

This document is to be used in conjunction with the *Pathway to Competence User Guide*, which is available on the Royal College’s website.

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

<b>MEDICAL EXPERT MILESTONES: RESIDENCY</b>				
	<b>Transition to discipline</b>	<b>Foundations of discipline</b>	<b>Core of discipline</b>	<b>Transition to practice</b>
<b>1. Practise medicine within their defined scope of practice and expertise</b>				
1.1. Demonstrate a commitment to high-quality care for their patients		Demonstrate compassion for patients		Demonstrate a commitment to high-quality care <small>TP1 TP3</small>
1.2. Integrate the CanMEDS Intrinsic Roles into their practice of Hematological Pathology	Explain how the Intrinsic Roles need to be integrated into the practice of Hematological Pathology to deliver optimal patient care			Integrate the CanMEDS Intrinsic Roles into their practice of Hematological Pathology
1.3. Apply knowledge of the clinical and biomedical sciences relevant to Hematological Pathology	<p><b>Apply knowledge of the procedures for specimen collection and identification, and all pre-analytical variables</b> <small>TPD2</small></p> <p><b>Apply knowledge of the potential clinical impact of improper handling or processing of specimens</b> <small>TPD2</small></p>	<p>Apply clinical and biomedical sciences to manage common presentations in Hematological Pathology</p> <p><b>Apply knowledge of indications, risks, and alternatives for blood components and blood products</b> <small>F4</small></p>	<p>Apply knowledge of hematologic disorders and their investigation</p> <p>Apply knowledge of hemostasis</p> <p>Demonstrate an approach to the diagnosis of bleeding and thrombotic disorders <small>C3</small></p>	<p>Apply a broad base and depth of knowledge in clinical and biomedical sciences relevant to Hematological Pathology</p> <p>Apply knowledge of laboratory management</p>

	<p>Apply knowledge of microscope use including Kohler illumination and polarization TTD3</p> <p><b>Apply basic knowledge of light microscopic appearance of specimens</b> TTD3</p> <p>Apply knowledge of the principles of digital imaging TTD3</p>		<p>Apply knowledge of transfusion medicine</p> <p><b>Apply knowledge of the principles of investigation and classification of adverse reactions to blood component therapy</b> c8</p> <p>Apply knowledge of hematopoietic stem cell transplantation and cellular therapy</p>	
<p>1.4. Perform appropriately timed diagnostic assessments with recommendations that are presented in an organized manner</p>		<p>Perform focused diagnostic assessments with recommendations that are well-documented</p> <p><b>Recognize urgent problems that may need the involvement of more experienced colleagues and seek their assistance</b> F5</p>	<p>Perform diagnostic assessments that address the breadth of issues in each case</p> <p><b>Synthesize a case for discussion at interdisciplinary rounds</b> C10</p>	<p>Perform appropriately timed diagnostic assessments addressing the breadth of Hematological Pathology with recommendations that are well-organized and properly documented in written and/or oral form</p> <p><b>Perform timely, accurate diagnostic assessments</b> TTP1</p> <p><b>Present and discuss pathology cases effectively at clinical rounds, in the role of a consultant in pathology</b> TTP2</p>
<p>1.5. Carry out professional duties in the face of multiple competing demands</p>		<p>On the basis of patient-centred priorities, seek assistance to prioritize multiple competing tasks that need to be addressed</p>	<p>Maintain a duty of care and patient safety while balancing multiple responsibilities</p>	<p><b>Set priorities, triage, and manage the workload within accepted turnaround times</b> TTP1</p> <p><b>Carry out professional duties in the face of</b></p>

				<p><b>multiple competing demands</b> <small>TTP3</small></p>
<p>1.6. Recognize and respond to the complexity, uncertainty, and ambiguity inherent in Hematological Pathology practice</p>	<p>Identify clinical situations in which complexity, uncertainty, and ambiguity may play a role in decision-making</p>	<p>Develop a plan that considers the current complexity, uncertainty, and ambiguity in a clinical situation</p>	<p>Seek assistance in situations that are complex or new</p>	<p>Recognize and respond to the complexity, uncertainty, and ambiguity inherent in Hematological Pathology practice</p> <p><b>Demonstrate insight into one's own limits of expertise and seek consultation as necessary</b> <small>TTP1 TTP2</small></p> <p><b>Convey diagnostic uncertainty and recommend additional studies when needed</b> <small>TTP2</small></p>

