitate self-care and chronic disease management
- 4.3. Use communication skills and strategies that help patients and their families make informed decisions regarding their health

5. Document and share written and electronic information about the medical encounter to optimize clinical decision-making, patient safety, confidentiality, and privacy

- 5.1. Document clinical encounters in an accurate, complete, timely, and accessible manner, in compliance with regulatory and legal requirements
 - 5.1.1. Communicate critical lab values or unexpected results in a timely manner
- 5.2. Communicate effectively using a written health record, electronic medical record, or other digital technology
- 5.3. Share information with patients and others in a manner that enhances understanding and that respects patient privacy and confidentiality

Collaborator

Definition:

As *Collaborators*, hematologists work effectively with other health care professionals to provide safe, high-quality, patient-centred care.

Key and Enabling Competencies: Hematologists are able to...

1. Work effectively with physicians and other colleagues in the health care professions

- 1.1. Establish and maintain positive relationships with physicians and other colleagues in the health care professions to support relationship-centred collaborative care
- 1.2. Negotiate overlapping and shared responsibilities with physicians and other colleagues in the health care professions in episodic and ongoing care
 - 1.2.1. Work effectively with other professionals within the hematology team, including laboratory technologists and physicians, nurses, social workers, and pharmacists
- 1.3. Engage in respectful shared decision-making with physicians and other colleagues in the health care professions
 - 1.3.1. Participate effectively in discussions, rounds, and patient conferences
 - 1.3.2. Convey information to other clinicians in a manner that enhances patient management
 - 1.3.3. Support clinical colleagues in the development and implementation of a management plan

2. Work with physicians and other colleagues in the health care professions to promote understanding, manage differences, and resolve conflicts

- 2.1. Show respect toward collaborators
- 2.2. Implement strategies to promote understanding, manage differences, and resolve conflict in a manner that supports a collaborative culture

3. Hand over the care of a patient to another health care professional to facilitate continuity of safe patient care

- 3.1. Determine when care should be transferred to another physician or health care professional
- 3.2. Demonstrate safe handover of care, using both oral and written communication, during a patient transition to a different health care professional, setting, or stage of care

Leader

Definition:

As *Leaders*, hematologists engage with others to contribute to a vision of a high-quality health care system and take responsibility for the delivery of excellent patient care through their activities as clinicians, administrators, scholars, or teachers.

Key and Enabling Competencies: Hematologists are able to...

1. Contribute to the improvement of health care delivery in teams, organizations, and systems

- 1.1. Apply the science of quality improvement to systems of patient care
- 1.2. Contribute to a culture that promotes patient safety
- 1.3. Analyze patient safety incidents to enhance systems of care
- 1.4. Use health informatics to improve the quality of patient care and optimize patient safety

2. Engage in the stewardship of health care resources

- 2.1. Allocate health care resources for optimal patient care
 - 2.1.1. Allocate health care resources judiciously, including laboratory investigations, blood products and derivatives, and high cost therapies
- 2.2. Apply evidence and management processes to achieve cost-appropriate care
 - 2.2.1. Ensure cost-appropriate care for individual patients and at a systems level

3. Demonstrate leadership in health care systems

- 3.1. Demonstrate leadership skills to enhance health care
 - 3.1.1. Describe the structure and function of the health care system as it relates to hematology practice, including cancer care systems, Canadian Blood Services/Hema-Quebec, and ministries of health
 - 3.1.2. Apply knowledge of standardization, quality control, quality assurance, and safety as each relates to hematopathology laboratory practices
 - 3.1.3. Apply knowledge of the hemovigilance system and reporting of adverse events and reactions
- 3.2. Facilitate change in health care to enhance services and outcomes

4. Manage career planning, finances, and health human resources in personal practice(s)

- 4.1. Set priorities and manage time to integrate practice and personal life
- 4.2. Manage personal professional practice(s) and career
- 4.3. Implement processes to ensure personal practice improvement

Health Advocate

Definition:

As *Health Advocates*, hematologists contribute their expertise and influence as they work with communities or patient populations to improve health. They work with those they serve to determine and understand needs, speak on behalf of others when required, and support the mobilization of resources to effect change.

Key and Enabling Competencies: Hematologists are able to...

