

CAR 2026

Seeing What Matters: Driving Canadian Radiology Forward

April 16-19 avril, 2026
Le Westin Montréal
Montréal, QC



PROGRAMME



Canadian Association of Radiologists
L'Association canadienne des radiologistes

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Programme Information

Renseignements sur le programme



The Canadian Association of Radiologists Annual Scientific Meeting (ASM) provides collaborative learning opportunities to enhance radiologists' knowledge and competencies in diagnostic and therapeutic medical imaging to help deliver optimal quality healthcare for patients and the Canadian public at large.

Accreditation and Designation Statements

This event is an Accredited Group Learning Activity (Section 1) as defined by the Maintenance of certification (MOC) program of the Royal College of Physicians and Surgeons of Canada and approved by the Canadian Association of Radiologists. The CAR 2026 scientific program is approved for a maximum of 12.75 credits (Section 1, Group Learning).

CAR 2026 includes an Accredited Breakfast Session (Section 1) approved for a maximum of 0.75 credits, under Section 1 (Group Learning) as defined MOC program of the Royal College and approved by the CAR.

CAR 2026 also features two accredited symposia, each approved for a maximum of 1.0 credits, under Section 1 (Group Learning) as defined MOC program of the Royal College and approved by the CAR.

AMA Accreditation Statement – Accreditation Information for US Residents

Through an agreement between the Royal College and the American Medical Association, physicians may convert Royal College MOC credits to AMA PRA Category 1 Credits™. Information on the process to convert Royal College MOC credits to AMA credits can be found at [here](#).

UEMS-EACCME Accreditation Statement

Live educational activities recognized by the Royal College as Accredited Group Learning Activities (Section 1) are deemed by the European Union of Medical Specialists (UEMS) eligible for ECMEC.

Accredited Symposia

Eisai co-Developed Accredited Symposium: *The Critical Role of Imaging in Alzheimer's and ARIA Diagnosis*

The goal of this accredited symposium is to provide delegates with an in-depth learning opportunity in the field of neuroradiology. Delegates will learn about the critical role of imaging in the diagnosis of Alzheimer's disease and amyloid-related imaging abnormalities (ARIA), a common side effect of new anti-amyloid therapies. Magnetic Resonance Imaging (MRI) is the central tool for monitoring ARIA, allowing clinicians to manage treatment safely. This symposium will discuss the recent evidence on ARIA, guidance from leading experts, as well as resources and management tools to support implementation of new disease modifying treatments in Canadian practices.

This symposium was co-developed with Eisai Inc and was planned to achieve scientific integrity, objectivity, and balance. This accredited symposium has been approved for a maximum of 1.0 credit, under Section 1 (Group Learning), as defined by the Maintenance of Certification (MOC) program of the Royal College of Physicians and Surgeons of Canada and approved by the Canadian Association of Radiologists. Physicians may claim a maximum of 1.0 hours.

Bayer co-Developed Accredited Symposium: *The Changing Landscape of MRI Contrast*

Magnetic resonance imaging (MRI) contrast agents are undergoing rapid evolution, driven by advances in molecular design, increasing attention to patient safety, and a growing emphasis on environmental sustainability. This symposium will review the changing landscape of MRI contrast agents, with a focus on next-generation high-relaxivity gadolinium-based contrast agents (GBCAs), targeted MRI contrast agents, and nongadolinium alternatives such as manganese-based agents.

This symposium was co-developed with Bayer and was planned to achieve scientific integrity, objectivity, and balance. This accredited symposium has been approved for a maximum of 1.0 credit, under Section 1 (Group Learning), as defined by the Maintenance of Certification (MOC) program of the Royal College of Physicians and Surgeons of Canada and approved by the Canadian Association of Radiologists.

Certificate of Attendance

Following the event, participants will be provided with a link where the certificate of attendance can be downloaded following the completion of the conference evaluation.

Participants can document their learning in the [Royal College's My MOC](#).

Learning Objectives

After attending and actively participating in CAR 2026 activities, participants will be better able to:

1. Identify and implement practical strategies to improve patient management as part of a multidisciplinary team.
CanMEDS roles: Collaborator, Communicator, Leader, Professional
2. Recognize, identify, and avoid common misinterpretation and blind spots in each of the following subspecialties: musculoskeletal, neuroradiology, cardiothoracic, abdominal (GI/GU), and pediatric imaging.
CanMEDS roles: Professional, Scholar, Health Advocate
3. Discuss the differential diagnoses of common pathologies in a selection of multimodality, multidisciplinary cases.
CanMEDS roles: Medical Expert, Scholar, Health Advocate
4. Adopt an evidence-based approach to common radiologic findings to enable the formulation of an appropriate differential diagnosis.
CanMEDS roles: Medical Expert, Scholar
5. Discuss characteristic appearances and distinguishing imaging features in each of the following subspecialties: musculoskeletal, neuroradiology, cardiothoracic, abdominal (GI/GU), and pediatric imaging.
CanMEDS roles: Medical Expert
6. Evaluate the use and application of advanced imaging techniques for various clinical scenarios.
CanMEDS roles: Medical Expert

Presentations

Unless otherwise indicated under individual sessions, each session presentation is scheduled for approximately 20 minutes. A designated Q&A section has been allotted at the end of each presentation to answer questions from the audience. Don't be shy! Microphones will be placed throughout the room to accommodate even the quietest of speakers. Every session has been designed as an educational offering to advance practitioners' professional development and the profession.