**MEDICAL EXPERT MILESTONES: RESIDENCY**

	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice
<b>2. Perform a clinicopathological assessment of a case</b>				
2.1. Prioritize issues to be addressed in a patient encounter or case		<b>Determine the acuity of the issue and the priorities for patient care</b> F4 C7	Gather and synthesize patient information to establish the clinical question C9  Assess specimen adequacy for molecular testing C6	Prioritize issues to be addressed in a patient encounter or case
2.2. Gather information from the clinical assessment, review the medical chart, select appropriate investigations, and interpret their results for the purpose of diagnosis and management, disease prevention, and health promotion	<p><b>Interpret history and relevant investigations in light of the clinical question</b> TTD1</p> <p><b>Synthesize and organize clinical information for clear and succinct presentation</b> TTD1</p> <p>Identify basic principles of specimen adequacy as they apply to hematological specimens TTD2</p> <p><b>Identify pre-analytical, analytical, or post-analytical stages and sources of error</b> TTD2</p> <p><b>Perform initial quality control of the sample and patient identification</b> TTD3</p>	<p><b>Gather relevant aspects of clinical information</b> F3 F4 F5 F7</p> <p><b>Perform morphologic assessment of peripheral blood or body fluid</b> F1 C1</p> <p><b>Select ancillary investigations</b> F2 F3</p> <p><b>Maintain the integrity required for the specific ancillary study (e.g., nucleic acid integrity for molecular testing, viable cells for cytogenetics)</b> F2</p> <p><b>Select and/or interpret investigations</b> F5 F7 C8</p> <p><b>Select and interpret serological and other laboratory investigations</b> F4</p>	<p><b>Gather and synthesize patient information to establish the clinical question</b> C7</p> <p>Identify patient factors that may affect the method and/or priority of testing C5</p> <p><b>Perform morphological assessment of a bone marrow and/or hematolymphoid tissue sample</b> C2</p> <p>Select and interpret appropriate investigations based on a differential diagnosis</p> <p><b>Select and interpret ancillary investigations</b> C2 C3 C4</p> <p><b>Select and interpret advanced serologic and</b></p>	Gather information from the clinical assessment, review the medical chart, select appropriate investigations, and interpret their results for the purpose of diagnosis and management, disease prevention, and health promotion

<p><b>Assess the quality of the sample and any impact on the diagnostic interpretation</b> TTD3 F1 F2 C1 C2</p>	<p><b>Interpret results of a blood film or body fluid investigation</b> F1 C1</p> <p><b>Interpret a hemoglobinopathy investigation</b> F3 C4</p> <p><b>Interpret the information in light of the clinical question</b> F5</p> <p>Develop a specific differential diagnosis relevant to the patient's presentation</p> <p><b>Correlate findings with clinical information and results of other investigations</b> F3</p> <p><b>Synthesize patient information to determine diagnosis</b> F1 F3</p> <p><b>Recognize critical or unexpected findings</b> F1 C1 C2 C4 C5</p> <p><b>Select the most appropriate blood product</b> F4 C7</p> <p><b>Summarize clinical information in a manner that accurately reflects the patient's presentation</b> F7</p> <p>Prepare images of relevant specimens F7</p>	<p><b>other laboratory investigations</b> C7</p> <p>Select molecular testing based on the diagnostic possibilities and the relevance and capabilities of available technologies C6</p> <p><b>Interpret molecular diagnostic test results together with available clinical and laboratory data</b> C6</p> <p><b>Interpret hemostasis investigations</b> C3</p> <p><b>Interpret flow cytometry investigations</b> C5</p> <p>Correlate the hematological findings with the clinical history C1</p> <p>Correlate prior investigations, including the results of relevant laboratory investigations C6</p> <p><b>Establish a diagnosis that takes into account clinical correlation</b> C1 C2 C3 C4 C5 C6</p> <p>Determine the indications for transfusion therapy C7</p> <p><b>Determine the classification of the adverse reaction to blood component therapy</b> C8</p> <p>Perform a product review C8</p>	
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<p>2.3. Provide diagnostic and prognostic information to help clinicians establish goals of care in collaboration with patients and their families*, which may include slowing disease progression, treating symptoms, achieving cure, improving function, and palliation</p>				<p>Provide diagnostic and prognostic information to help clinicians establish goals of care in collaboration with the patient and family, which may include slowing disease progression, achieving cure, improving function, and palliation</p>
<p>2.4. Contribute to a patient-centred management plan</p>		<p><b>Summarize findings for the lab or health care team and provide suggestions for further testing and/or patient management</b> F9</p> <p>Modify and/or release routine blood components and products for clinical use F4</p>	<p>Diagnose a broad range of hematologic conditions using available clinical and laboratory data</p> <p>Advise physicians regarding appropriate selection of diagnostic testing in the hematopathology lab</p> <p>Advise physicians regarding diagnostic and therapeutic aspects of transfusion medicine</p> <p>Modify and/or release blood components and products for clinical use C7</p> <p>Establish the probable cause of the adverse reaction to blood component therapy C8</p>	<p>Contribute to a patient-centred management plan</p>

\*Throughout this document, phrases such as “patients and their families” 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 guardian, and substitute decision-makers.

**MEDICAL EXPERT MILESTONES: RESIDENCY**

Transition to discipline

Foundations of discipline

Core of discipline

Transition to practice

**3. Plan and perform procedures and therapies for the purpose of diagnosis and case management**

<p>3.1. Determine the most appropriate procedures or therapies</p>		<p><b>Recognize when a specimen might require ancillary studies</b> F2 F3 C1</p> <p>Describe the indications, contraindications, risks, and alternatives for a given procedure or therapy</p> <p>Determine the safety and appropriateness of the procedure F6</p>	<p>Integrate all sources of information to develop an investigational plan that is safe, patient-centred, and considers the risks and benefits of all approaches</p> <p>Integrate planned investigations, procedures or therapies into global assessment and management plans</p>	<p>Determine the most appropriate procedures or therapies for the purpose of diagnosis and/or case management</p>
<p>3.2. Obtain and document informed consent, explaining the risks and benefits of, and the rationale for, a proposed procedure or investigation</p>		<p><b>Obtain and document informed consent, explaining the risks and rationale for a proposed procedure</b> F6</p>	<p>Ensure informed consent has been obtained and documented for procedures performed by others</p>	
<p>3.3. Prioritize procedures or therapies, taking into account clinical urgency and available resources</p>	<p>Recognize and discuss the importance of the triaging and timing of a procedure or therapy</p>	<p><b>Prioritize routine and ancillary studies when specimen adequacy is limited</b> F2</p>	<p><b>Triage investigations, taking into account clinical urgency and available resources</b> c2 C3 C4 c5</p> <p>Advocate for a patient's procedure or therapy on the basis of urgency and available resources</p>	<p>Prioritize a procedure or therapy, taking into account clinical urgency, and available resources</p>

