2022

VERSION 1.0

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.

MEDICAL EXPERT MILESTONES: RESIDENCY				
	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice
1. Practise medicine withi	n their defined scope of pra	ctice and expertise		
1.1. Demonstrate a commitment to high-quality care for their patients	Demonstrate compassion for patients			Demonstrate a commitment to high-quality care of their patients
1.2. Integrate the CanMEDS Intrinsic Roles into their practice of Diagnostic Radiology	Explain how the Intrinsic Roles need to be integrated into the practice of Diagnostic Radiology to deliver optimal patient care			Integrate the CanMEDS Intrinsic Roles into their practice of Diagnostic Radiology
1.3. Apply knowledge of the clinical and biomedical sciences relevant to Diagnostic Radiology	Apply knowledge of image generation when using radiography and CT modalities TTD3 Apply knowledge of patient positioning TTD3	Apply clinical and biomedical sciences to manage core patient presentations in Diagnostic Radiology Apply knowledge of anatomy, physiology and pathophysiology F2 F6 C4	Apply knowledge of pathology, physiology, and pathophysiology relating to systems and conditions relevant to medical imaging studies and procedures	Apply a broad base and depth of knowledge in clinical and biomedical sciences to manage the breadth of patient presentations in Diagnostic Radiology Apply knowledge of quality control and testing of medical imaging equipment

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Apply knowledge of radiological anatomy F1 F4

Apply knowledge of image generation F1

Apply knowledge of the physical principles of ultrasound, including Doppler F2

Apply knowledge of the biological effects of radiation, magnetic fields, and ultrasound waves, and their safe use

Apply knowledge of safety and protection as applied to all medical imaging modalities, including regulation, workplace safety and personal protection, and the ALARA principle Apply knowledge of imaging physics and equipment operation in all imaging modalities

Apply knowledge of image generation, including technical aspects, patient positioning and use of contrast media or additional pharmaceuticals c5

Apply knowledge of computer applications relevant to Diagnostic Radiology, including imaging informatics, image analysis, image manipulation and computer-aided diagnosis

Apply knowledge of use of medical imaging modalities, including clinical indications, integration of medical imaging into patient assessment and management, and absolute contraindications, relative risks, and benefits of imaging studies

Apply knowledge of imaging techniques and protocols

Apply knowledge of the indications and techniques for, and relative risks and absolute contraindications and alternatives to, imageguided procedures

Apply knowledge of quality assurance and improvement of medical imaging services

			Apply knowledge of pharmacology, including contrast media, sedation and analgesia, and medications used as part of or following imaging studies or diagnostic or therapeutic procedures Apply knowledge of the adverse effects and complications of medical imaging studies and procedures	
1.4. Perform appropriately timed clinical assessments with recommendations that are presented in an organized manner	Perform focused clinical assessments with recommendations that are well-documented Recognize urgent problems that may need the involvement of more experienced colleagues and seek their assistance immediately		Synthesize cases for discussion at interdisciplinary rounds co	Perform appropriately-timed clinical assessments addressing the breadth of Diagnostic Radiology with recommendations that are well-organized and properly documented in written and/or oral form Present and discuss cases effectively in the role of a consultant in Diagnostic Radiology TTP3
1.5. Carry out professional duties in the face of multiple competing demands		On the basis of patient- centred priorities, seek assistance to prioritize multiple competing tasks that need to be addressed	Maintain a duty of care and patient safety while balancing multiple responsibilities Prioritize patients on the basis of clinical presentations	Carry out professional duties in the face of multiple, competing demands TTP1

PATHWAY TO COMPETENCE IN DIAGNOSTIC RADIOLOGY (2022)

1.6. Recognize and respond to the complexity, uncertainty, and ambiguity inherent in Diagnostic Radiology practice Identify clinical situations in which complexity, uncertainty, and ambiguity may play a role in decisionmaking Develop a plan that considers the current complexity, uncertainty, and ambiguity in a clinical situation

Demonstrate insight into one's own limits of expertise F7

Adapt care as the complexity, uncertainty, and ambiguity of the patient's clinical situation evolves

Seek assistance in situations that are complex or new

Recognize and respond to the complexity, uncertainty, and ambiguity inherent in Diagnostic Radiology practice