1. Respond to an individual patient's health needs by advocating with the patient within and beyond the clinical environment

- 1.1. Work with patients to address determinants of health that affect them and their access to needed health services or resources
 - 1.1.1. Facilitate timely access to therapeutic agents, blood products and derivatives, and diagnostic and therapeutic interventions and procedures
 - 1.1.2. Address barriers to access to care and resources
- 1.2. Work with patients and their families to increase opportunities to adopt healthy behaviours

- 1.3. Incorporate disease prevention, health promotion, and health surveillance into interactions with individual patients
 - 1.3.1. Promote strategies to prevent complications of hematologic disorders and their therapies
 - 1.3.2. Recommend screening for patients and families with inherited hematologic disorders

2. Respond to the needs of the communities or populations they serve by advocating with them for system-level change in a socially accountable manner

- 2.1. Work with a community or population to identify the determinants of health that affect them
 - 2.1.1. Promote blood safety
- 2.2. Improve clinical practice by applying a process of continuous quality improvement to disease prevention, health promotion, and health surveillance activities
- 2.3. Contribute to a process to improve health in the community or population they serve

Scholar

Definition:

As *Scholars*, hematologists demonstrate a lifelong commitment to excellence in practice through continuous learning, and by teaching others, evaluating evidence, and contributing to scholarship.

Key and Enabling Competencies: Hematologists are able to...

1. Engage in the continuous enhancement of their professional activities through ongoing learning

- 1.1. Develop, implement, monitor, and revise a personal learning plan to enhance professional practice
- 1.2. Identify opportunities for learning and improvement by regularly reflecting on and assessing their performance using various internal and external data sources
- 1.3. Engage in collaborative learning to continuously improve personal practice and contribute to collective improvements in practice

2. Teach students, residents, the public, and other health care professionals

- 2.1. Recognize the influence of role-modelling and the impact of the formal, informal, and hidden curriculum on learners
- 2.2. Promote a safe and respectful learning environment

- 2.3. Ensure patient safety is maintained when learners are involved
- 2.4. Plan and deliver learning activities
- 2.5. Provide feedback to enhance learning and performance
- 2.6. Assess and evaluate learners, teachers, and programs in an educationally appropriate manner

3. Integrate best available evidence into practice

- 3.1. Recognize practice uncertainty and knowledge gaps in clinical and other professional encounters and generate focused questions that can address them
- 3.2. Identify, select, and navigate pre-appraised resources
- 3.3. Critically evaluate the integrity, reliability, and applicability of health-related research and literature
- 3.4. Integrate evidence into decision-making in their practice

4. Contribute to the creation and dissemination of knowledge and practices applicable to health

- 4.1. Demonstrate an understanding of the scientific principles of research and scholarly inquiry and the role of research evidence in health care
- 4.2. Identify ethical principles for research and incorporate them into obtaining informed consent, considering potential harms and benefits, and vulnerable populations
- 4.3. Contribute to the work of a research program
- 4.4. Pose questions amenable to scholarly investigation and select appropriate methods to address them
- 4.5. Summarize and communicate to professional and lay audiences, including patients and their families, the findings of relevant research and scholarly inquiry

Professional

Definition:

As *Professionals*, hematologists are committed to the health and well-being of individual patients and society through ethical practice, high personal standards of behaviour, accountability to the profession and society, physician-led regulation, and maintenance of personal health.

Key and Enabling Competencies: Hematologists are able to...

1. Demonstrate a commitment to patients by applying best practices and adhering to high ethical standards

- 1.1. Exhibit appropriate professional behaviours and relationships in all aspects of practice, demonstrating honesty, integrity, humility, commitment, compassion, respect, altruism, respect for diversity, and maintenance of confidentiality
- 1.2. Demonstrate a commitment to excellence in all aspects of practice
- 1.3. Recognize and respond to ethical issues encountered in practice
- 1.4. Recognize and manage conflicts of interest
 - 1.4.1. Identify, declare, and manage perceived, potential, and actual conflicts of interest, including in interactions with the pharmaceutical industry
- 1.5. Exhibit professional behaviours in the use of technology-enabled communication

2. Demonstrate a commitment to society by recognizing and responding to societal expectations in health care

- 2.1. Demonstrate accountability to patients, society, and the profession by responding to societal expectations of physicians
- 2.2. Demonstrate a commitment to patient safety and quality improvement

3. Demonstrate a commitment to the profession by adhering to standards and participating in physician-led regulation

- 3.1. Fulfil and adhere to professional and ethical codes, standards of practice, and laws governing practice
- 3.2. Recognize and respond to unprofessional and unethical behaviours in physicians and other colleagues in the health care professions
- 3.3. Participate in peer assessment and standard setting

4. Demonstrate a commitment to physician health and well-being to foster optimal patient care

- 4.1. Exhibit self-awareness and manage influences on personal well-being and professional performance
 - 4.1.1. Develop effective strategies to monitor fatigue, burnout, and psychological distress, and mitigate effects on clinical performance

HEMATOLOGY COMPETENCIES (2022)

- 4.2. Manage personal and professional demands for a sustainable practice throughout the physician life cycle
- 4.3. Promote a culture that recognizes, supports, and responds effectively to colleagues in need

This document is to be reviewed by the Specialty Committee in Hematology by December 2023.

APPROVED – Specialty Standards Review Committee – January 2021