3.4. Perform procedures in a skilful and safe manner, adapting to unanticipated findings or changing clinical circumstances

**Perform basic microscope operation and maintenance** TTD3

**Perform basic microscope camera and imaging software operation** TTD3

Demonstrate effective procedure preparation F6

**Prepare to obtain and handle samples, sending for appropriate testing** F6

Set up and position the patient for the procedure F6

Maintain universal precautions F6

Prepare and cleanse the procedural site F6

**Perform the procedure in a skilful and safe manner, adapting to unanticipated findings or changing clinical circumstances** F6

Demonstrate safe handling of instruments and biologic samples F6

Seek assistance as needed when unanticipated findings or changing clinical circumstances are encountered

Recognize and manage complications F6

**Document the procedure, including adequacy of specimen obtained and the presence/absence of complications** F6

Perform bone marrow aspiration and biopsy in a skilful and safe manner, adapting to unanticipated findings or changing clinical circumstances

Prescribe and supervise therapeutic apheresis

**MEDICAL EXPERT MILESTONES: RESIDENCY**

Transition to discipline

Foundations of discipline

Core of discipline

Transition to practice

**4. Establish plans for ongoing case management and, when appropriate, timely consultation**

<p>4.1. Implement a patient-centred care plan that supports ongoing case management, follow-up on investigations, supplemental reporting, and further consultation</p>		<p><b>Recognize and respond to situations or results that warrant verbal reporting to the referring physician F9</b></p>	<p>Ensure appropriate follow-up is arranged when performing a diagnostic procedure or ordering a test</p> <p>Determine the need and timing of referral to another specialist and/or second opinion</p>	<p>Implement a patient-centred care plan that supports ongoing case management, follow-up on investigations, response to treatment, and further consultation</p>
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**MEDICAL EXPERT MILESTONES: RESIDENCY**

	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice
<b>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</b>				
5.1. Recognize and respond to harm from health care delivery, including patient safety incidents	Recognize the occurrence of a patient safety incident	Resolve issues related to specimen misidentification or diagnostic errors  Report patient safety incidents to appropriate institutional representatives	<b>Report the adverse reaction, completing the relevant documentation</b> <sup>CS</sup>  Recognize near-misses in real time and respond to correct them  Identify potential improvement opportunities arising from harmful patient safety incidents and near misses  Participate in an analysis of patient safety incidents	Recognize and respond to harm from health care delivery, including patient safety incidents  <b>Recognize and respond to patient safety events in a timely manner</b> <sup>TTP3</sup>
5.2. Adopt strategies that promote patient safety and address human and system factors	Describe common types of cognitive and affective bias  Describe the principles of situational awareness and their implications for medical practice Apply safe practices in the laboratory to minimize occupational risk	Use cognitive aids such as procedural checklists, structured communication tools, or care paths, to enhance patient safety  Describe strategies to address human and system factors on clinical practice	Apply the principles of situational awareness to clinical practice  Adhere to quality management processes throughout the pre-analytic, analytic, and post-analytic phase	Adopt strategies that promote patient safety and address human and system factors

**COMMUNICATOR MILESTONES: RESIDENCY**

	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice
<b>1. Establish professional relationships with patients and their families</b>				
1.1. Communicate using a patient-centred approach that encourages patient trust and autonomy and is characterized by empathy, respect, and compassion	Communicate using a patient-centred approach that facilitates 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		Optimize the physical environment for patient comfort, dignity, privacy, engagement, and safety	Maintain the dignity and privacy of human tissue and samples	
1.3. Recognize when the perspectives, values, or biases of patients, physicians, or other health care professionals may have an impact on the quality of care, and modify the approach to the patient accordingly			Recognize when the values, biases, or perspectives of patients, 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		<p>Identify, verify and validate non-verbal cues on the part of patients and their families</p> <p>Use appropriate non-verbal communication to demonstrate attentiveness, interest, and responsiveness to the patient and family</p>	Respond to patients' non-verbal communication and use appropriate non-verbal behaviours to enhance communication with patients	
1.5. Manage disagreements and emotionally charged conversations		Recognize when personal feelings in an encounter are valuable clues to the patient's emotional state	Establish boundaries as needed in emotional situations	Manage disagreements and emotionally charged conversations
1.6. Adapt to the unique needs and preferences of each patient and to his or her clinical condition and circumstances		Assess a patient's decision-making capacity	Tailor approaches to decision-making to patient capacity, values, and preferences	Adapt to the unique needs and preferences of each patient and to his or her 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		Use patient-centred interviewing skills <sup>F5</sup>	Integrate, summarize, and present the biopsychosocial information obtained from a patient-centred interview	Use patient-centred interviewing skills to effectively gather relevant biomedical and psychosocial information
2.2. Provide a clear structure for and manage the flow of an entire patient encounter		Conduct a focused and efficient patient interview, managing the flow of the encounter while being attentive to the patient's cues and responses	Manage the flow of challenging patient encounters, including those with angry, distressed, or excessively talkative individuals	Provide a clear structure for and manage the flow of an entire patient encounter