MEDICAL EXPERT MILESTONES: RESIDENCY					
	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice	
2. Perform a patient-centred clinical assessment and establish a management plan					
2.1. Prioritize issues to be addressed in a patient encounter	Recognize instability and acuity in a clinical presentation TTD4 Determine the priorities for patient care TTD4			Prioritize requests for diagnostic radiology studies πρ1	
2.2. Gather clinical information, which may include a focused history or chart review and a targeted physical exam, select appropriate investigations, and interpret the results for the purpose of diagnosis and management, disease prevention, and health promotion	Gather a relevant clinical history TTD5 Perform a physical exam relevant to the presentation TTD5 Perform a history and physical exam relevant to the patient presentation, in a time-effective manner TTD4 Provide assessment and initial stabilization of ABCs TTD4 Select and/or interpret investigations TTD4 TTD5 Interpret the findings of the history, physical examination and investigations in light of the clinical question TTD1	Gather and synthesize patient information to establish the clinical question F3 F5 F6 C1 C5 C7	Gather patient information from another health professional c6 Integrate and synthesize patient information to establish the clinical question c6 Correlate prior investigations, including the results of relevant laboratory investigations and imaging c6 C7 Assess the patient's suitability to proceed with the procedure, reviewing relevant investigations and medical history c3 Identify patient factors that may affect the choice of imaging protocol c7	Gather clinical information, which may include a focused history or chart review and a targeted physical exam, select appropriate investigations, and interpret the results for the purpose of diagnosis and management, disease prevention, and health promotion Gather additional clinical information from the medical record πρ2 Integrate findings from prior investigations πρ2	

	Develop a differential diagnosis ττσ5 Synthesize and organize clinical information for clear and succinct presentation to supervisor ττσ5		Minimize exposure to contrast agents and radiation c7	
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	Work with the patient and their family to understand relevant options for care Address with the patient and family their ideas about the nature and cause of the health problem, fears and concerns, and expectations of health care professionals		Address the impact of the medical condition on the patient's ability to pursue life goals and purposes	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
2.4. Establish a patient- centred management plan	Develop and implement a plan for initial management πD4 Identify and/or monitor key clinical features in the implementation of a management plan πD5	Provide suggestions for further testing and/or patient disposition as relevant F7 F8	Advise referring physicians on the most appropriate selection, sequence and/or timing of investigation(s) c6 Identify when a study and/or procedure is not appropriate c6 c7 Integrate medical imaging studies and procedures into the patient care plan	Establish a patient-centred management plan

^{*}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 guardians, and substitute decision-makers.

TATTIWAT TO COMPE	TENCE IN DIAGNOSTIC RADI	101001 (2022)		
			Use pharmacologic agents, contrast and/or other techniques to optimize the study c4	
			Develop plans for therapeutic procedures	

MEDICAL EXPERT MILESTONES: RESIDENCY					
	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice	
3. Plan and perform procedures for the purpose of assessment and/or management					
3.1. Determine the most appropriate procedures or therapies		Apply diagnostic algorithms for the investigation of conditions examined by medical imaging modalities F3 Describe the indications, contraindications, risks, and alternatives for a given procedure or therapy Describe to patients' common procedures or therapies for common conditions in their discipline	Integrate all sources of information to develop a procedural or therapeutic plan that is safe, patient-centred, and considers the risks and benefits of all approaches Integrate planned procedures or therapies into global assessment and management plans	Determine the most appropriate procedures or therapies for the purpose of assessment and/or management	
3.2. Obtain and document informed consent, explaining the risks and benefits of, and the rationale for, a proposed procedure or therapy			Obtain and document informed consent, explaining the risks and rationale for the procedure c3 Use shared decision-making in the consent process, taking risk and uncertainty into consideration		