<p>2.3. Seek and synthesize relevant information from other sources, including the patient's family, with the patient's consent</p>	<p><b>Seek and integrate information from various sources</b> TTD1 F5 F7</p>		<p><b>Seek and synthesize clinical history and relevant information from various sources, including the physician(s) involved</b> c8</p>	
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**3. Share health care information and plans with patients and their families**

<p>3.1. Share information and explanations that are clear, accurate, and timely while assessing for patient and family understanding</p>	<p>Recognize when to seek help in providing clear explanations to the patient and family</p>	<p>Communicate the diagnosis, prognosis and plan of care in a clear, compassionate, respectful, and accurate manner to the patient and family</p> <p>Use strategies to verify and validate the understanding of the patient and family</p>	<p>Convey pathology findings to patients and families clearly and compassionately</p>	
<p>3.2. Disclose harmful patient safety incidents to patients and their families accurately and appropriately</p>	<p>Describe the steps in providing disclosure after a patient safety incident</p>	<p>Demonstrate strategies for disclosing adverse patient events to a variety of audiences</p>	<p><b>Convey and document issues arising from a breach in quality or safety of laboratory practices</b> c11</p>	<p>Disclose patient safety incidents to the patient and family accurately and appropriately</p>

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

<p>4.1. Document pathology encounters in an accurate, complete, timely, and accessible manner, in compliance with regulatory and legal requirements</p>	<p>Organize information in appropriate sections within an electronic or written medical record</p> <p>Contribute to an error submission form or error monitoring system document TTD2</p>	<p>Document information about patients and their medical conditions in a manner that enhances intra- and interprofessional care</p> <p>Document clinical encounters to adequately convey clinical reasoning and the rationale for decisions</p> <p><b>Generate a clear, concise report that enhances patient management</b> F1 F3 C1 C2 C3 C4 C5 C6</p> <p>Convey critical values or unexpected results in a clear, accurate, and timely manner</p>	<p>Obtain satisfactory photomicrographs, digital images, and photographs</p> <p>Complete pathology reports within appropriate turnaround times C2</p> <p>Use synoptic and other standardized reporting formats as appropriate C2</p> <p>Integrate molecular results into the laboratory report C6</p> <p><b>Integrate information from ancillary studies and other sources into the pathology report</b> C2 C3 C4</p> <p><b>Document actions taken to communicate significant or unexpected findings</b> C1 C2 C3 C4 C5</p> <p>Identify and correct vague or ambiguous documentation</p>	<p>Document pathology encounters in an accurate, complete, timely and accessible manner, and in compliance with legal and privacy requirements</p> <p><b>Formulate comprehensive and clinically meaningful reports</b> TTP1</p> <p>Express diagnostic uncertainty clearly with appropriate differential diagnoses and suggestions regarding further studies or ancillary investigations</p>
<p>4.2. Communicate effectively using a written health record, electronic medical record, or other digital technology</p>				<p>Communicate effectively using a written health record, electronic medical record, or other digital technology</p>

4.3. Share information with patients and others in a manner that enhances understanding and that respects patient privacy and confidentiality

Adapt written and electronic communication to the specificity of the discipline and to the expectations of patients

Share information with patients and others in a manner that enhances understanding and respects patient privacy and confidentiality

**COLLABORATOR MILESTONES: RESIDENCY**

	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice
<b>1. Work effectively with physicians and other colleagues in the health care professions</b>				
1.1. Establish and maintain positive relationships with physicians and other colleagues in the health care professions to support relationship-centred collaborative care	Compare and contrast enablers of and barriers to collaboration in health care	Respect established rules of their team  Differentiate between task and relationship issues among health care professionals  Receive and appropriately respond to input from other health care professionals (e.g., pathology assistants, technologists) F2	Anticipate, identify, and respond to patient safety issues related to the function of a team	Establish and maintain healthy 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	Discuss the role and responsibilities of a specialist in Hematological Pathology	Describe the roles and scopes of practice of other health care providers related to Hematological Pathology	Consult as needed with other health care professionals, including other physicians	Negotiate overlapping and shared care responsibilities with physicians and other colleagues in the health care professions in episodic and ongoing care  <b>Work effectively with other health professionals</b> TTP1
1.3. Engage in respectful shared decision-making with physicians and other colleagues in the health care professions		<b>Communicate effectively with other health care professionals</b> F9 C9  <b>Convey information to clinicians in a manner that enhances patient management</b> F9 C10 TTP2	<b>Provide guidance and support for questions arising in the laboratory</b> C9 TTP3  <b>Work effectively with individuals responsible for laboratory</b>	Engage in respectful shared decision-making with physician and other colleagues in the health care professions  Use referral and consultation as opportunities to improve

		<p><b>Consult with clinical colleagues, when appropriate, to ascertain if ancillary studies would be of value</b> F2</p> <p>Provide advice to clinical colleagues regarding blood transfusion management, including transfusion reactions F4</p>	<p><b>management and hospital administration</b> C11</p> <p>Work effectively with clinical colleagues to assist in the interpretation of laboratory findings in the clinical context C7 C8</p> <p><b>Support clinical colleagues in the development and implementation of a management plan</b> C7 C8 C9 TTP3</p> <p><b>Encourage discussion, questions, and interaction relevant to the case</b> C10</p>	<p>quality of care and patient safety by sharing expertise</p> <p><b>Provide guidance and support for questions arising from clinical colleagues</b> TTP3</p>
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**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	<p>Convey information thoughtfully</p> <p><b>Respond to requests and feedback in a respectful and timely manner</b> C9</p>	<p>Actively listen to and engage in interactions with collaborators</p>	<p>Delegate tasks and responsibilities in an appropriate and respectful manner</p> <p>Actively listen to and engage in interactions with members of the interdisciplinary team C10</p>	<p>Show respect toward collaborators</p>
2.2. Implement strategies to promote understanding, manage differences, and resolve conflict in a manner that supports a collaborative culture		<p>Identify communication barriers between health care professionals</p> <p>Communicate clearly and directly to promote understanding, manage</p>	<p>Gather the information and resources needed to manage differences and resolve conflicts among collaborators</p> <p>Analyze team dynamics</p>	<p>Implement strategies to promote understanding, manage differences, and resolve conflicts in a manner that supports a collaborative culture</p>

		<p>differences, and resolve conflicts</p> <p>Listen to understand and find common ground with collaborators</p>	<p>Gain consensus among colleagues in resolving conflicts</p>	
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**3. Work with physicians and other colleagues in the health care professions to effectively enable continuity of case management**

<p>3.1. Determine when a case should be transferred to another pathologist with differing expertise</p>				<p>Determine when a case should be transferred to another pathologist with differing expertise</p>
<p>3.2. Demonstrate safe handover of case management, using both oral and written communication, as needed</p>				<p>Demonstrate safe handover of case management, using both oral and written communication, as needed</p>

**LEADER MILESTONES: RESIDENCY**

	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice
<b>1. Contribute to the improvement of health care delivery in teams, organizations, and systems</b>				
1.1. Apply the science of quality improvement to systems of patient care	Describe quality improvement methodologies	<p>Compare and contrast the traditional methods of research design with those of improvement science</p> <p>Compare and contrast systems of theory with traditional approaches to quality improvement</p> <p>Seek data to inform practice and engage in an iterative process of improvement</p> <p><b>Identify when a finding or occurrence requires action to ensure quality of laboratory services F8</b></p> <p><b>Review and interpret quality control data F8</b></p>	<p>Analyze and provide feedback on processes seen in one's own practice, team, organization, or system</p> <p>Participate in a patient safety and/or quality improvement initiative</p> <p>Apply knowledge of process improvement methodologies C11</p> <p>Minimize hazards of the laboratory workplace to create and maintain a safe working environment</p>	<p>Apply the science of quality improvement to contribute to improving systems of patient care</p> <p>Plan and implement quality management programs and laboratory information systems</p> <p>Employ processes to ensure standardization, policy adherence, and adverse event and incident reporting</p>
1.2. Contribute to a culture that promotes patient safety			<p>Actively encourage all involved in health care, regardless of their role, to report and respond to unsafe situations</p> <p>Model a just culture to promote openness and increased reporting</p>	Contribute to a culture that promotes patient safety

1.3. Analyze safety incidents to enhance systems of care	Describe the available supports for patients and health care professionals when patient safety incidents occur		Contribute to the identification or quality management of safety problems in laboratory medicine, the formulation and execution of a plan of action, and the assessment of that plan	Analyze harmful patient safety incidents and near misses to enhance systems of care
1.4. Use health informatics to improve the quality of patient care and optimize patient safety	Describe the data available from health information systems in their discipline to optimize patient care	<p><b>Apply knowledge of the metrics and measurement systems used to track quality management and safety activities</b> <small>F8</small></p> <p><b>Identify variations and gaps between actual and targeted performance using thresholds</b> <small>F8</small></p>	<p><b>Apply knowledge of the metrics and measurement systems used to track quality management, utilization, and safety activities</b> <small>C11</small></p> <p>Map the flow of information and suggest changes for quality improvement and patient safety</p> <p>Use data on measures of laboratory performance during team discussions and to support team decision-making</p>	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	Describe the costs of common diagnostic and therapeutic interventions relevant to their discipline	<p>Describe models for resource stewardship in health care used at the institutional level</p> <p>Consider costs when choosing care options</p> <p>Demonstrate judicious use of laboratory testing <small>F5</small></p>	<p>Develop practice-based and system-based rules for resource allocation</p> <p>Use clinical judgment to minimize wasteful practices <small>C7</small></p> <p><b>Utilize genetic testing resources effectively to balance costs with</b></p>	<b>Allocate health care resources for optimal patient care</b> <small>TTP3</small>
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			<p><b>potential utility of results</b> c6</p> <p><b>Use clinical judgment to allocate resources including investigations, blood products, and staffing</b> c9</p> <p><b>Demonstrate an awareness of blood inventory</b> c7</p>	
2.2. Apply evidence and management processes to achieve cost-appropriate care		Apply evidence and guidelines with respect to resource utilization F2	<p>Determine cost discrepancies between best practice and their current practice</p> <p>Optimize practice patterns for cost-effectiveness and cost control</p>	Apply evidence and management processes to achieve cost-appropriate care