3.3. Prioritize procedures or therapies, taking into account clinical urgency and available resources	Recognize and discuss the importance of the triaging and timing of a procedure or therapy	Consider urgency, and potential for deterioration, in advocating for the timely execution of a procedure or therapy	Triage a procedure or therapy, taking into account clinical urgency, potential for deterioration, and available resources Advocate for a patient's procedure or therapy on the basis of urgency and available resources	Prioritize a procedure or therapy, taking into account clinical urgency, potential for deterioration, and available resources
3.4. Supervise and provide interpretation of medical imaging studies	Use the PACS system to retrieve images TTD1 Identify and retrieve pertinent prior imaging TTD1 Display images to review a study TTD1 F4 Identify normal structures and anatomic landmarks TTD3 F1 F4 F5 Identify when image quality is affected by patient positioning TTD3	Determine the priority of the request and triage the study F3 C7 Modify and/or customize the request as needed F3 C7 Assess the quality of the study and any impact on the diagnostic interpretation F2 F4 F5 C1 C4 Demonstrate the use of a systematic search pattern F4 Recognise normal anatomical variants F1 Identify key findings and common or significant incidental findings F5 Summarize pertinent positive and negative findings F6	Determine whether the patient requires sedation and/or pre-treatment for prevention of contrast reactions c7 Adjust the process of the study c5 Use computer applications to optimize the images and/or views needed to answer the clinical question c1 Use a systematic search pattern c1 Detect issues with image quality, such as artefacts, incorrect markers and positioning c5 Identify the cause(s) of poor image quality cs Acquire supplemental images, as necessary c5	Interpret diagnostic radiology studies/procedures TTP1 Provide an interpretation of the medical imaging study/procedure TTP2 Provide recommendations that may clarify the diagnosis, such as other investigations or follow-up testing TTP2

	Summarize findings of clinical relevance F7 F8 C1 C2 Correlate findings with clinical information and other imaging modalities F6 C1 Generate an appropriate differential diagnosis F6 Generate an appropriate differential and most likely diagnosis F8 C1 Provide an appropriate order for the differential diagnosis based on the imaging findings and clinical context F6 Recognize critical findings that warrant verbal reporting to the referring physician F5 F7 C1	Identify anatomic landmarks, normal anatomy and variants, artefacts and imaging pitfalls c1 Identify all major and minor findings c1 Provide recommendations for further imaging and/or management c1 Determine whether a study needs to be repeated or whether a different medical imaging study would be better to resolve the clinical question c5	
3.5. Perform imaging studies and image-guided procedures in a skilful and safe manner, adapting to unanticipated findings or changing clinical circumstances	Perform ultrasound evaluation of the abdomen and pelvis and the vascular system, and of pregnancy Position the patient to optimize the study/procedure F2 C4 Adjust instrument settings to optimize image quality F2 C4	Perform ultrasound evaluation of the abdomen and pelvis, breast, chest, head and neck, musculoskeletal system and vascular system, and of pregnancy	Perform imaging studies and image-guided procedures in a skilful and safe manner, adapting to unanticipated findings or changing clinical circumstances Perform procedures in a skilful and safe manner TTP1

Obtain standard views F2

Evaluate patient comfort and safety, and adjust the study/procedure as needed F2 C3 C4

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

Perform fluoroscopy for the evaluation of the chest, gastrointestinal system, genitourinary system and the musculoskeletal system as well as for the guided manipulation of tubes and drains

Perform diagnostic aspiration and therapeutic drainage of fluid collections, abscesses and body cavities and/or spaces

Perform image-guided biopsies

Perform image-guided localization

Perform lumbar puncture

Perform paracentesis

Perform thoracentesis

Demonstrate effective preprocedure planning and preparation c3

Demonstrate aseptic technique: skin preparation; draping; establishing and respecting the sterile field; hand cleanse, gown and glove c3

PATHWAT TO COMPE	TENCE IN DIAGNOSTIC RADI	LOLOGI (2022)		
			Perform the procedure in a skilful and safe manner	
			Recognize and manage immediate complications	
			Establish and implement a plan for post-procedure care	

MEDICAL EXPERT MILES	MEDICAL EXPERT MILESTONES: RESIDENCY					
	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice		
4. Establish plans for o	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	Determine the appropriate disposition and/or setting for ongoing care TTD4	Recognize when the patient's best interests are served by discontinuing a study or procedure or by referring the patient to another physician, and respond appropriately	Recognize and manage complications of medical imaging studies and procedures Ensure follow-up has been arranged for the results of a diagnostic procedure Determine the need and timing of referral to another imaging specialist	Implement a patient-centred care plan that supports ongoing care, follow-up on investigations, response to treatment, and further consultation		