**3. Demonstrate leadership in health care systems**

3.1. Demonstrate leadership skills to enhance health care	Analyze their own leadership styles, including strengths, weaknesses, and biases		<p>Contribute to a health care change initiative</p> <p><b>Actively engage laboratory and clinical stakeholders in change management</b> c11</p> <p>Apply knowledge of human resource policies, professional responsibilities, and organizational structures for optimal laboratory functioning in accordance with institutional, local, provincial, territorial, and</p>	<p>Demonstrate leadership skills to enhance health care</p> <p>Demonstrate knowledge of the principles of laboratory management, including resource allocation and collaboration with technical managers, and hospital and laboratory administration TTP1</p> <p>Provide clinical direction of the laboratory TTP1</p>
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			national regulations	Work with staff to address personnel, management, and laboratory issues TTP3
3.2. Facilitate change in health care to enhance services and outcomes		Analyze patient feedback to help improve patient experiences and clinical outcomes  Describe key health policy and organizational issues in their discipline	Develop a strategy for implementing change in health care with patients, physicians, and other health care professionals  Analyze ongoing changes occurring in health care delivery	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	Align priorities with expectations for professional practice	Build relationships with mentors  Organize work using strategies that address strengths and identify areas to improve in personal effectiveness		Set priorities and manage time to integrate practice and personal life
4.2. Manage a personal professional practice and career	Review opportunities for practice preparation, including choices available for further training  Maintain a portfolio and reflect professional development	Examine personal interests and seek career mentorship and counselling	Reconcile expectations for practice with job opportunities and workforce needs  Adjust educational experiences to gain competencies necessary for future independent practice  Describe remuneration models as they pertain to their discipline	Manage a career and a practice

			Plan practice finances, considering short- and long-term goals	
4.3. Implement processes to ensure personal practice improvement	Describe how practice standardization can improve quality of health care		Improve personal practice by evaluating a problem, setting priorities, executing a plan, and analyzing the results	Implement processes to ensure personal practice improvement

**HEALTH ADVOCATE MILESTONES: RESIDENCY**

	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice
<b>1. Respond to an individual patient’s health needs by advocating with the patient within and beyond the clinical environment</b>				
1.1. Work with patients to address determinants of health that affect them, and their access to needed health services and resources	Analyze a given patient’s needs for health services or resources related to the scope of Hematological Pathology		<b>Respond to individual patient diagnostic needs and issues as part of patient care</b> F9 C9 C10	Work with patients to address the determinants of health that affect them and their access to needed health services or resources
1.2. Incorporate disease prevention, health promotion, and health surveillance into interactions with individual patients				Incorporate disease prevention, health promotion, and health surveillance activities into interactions with individual patients
<b>2. Respond to the needs of communities or populations they serve by advocating with them for system-level change in a socially accountable manner</b>				
2.1. Work with a community or population to identify the determinants of health that affect them		Identify communities or populations they serve who are experiencing health inequities	Analyze current policy or policy developments that affect the communities or populations they serve	Work with a community or population to identify the determinants of health that affect them
2.2. Improve clinical practice by applying a process of continuous quality improvement to disease prevention, health promotion, and health surveillance activities	Participate in health promotion and disease prevention programs relevant to their practice	Identify patients or populations that are not being served optimally in their clinical practice	Report epidemics or clusters of unusual cases seen in practice, balancing patient confidentiality with the duty to protect the public’s health  Evaluate laboratory practices and test selection to ensure	Improve clinical practice by applying a process of continuous quality improvement to disease prevention, health promotion, and health surveillance activities

			they meet community needs C11	
2.3. Contribute to a process to improve health in the community or population they serve		Partner with others to identify the health needs of a community or population they serve	Appraise available resources to support the health needs of communities or populations they serve  Distinguish between potentially competing health interests of the individuals, communities, and populations they serve	Contribute to a process to improve health in the communities or populations they serve

**SCHOLAR MILESTONES: RESIDENCY**

	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice
<b>1. Engage in the continuous enhancement of their professional activities through ongoing learning</b>				
1.1. Develop, implement, monitor, and revise a personal learning plan to enhance professional practice	Describe physicians' obligations for lifelong learning and ongoing enhancement of competence	<p>Create a learning plan in collaboration with a designated supervisor identifying learning needs related to Hematological Pathology and career goals</p> <p>Use technology to develop, record, monitor, revise, and report on learning in medicine</p> <p>Demonstrate a structured approach to monitoring progress of learning in the clinical setting</p>	Review and update earlier learning plan(s) with input from others, identifying learning needs related to all CanMEDS Roles to generate immediate and longer-term career goals	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		Identify, record, prioritize and answer learning needs that arise in daily work, scanning the literature or attending formal or informal education sessions	Seek and interpret multiple sources of performance data and feedback, with guidance, to continually improve performance	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		Identify the learning needs of a health care team		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**

<p>2.1. Recognize the influence of role-modelling and the impact of the formal, informal, and hidden curriculum on learners</p>		<p>Identify behaviours associated with positive and negative role-modelling</p>	<p>Use strategies for deliberate, positive role-modelling</p>	<p>Recognize the influence of role-modelling and the impact of the formal, informal, and hidden curriculum on learners</p>
<p>2.2. Promote a safe and respectful learning environment</p>		<p>Explain how power differentials between learners and teachers can affect the learning environment</p>	<p>Ensure a safe learning environment for all members of the team</p>	<p><b>Create a positive learning environment</b> TTP4</p>
<p>2.3. Ensure patient safety is maintained when learners are involved</p>		<p>Identify unsafe clinical situations involving learners and manage them appropriately</p>	<p>Supervise learners to ensure they work within limitations, seeking guidance and supervision when needed</p> <p>Balance clinical supervision and graduated responsibility, ensuring the safety of patients and learners</p>	<p>Ensure patient safety is maintained when learners are involved</p> <p><b>Supervise learners to ensure they work within their limits, providing guidance and supervision when needed</b> TTP4</p>
<p>2.4. Plan and deliver learning activities</p>		<p>Demonstrate basic skills in teaching others, including peers</p>	<p>Describe how to formally plan a medical education session</p> <p>Describe sources of information used to assess learning needs</p> <p>Define specific learning objectives for a teaching activity</p> <p>Describe clinical teaching strategies relevant to their discipline</p>	<p>Plan and deliver a learning activity</p> <p><b>Provide teaching and/or other informal learning activities</b> TTP4</p>

<p>2.5. Provide feedback to enhance learning performance</p>		<p>Provide written or verbal feedback to other learners, faculty and other members of the team</p>		<p><b>Provide feedback to enhance learning and performance</b> TTP4  Role-model regular self-assessment and feedback-seeking behaviour</p>
<p>2.6. Assess and evaluate learners, teachers, and programs in an educationally appropriate manner</p>			<p>Appropriately assess junior learners</p>	<p>Assess and evaluate learners, teachers, and programs in an educationally appropriate manner</p>

**3. Integrate best available evidence into practice**

<p>3.1. Recognize practice uncertainty and knowledge gaps in clinical and other professional encounters and generate focused questions that can address them</p>		<p>Recognize uncertainty and knowledge gaps in clinical and other professional encounters relevant to Hematological Pathology</p>	<p>Generate focused questions that address practice uncertainty and knowledge gaps</p>	
<p>3.2. Identify, select, and navigate pre-appraised resources</p>		<p>Contrast the various study designs used in medicine and the quality of various pre-appraised resources</p>		<p>Identify, select, and navigate pre-appraised resources</p>
<p>3.3. Critically evaluate the integrity, reliability, and applicability of health-related research and literature</p>		<p>Interpret study findings, including a critique of their relevance to their practice</p>	<p>Evaluate the applicability (external validity or generalizability) of evidence from a resource</p>	<p>Critically evaluate the integrity, reliability, and applicability of health-related research and literature</p>

		Determine the validity and risk of bias in a source of evidence	Describe study results in both quantitative and qualitative terms  <b>Critically evaluate the literature</b> c12	
3.4. Integrate evidence into decision-making in their practice		Discuss the barriers to and facilitators of applying evidence into practice  Describe how various sources of information, including studies, expert opinion, and practice audits, contribute to the evidence base of medical practice	Identify new evidence appropriate to their scope of professional practice through quality-appraised evidence-alerting services  Integrate best evidence and clinical expertise c11	Integrate best evidence and clinical expertise into decision-making c9 TTP1 TTP2 TTP3

**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			Contribute to a scholarly investigation or the dissemination of research findings in their discipline	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		Discuss and provide examples of the ethical principles applicable to research and scholarly inquiry relevant to Hematological Pathology	Identify ethical principles in research c12	Identify ethical principles for research and incorporate them into obtaining informed consent, considering harm and benefits, and considering vulnerable populations

<p>4.3. Contribute to the work of a research program</p>		<p>Compare and contrast the roles and responsibilities of members of a research team and describe how they differ from clinical and other practice roles and responsibilities</p>	<p>Actively participate as a research team member, balancing the roles and responsibilities of a researcher with the clinical roles and responsibilities of a physician</p>	<p>Contribute to the work of a research program</p>
<p>4.4. Pose questions amenable to scholarly investigation and select appropriate methods to address them</p>		<p>Describe and compare the common methodologies used for scholarly inquiry in Hematological Pathology</p>	<p>Identify, consult, and collaborate with content experts and others in the conduct of scholarly work <small>C12</small></p> <p><b>Generate a focused question for scholarly investigation</b> <small>C12</small></p> <p><b>Select appropriate methods of addressing a given scholarly question</b> <small>C12</small></p> <p><b>Collect data for a scholarly project</b> <small>C12</small></p> <p><b>Perform data analysis</b> <small>C12</small></p> <p><b>Integrate existing literature and findings of data collection</b> <small>C12</small></p> <p>Identify areas for further investigation <small>C12</small></p>	<p>Pose medically and scientifically relevant and appropriately constructed questions amenable to scholarly investigation</p>

<p>4.5. Summarize and communicate to professional and lay audiences, including patients and their families, the findings of relevant research and scholarly inquiry</p>		<p>Summarize and communicate to peers the findings of applicable research and scholarship</p>		<p>Summarize and communicate to professional and lay audiences, including patients and their families, the findings of applicable research and scholarly inquiry</p> <p>Prepare a manuscript suitable for publication in a peer-reviewed journal</p>
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**PROFESSIONAL MILESTONES: RESIDENCY**