MEDICAL EXPERT MILESTO	MEDICAL EXPERT MILESTONES: RESIDENCY				
	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice	
5. Actively contribute, as and patient safety	an individual and as a memb	er of a team providing care,	to the continuous improveme	ent of health care quality	
5.1. Recognize and respond to harm from health care delivery, including patient safety incidents	Recognize the occurrence of a patient safety incident Differentiate outcomes of medical conditions and diseases from complications related to the inherent risks of treatments and from patient safety incidents Prioritize the initial medical response to adverse events to mitigate further injury Incorporate, as appropriate, into a differential diagnosis, harm from health care delivery		Report patient safety incidents to appropriate institutional representatives Recognize near-misses in real time and respond to correct them, preventing them from reaching the patient 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	
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	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 Apply safe practices in the imaging suite to minimize occupational and patient risk c3 Apply the ALARA principle c5	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	
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	Communicate using a patient-centred approach that facilitates patient trust and autonomy and is characterized by empathy, respect, and compassion		Demonstrate empathy, respect and compassion c8		
1.2. Optimize the physical environment for patient comfort, dignity, privacy, engagement, and safety	Mitigate physical barriers to communication to optimize patient comfort, dignity, privacy, engagement, and safety	Optimize the physical environment for patient comfort and privacy F2 C4			
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			Recognize when the values, biases, or perspectives 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	Identify, verify and validate non-verbal cues on the part of patients and their families Use appropriate non-verbal communication to demonstrate attentiveness, interest, and responsiveness to the patient and family		Respond to patients' non- verbal communication and use appropriate non-verbal behaviours to enhance communication c8	
1.5. Manage disagreements and emotionally charged conversations		Recognize when personal feelings in an encounter are valuable clues to the patient's emotional state	Recognize when strong emotions (such as anger, fear, anxiety, or sadness) are impacting an interaction and respond appropriately c8 Establish boundaries as needed in emotional situations c8	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		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 the patient's clinical condition and circumstances

2. Elicit and synthesize accurate and relevant information

2.1. Use patient-centred interviewing skills to effectively gather relevant biomedical and psychosocial information	Use patient-centred interviewing skills TTD5 Integrate and synthesize information about the patient's beliefs, values, preferences, context and expectations with biomedical and psychosocial information			Use patient-centred interviewing skills to effectively gather relevant biomedical and psychosocial information
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2.2. Seek and synthesize relevant information from other sources, including the health record and, with the patient's consent, the patient's family

Access the medical record and retrieve clinical information TTD1

Seek and synthesize relevant information from other sources, including the health record and, with the patient's consent, the patient's family

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

Convey information to the patient and/or family clearly and compassionately TTD5

Recognize when to seek help in providing clear explanations to the patient and family

Use strategies to verify and validate the understanding of the patient and family with regard to the diagnosis, prognosis, and management plan

Communicate effectively with the patient during the study/procedure F2 C4

Share information about risks and benefits of, and alternatives to, imaging studies and procedures

Convey the concept of relative risk, as it applies to radiation exposure, in discussion of investigations and procedures

Convey imaging findings to patients and families clearly and compassionately

Provide accurate information c8

Use plain language and avoid medical jargon c8

Verify the patient's and/or family's understanding cs

Communicate clearly with patients and others in the setting of ethical dilemmas

3.2.	Disclose harmful patient
	safety incidents to
	patients and their
	families

Describe the steps in providing disclosure after a patient safety incident

Communicate the reasons for unanticipated clinical outcomes to patients and disclose patient safety incidents

Apologize appropriately for a harmful patient safety incident

Disclose patient safety incidents to the patient and family accurately and appropriately

Plan and document follow-up to harmful patient safety incident

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, nonjudgmental, and culturally safe	Conduct an interview, demonstrating cultural awareness	Explore the perspectives of the patient and others when developing care plans Communicate with cultural awareness and sensitivity	Communicate in a manner that is respectful, compassionate, non-judgmental, and culturally aware cs	Facilitate discussions with the patient and family in a way that is respectful, non- judgmental, and culturally safe
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	Assist the patient and family to identify, access, and make use of information and communication technologies to support care and manage health			
4.3. Use communication skills and strategies that help patients and their families make informed decisions regarding their health	Demonstrate steps to obtaining informed consent		Answer questions from the patient and/or family C8	Use communication skills and strategies that help the patient and family 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 imaging Record high quality Use the dictation system Adapt record keeping to the Document imaging studies studies and diagnostic to generate, edit and images of significant specific quidelines of their and diagnostic and and therapeutic issue a report πp2 findings F2 C4 discipline and the clinical therapeutic procedures in an procedures in an context accurate, complete, timely, accurate, complete, Document the essential Document the plan for the and accessible manner, in timely, and accessible elements of a clinical imaging study or Identify and correct vague or compliance with regulatory manner, in compliance ambiguous documentation encounter using a procedure F3 C7 and legal requirements with regulatory and structured approach TTD5 legal requirements Use a systematic method Document the procedure **Provide reports of the** caseload of diagnostic Organize information in of reporting, integrating appropriate sections within clinical and imaging radiology studies within an electronic or written information F8 C2 Provide an appropriately an acceptable time frame medical record ordered differential TTP1 Provide clear, concise, diagnosis and convey diagnostic uncertainty c2 **Articulate complexities** Maintain accurate and up-toaccurate and date problem lists and grammatically correct and/or diagnostic medication lists **Communicate critical** uncertainty in the report, reports F8 C2 results urgently to the such as limitations and Document the clinical referring clinician c2 areas of uncertainty TTP2 Document in the imaging encounter to adequately report actions taken to convey clinical reasoning and communicate significant the rationale for decisions or unexpected findings F7 TTD4 5.2. Communicate effectively Demonstrate reflective Adapt use of the health Communicate effectively using a written health listening, open-ended record to the patient's health using a written health record, electronic inquiry, empathy, and literacy and the clinical record, electronic medical medical record, or other effective eye contact while context record, or other digital digital technology using a written or electronic technology medical record

PATHWAY TO COMPETENCE IN DIAGNOSTIC RADIOLOGY (2022)

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

Assess patients' needs and preferences with respect to methods of information sharing

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 that respects patient privacy and confidentiality

	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice
1. Work effectively with p	hysicians and other colleagu	ies in the health care profess	ions	
1.1. Establish and maintain positive relationships with physicians and other colleagues in the health care professions to support relationshipcentred collaborative care	Compare and contrast enablers of and barriers to collaboration in health care Respond appropriately to input from other health care professionals πD6	Respect established rules of their team	Anticipate, identify, and respond to patient safety issues related to the function of a team Establish positive relationships with other members of the health care team c6	Establish and maintain healthy relationships with physicians and other colleagues in the health care professions to support relationship-centered 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 Diagnostic Radiology Demonstrate an understanding of the scope and expertise of other health care professionals πρ6 Work effectively as a member of the clinical team πτρ5 Consult as needed with other health care professionals, including other physicians πτρ4	Describe the roles and scopes of practice of other health care providers related to Diagnostic Radiology Communicate effectively with technical staff about the urgency and/or customization of diagnostic radiology studies/procedures F3 C7	Work with technical staff to solve imaging challenges and optimize the quality of studies cs Provide feedback to technical staff cs Work effectively with technologists and other health care providers c4 Communicate effectively with supervisor, nurses, and/or assistants during the procedure c3	Negotiate overlapping and shared care responsibilities with physicians and other colleagues in the health care professions in episodic and ongoing care Coordinate scheduling of cases with technical and other staff TTP1 Guide technical staff to resolve clinical or imaging challenges TTP1

1.3.	Engage in respectful
	shared decision-making
	with physicians and
	other colleagues in the
	health care professions

Discuss with the patient and family any plan for involving other health care professionals, including other physicians, in the patient's care

Integrate the patient's perspective and context into the collaborative care plan

Communicate effectively with physicians and other health care professionals TTD6

Convey information to clinicians in a manner that enhances patient management F7 F8 C2 C6 C9

Convey diagnostic uncertainty, as needed F8

Support clinical colleagues in the development and implementation of a management plan C6 C9 TTP3