	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice
<b>1. Demonstrate a commitment to patients by applying best practices and adhering to high ethical standards</b>				
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	<p>Consistently prioritize the needs of patients and others to ensure a patient's legitimate needs are met</p> <p>Demonstrate punctuality</p> <p><b>Complete assigned responsibilities</b> TTD2</p>	<p>Independently manage specialty-specific issues surrounding confidentiality, intervening when confidentiality is breached</p> <p><b>Exhibit appropriate professional behaviours</b> F9 C9 TTP1 TTP2 TTP3</p> <p><b>Work within personal limits, seeking assistance as needed</b> F1 C9 TTP3</p>	<p>Manage complex issues while preserving confidentiality</p> <p>Intervene when behaviours undermine a positive learning environment TTP4</p> <p><b>Demonstrate accountability for the delivery of hematological pathology services</b> C9</p>	<p>Exhibit appropriate professional behaviours and relationships in all aspects of practice, reflecting honesty, integrity, humility, dedication, compassion, respect, altruism, respect for diversity, and maintenance of confidentiality</p>
1.2. Demonstrate a commitment to excellence in all aspects of practice and to active participation in collaborative care		<p>Analyze how the system of care supports or jeopardizes excellence</p>	<p><b>Demonstrate a commitment to continuous quality improvement</b> C11</p>	<p>Demonstrate a commitment to excellence in all aspects of practice</p>
1.3. Recognize and respond to ethical issues encountered in practice			<p>Manage ethical issues encountered in the clinical and academic setting</p>	<p>Recognize and respond to ethical issues encountered in independent practice</p>
1.4. Recognize and manage conflicts of interest			<p>Proactively resolve real, potential, or perceived conflicts of interest transparently and in accordance with ethical, legal, and moral obligations</p>	<p>Recognize and manage conflicts of interest in independent practice</p>

1.5. Exhibit professional behaviours in the use of technology-enabled communication			Intervene when aware of breaches of professionalism involving technology-enabled communication	Exhibit professional behaviours in the use of technology-enabled communication
<b>2. Demonstrate a commitment to society by recognizing and responding to societal expectations in health care</b>				
2.1. Demonstrate accountability to patients, society, and the profession by responding to societal expectations of physicians		<p>Manage tensions between societal and physician's expectations</p> <p>Describe the tension between the physician's role as advocate for individual patients and the need to manage scarce resources</p>	<p>Demonstrate a commitment to the promotion of the public good in health care, including stewardship of resources</p> <p>Demonstrate a commitment to maintaining and enhancing competence</p>	Demonstrate accountability to patients, society, and the profession by recognizing and responding to societal expectations of the profession
2.2. Demonstrate a commitment to patient safety and quality improvement	Demonstrate a commitment to patient safety and quality improvement through adherence to institutional policies and procedures <sup>TTD2</sup>	Monitor institutional and clinical environments and respond to issues that can harm patients or the delivery of health care		Demonstrate a commitment to patient safety and quality improvement initiatives within their own practice environment
<b>3. Demonstrate a commitment to the profession by adhering to standards and participating in physician-led regulation</b>				
3.1. Fulfil and adhere to professional and ethical codes, standards of practice, and laws governing practice		<b>Adhere to the relevant codes, policies, standards, and laws governing laboratory practice, including accreditation standards, standard operating procedures, and Clinical and Laboratory Standards</b>	<p>Fulfil and adhere to the standards regulating laboratory accreditation and practice <sup>C11</sup></p> <p><b>Adhere to regulations governing the safety and surveillance of the blood supply system</b> <sup>C7 C8</sup></p>	Fulfil and adhere to the professional and ethical codes, standards of practice, and laws governing practice

		<b>Institute (CLSI) standards F8</b>		
			<p>Describe how to respond to, cope with, and constructively learn from a complaint or legal action</p> <p>Demonstrate accountability to the profession and society with regard to the impact of decisions that are made</p> <p>Describe the relevant codes, policies, standards, and laws governing physicians and the profession including standard setting and disciplinary and credentialing procedures</p>	
3.2. Recognize and respond to unprofessional and unethical behaviours in physicians and other colleagues in the health care profession	Respond to peer-group lapses in professional conduct		Describe and identify regulatory codes and procedures relevant to involving a regulatory body in a case of serious unprofessional behaviour or practice	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			<p>Participate in audit and utilization reviews</p> <p>Participate in intra- and extradepartmental reviews of diagnostic pathology material</p> <p>Participate in the assessment of junior learners TTP4</p> <p>Prepare a morbidity and mortality report or chart review</p>	Participate in peer assessment and standard setting

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

<p>4.1. Exhibit self-awareness and effectively manage influences on personal well-being and professional performance</p>		<p>Manage the impact of physical and environmental factors on performance</p> <p>Demonstrate an ability to regulate attention, emotions, thoughts, and behaviours while maintaining capacity to perform professional tasks</p>	<p>Integrate skills that support adaption and recovery in challenging situations</p> <p>Demonstrate a commitment to safe practices in Hematological Pathology to minimize occupational risk</p>	<p>Exhibit self-awareness and effectively manage influences on personal well-being and professional performance</p>
<p>4.2. Manage personal and professional demands for a sustainable practice throughout the physician life cycle</p>	<p>Recognize evolving professional identity transitions and manage inherent stresses</p>	<p>Describe the influence of personal and environmental factors on the development of a career plan</p>	<p>Manage competing personal and professional priorities</p>	<p>Manage personal and professional demands for a sustainable practice throughout the physician life cycle</p>
<p>4.3. Promote a culture that recognizes, supports, and responds effectively to colleagues in need</p>		<p>Use strategies to mitigate the impact of patient safety incidents</p>	<p>Support others in their professional transitions</p>	<p>Promote a culture that recognizes, supports, and responds effectively to colleagues in need</p> <p>Provide mentorship to colleagues</p>