Participate effectively at interdisciplinary rounds c9

Encourage discussion, questions, and interaction relevant to the case co

Engage in respectful shared decision-making with physician and other colleagues in the health care professions

Gather and/or clarify the indication for testing and/or clinical information with the referring physician TTP2

Consult with colleagues with different expertise TTP2

Incorporate the opinions and perspectives of other physicians πp_2

Use referral and consultation as opportunities to improve quality of care and patient safety by sharing expertise

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
	collab	orators

Convey information thoughtfully

Respond to requests and feedback in a respectful and timely manner

Actively listen to and engage in interactions with collaborators

Delegate tasks and responsibilities in an appropriate and respectful manner Show respect toward collaborators

2.2.	Implement strategies to
	promote understanding,
	manage differences, and
	resolve conflict in a
	manner that supports a
	collaborative culture

Identify communication barriers between health care professionals

Communicate clearly and directly to promote understanding, manage differences, and resolve conflicts

Listen to understand and find common ground with collaborators

Gather the information and resources needed to manage differences and resolve conflicts among collaborators

Analyze team dynamics

Gain consensus among colleagues in resolving conflicts

Implement strategies to promote understanding, manage differences, and resolve conflicts in a manner that supports a collaborative culture

Facilitate the development of consensus when there are differences in recommendations provided by other health care professionals TTP3

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		Identify patients requiring handover to other physicians or health care professionals	Identify patients that need referral and/or transport for emergent or urgent medical assistance and arrange for transfer to the appropriate medical provider or facility	Determine when a patient should be transferred to another radiologist or centre with differing expertise
3.2. Demonstrate safe handover of care, using both oral and written communication, during a patient transition to a different health care professional or setting	Describe specific information required for safe and effective handover during transitions in care Communicate with the patient's primary health care professional about the patient's care Summarize the patient's issues in the transfer summary, including plans to deal with the ongoing issues	Communicate with the receiving physicians or health care professionals during transitions in care, clarifying issues after transfer as needed	Organize the handover of care to the most appropriate physician or health care professional Communicate with the physician receiving a patient in transfer or as a referral, providing a summary of relevant issues and/or plans for ongoing care	Demonstrate safe transfer of care, both verbal and written, during patient transitions to a different health care professional or setting

PATHWAY TO COMPI	ETENCE IN DIAGNOSTIC RADI 	.ULUGY (2022)		
			Analyze gaps in communication between health care professionals during transitions in care	
			Recognize and act on patient safety issues in the transfer of care	

LEADER MILESTONES: RESIDENCY					
	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice	
1. Contribute to the impro	ovement of health care delive	ery in teams, organizations, a	and systems		
1.1. Apply the science of quality improvement to systems of patient care	Describe quality improvement methodologies	Compare and contrast the traditional methods of research design with those of improvement science Compare and contrast systems of theory with traditional approaches to quality improvement Seek data to inform practice and engage in an iterative process of improvement	Review results and outcomes from diagnostic and therapeutic procedures to monitor the quality of health service delivery Analyze and provide feedback on processes seen in one's own practice, team, organization, or system Participate in a patient safety and/or quality improvement initiative	Apply the science of quality improvement to contribute to improving systems of patient care	
1.2. Contribute to a culture that promotes patient safety	Engage patients and their families in the continuous improvement of patient safety	Actively encourage all involved in health care, regardless of their role, to report and respond to unsafe situations	Model a just culture to promote openness and increased reporting	Contribute to a culture that promotes patient safety	
Analyze patient safety incidents to enhance systems of care	Describe the available supports for patients and health care professionals when patient safety incidents occur			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

Describe the data available from health information systems in their discipline to optimize patient care Map the flow of information in the care of their patients and suggest changes for quality improvement and patient safety

Use data on measures of clinical performance during team discussions and to support team decision-making

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 Describe models for resource stewardship in health care used at the institutional level

Consider costs when choosing care options

Allocate imaging resources judiciously, recognizing redundancies and demonstrating awareness and stewardship of medical imaging resources F3C7

Use clinical judgment to minimize wasteful practices

Develop practice-based and system-based rules for resource allocation

Allocate health care resources for optimal patient care TTP3

2.2. Apply evidence and management processes to achieve costappropriate care		Apply evidence and guidelines with respect to resource utilization in common clinical scenarios	Determine cost discrepancies between best practice and their current practice Optimize practice patterns for cost-effectiveness and cost control	Apply evidence and management processes to achieve cost-appropriate care		
3. Demonstrate leadershi	p in health care systems					
3.1. Demonstrate leadership skills to enhance health care	Analyze their own leadership styles, including strengths, weaknesses, and biases		Contribute to a health care change initiative	Demonstrate leadership skills to enhance health care		
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	Report the caseload of imaging studies within an appropriate turnaround time c2	Set priorities and manage time to fulfil diverse responsibilities TTP1 Integrate supervisory and teaching responsibilities into the overall management of the service TTP1		

4.2. Manage personal professional practice(s) 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 practice TTP5 Describe remuneration models as they pertain to their discipline Plan practice finances, considering short- and long-term goals	Manage a career and a practice Examine personal interests and career goals πps
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	
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 and resources	Identify patient needs and help provide access to health services and/or resources πD6		Facilitate timely patient access to services and resources Respond to individual patient diagnostic needs and issues as part of patient care C6 C9 πP3	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		Work with the patient and family to identify opportunities for disease prevention, health promotion, and health protection	Evaluate with the patient the potential benefits and harms of health screening	Incorporate disease prevention, health promotion, and health surveillance activities into interactions with individual patients	
Respond to the needs of accountable manner	f communities or population	s they serve by advocating v	with them for system-level ch	nange in a socially	
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	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		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: RE	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice		
1. Engage in the continuo	 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	Describe physicians' obligations for lifelong learning and ongoing enhancement of competence	Create a learning plan in collaboration with a designated supervisor identifying learning needs related to Diagnostic Radiology and career goals Use technology to develop, record, monitor, revise, and report on learning in medicine Demonstrate a structured approach to monitoring progress of learning in the clinical setting	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 Define learning needs related to personal practice and/or career goals TTP5 Identify resources required to implement a personal learning plan TTP5 Create a learning plan that is feasible, includes clear deliverables and a plan for monitoring ongoing achievement TTP5		
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 Interpret data on personal performance to identify opportunities for learning and improvement TTPS		

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
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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	Identify behaviours associated with positive and negative role-modelling	Use strategies for deliberate, positive role-modelling	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	Explain how power differentials between learners and teachers can affect the learning environment		Ensure a safe learning environment for all members of the team
2.3. Ensure patient safety is maintained when learners are involved	Identify unsafe clinical situations involving learners and manage them appropriately	Supervise learners to ensure they work within limitations, seeking guidance and supervision when needed Balance clinical supervision and graduated responsibility, ensuring the safety of patients and learners	Ensure patient safety is maintained when learners are involved
2.4. Plan and deliver learning activities	Demonstrate basic skills in teaching others, including peers	Describe how to formally plan a medical education session	Plan and deliver a learning activity

		Describe sources of information used to assess learning needs Describe clinical teaching strategies relevant to their discipline Define specific learning objectives for a teaching activity Present the information in an organized manner co Use audiovisual aids effectively co	
2.5. Provide feedback to enhance learning performance	Provide written or verbal feedback to other learners, faculty and other members of the team		Provide feedback to enhance learning and performance Role-model regular self-assessment and feedback-seeking behaviour
2.6. Assess and evaluate learners, teachers, and programs in an educationally appropriate manner		Appropriately assess junior learners	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	Recognize uncertainty and knowledge gaps in clinical and other professional encounters relevant to Diagnostic Radiology	Generate focused questions that address knowledge gaps	
3.2. Identify, select, and navigate pre-appraised resources	Contrast the various study designs used in medicine and the quality of various pre-appraised resources		Identify, select, and navigate pre-appraised resources
3.3. Critically evaluate the integrity, reliability, and applicability of health-related research and literature	Interpret study findings, including a critique of their relevance to their practice Determine the validity and risk of bias in a source of evidence	Evaluate the applicability (external validity or generalizability) of evidence from a resource Describe study results in both quantitative and qualitative terms Critically evaluate the literature C9 TTP3 TTP4	Critically evaluate the integrity, reliability, and applicability of health-related research and literature

3.4. Integrate evidence into decision-making in their practice	Discuss the barriers to and facilitators of applying evidence into practice	Identify new evidence appropriate to their scope of professional practice through quality-appraised evidence-	Integrate best evidence and clinical expertise TTP1 TTP3
	Describe how various sources of information, including studies, expert opinion, and practice audits, contribute to the evidence base of medical practice	alerting services	Critically appraise relevant medical literature to make evidence informed decisions πρ2

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 considering vulnerable populations	Discuss and provide examples of the ethical principles applicable to research and scholarly inquiry relevant to Diagnostic Radiology		Identify ethical principles for research and incorporate them into obtaining informed consent, considering harm and benefits, and considering vulnerable populations Identify ethical principles in research, including patient privacy concerns TTP4

4.3. Contribute to the work of a research program	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	Actively participate as a research team member, balancing the roles and responsibilities of a researcher with the clinical roles and responsibilities of a physician	Contribute to the work of a research program
4.4. Pose questions amenable to scholarly investigation and select appropriate methods to address them	Describe and compare the common methodologies used for scholarly inquiry in Diagnostic Radiology	Generate focused questions for scholarly investigation TTP4 Select appropriate methods of addressing a given scholarly question TTP4 Collect data for a scholarly project TTP4 Perform data analysis TTP4 Interpret and integrate data in the context of existing literature TTP4	Pose medically and scientifically relevant and appropriately constructed questions amenable to scholarly investigation
4.5. Summarize and communicate to professional and lay audiences, including patients and their families, the findings of relevant research and scholarly inquiry	Summarize and communicate to peers the findings of applicable research and scholarship		Summarize and communicate to professional and lay audiences, including patients and their families, the findings of applicable research and scholarly inquiry Summarize the findings of a literature review TTP4 Disseminate the findings of scholarly activity, in written or oral form TTP4

PATHWAY TO COMPE	TENCE IN DIAGNOSTIC RADIO	OLOGY (2022)	
			Prepare a manuscript suitable for publication in a peer-reviewed journal

PROFESSIONAL MILESTON	ES: RESIDENCY Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice	
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	Consistently prioritize the needs of patients and others to ensure a patient's legitimate needs are met Demonstrate punctuality Complete assigned responsibilities TTD5 Work within personal limits, seeking assistance as needed TTD4 F5 C3 TTP1 Behave in a professional manner TTD6 F7 C9 TTP3 Respond punctually to requests from patients or other health care professionals TTD6	Independently manage specialty-specific issues surrounding confidentiality, intervening when confidentiality is breached	Manage complex issues while preserving confidentiality Intervene when behaviours toward colleagues and learners undermine a respectful environment	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 Identify limits in their own expertise TTP2	
1.2. Demonstrate a commitment to excellence in all aspects of practice			Analyze how the system of care supports or jeopardizes excellence	Demonstrate a commitment to excellence in all aspects of practice	
1.3. Recognize and respond to ethical issues encountered in practice			Manage ethical issues encountered in the clinical and academic setting	Recognize and respond to ethical issues encountered in independent practice	

1.4. Recognize and manage conflicts of interest		Proactively resolve real, potential, or perceived conflicts of interest transparently and in accordance with ethical, legal, and moral obligations	Recognize and manage conflicts of interest in independent practice
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

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	Manage tensions between societal and physician's expectations Describe the tension between the physician's role as advocate for individual patients and the need to manage scarce resources	Demonstrate a commitment to the promotion of the public good in health care, including stewardship of resources Demonstrate a commitment to maintaining and enhancing competence TTP5	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		Demonstrate a commitment to patient safety and quality improvement initiatives within their own practice environment

Monitor institutional and					
clinical environments and					
respond to issues that can					
harm patients or the					
delivery of health care					

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		Describe how to respond to, cope with, and constructively learn from a complaint or legal action Demonstrate accountability to the profession and society with regard to the impact of decisions that are made Describe the relevant codes, policies, standards, and laws governing physicians and the profession including standard-setting and disciplinary and credentialing procedures	Fulfill and adhere to the 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 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		Participate in the review of practice, standard setting and quality improvement activities	Participate in peer assessment and standard-setting
		Participate in the assessment of junior learners	
		Prepare a morbidity and mortality report or chart review	

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