Abstracts (Electronic Posters)

All abstract electronic posters are featured in the Whova app, in the Posters' section and at the poster display stations on the 9th & 11th floors. Participants are encouraged to view the electronic posters during the breaks and lunch and throughout the ASM. Reading electronic posters is an Individual Learning Activity under Section 2 of the Royal College of Physicians and Surgeons of Canada Maintenance of Certification (MOC) Program and is eligible for 0.5 credits per hour as Educational Content Review.

Disclaimer

No responsibility is assumed by the CAR for any injury and/or damage to persons or property as a matter of product liability, negligence or otherwise, or from any use or operations of any methods, products, instructions, or ideas contained in materials distributed or described during presentations throughout CAR 2026. Because of rapid advances in the medical sciences, in particular independent verification of diagnoses and drug dosages should be made.

Although all advertising material available on the CAR 2026 event app is expected to conform to ethical (medical) standards, inclusion in this event does not constitute a guarantee or endorsement of the quality or value of such product or of the claims made of it by its manufacturer and representatives.

Disclosure of Conflict of Interest

The CAR has a formal policy regarding the need for authors and presenters to inform CAR attendees of any Conflict of Interest (COI). A COI includes, but is not limited to, employment, ownership of stock, membership on a standing advisory council or committee, or being on the board of directors or publicly associated with a company or its products. Other potential areas of real or perceived conflict of interest could include receiving honoraria, consulting fees, or grants.

Annual Scientific Meeting Standing Committees | Comités permanent du congrès annuel scientifique

CAR 2026 Annual Scientific Meeting Planning Committee

Chris Fung, Chair	Bruno Morin
Scott Adams, Vice-Chair	Karl Narvacan
Tanya Chawla	Adnan Sheikh
Natalia Gorelik	Carolina Souza
Laurent Létourneau-Guillon	Nina Stein
Kathleen MacMillan	Saly Zahra
Lindsay Milroy	Isabelle Zheng

CAR 2026 ASM Scientific and Educational Competitions Judging Committee

Lindsay Milroy, Chair	Omar Islam
Scott Adams, Vice Chair	Ian Macdonald
Mona El Khoury	Nicolas Murray
Nika Elmi	Jai Shankar
Natalia Gorelik	Adnan Sheikh
Neetika Gupta	Mitch Wilson
Shivaprakash Hiremath	

Agenda

Sommaire du programme



CAR 2026 Agenda



- Plenaries | Séances plénières
- Educational Sessions | Séances éducatives
- Accredited Symposia | Symposiums accrédités
- Social Events | Événements sociaux
- Abstract Competition Presentations | Présentations du concours de résumés
- Wellness Breaks | Pauses santé
- CAR & CRF AGMs | Assemblées générales de la CAR et de la FRC

Thursday, April 16

4:30 PM - 5:30 PM	CAR & CRF Annual General Meeting St-Antoine (9th Floor)
5:30 PM - 6:30 PM	Welcome Reception Fortifications (9th Floor)

Friday, April 17

8:00 AM - 8:55 AM	Breakfast • Exhibit Hall (11th Floor)
8:55 AM - 9:00 AM	Welcome Address Fortifications (9th Floor) <i>Christopher Fung</i>
9:05 AM - 10:00 AM	Opening Plenary: Work-work Imbalance and Burnout: Wicked Problems and Difficult Solutions Fortifications (9th Floor) <i>Frank Lexa, introduction by Christopher Fung</i>
10:00 AM - 10:30 AM	Break & Visit the Electronic Posters • Exhibit Hall & Foyer (11th Floor)

Friday, April 17 (continued)

10:30 AM - 12:00 PM	From Bosniak to Biopsy: The Modern Approach to Renal Masses Fortifications (9th Floor) <i>Moderators: Gavin Sugrue & Gary Brahm</i>	Spine and Shoulders, Knees and Toes: Essentials of MSK Imaging St-Antoine (9th Floor) <i>Moderators: Linda Probyn & Natalia Gorelik</i>	Scientific Research Project Competition Oral Presentations Ville-Marie (9th Floor) <i>Moderator: Elsa Ruprecht</i>
	Solid Renal Masses <i>Satheesh Krishna</i>	Don't Touch Lesions <i>Laura Fitzpatrick</i>	<i>Judges:</i> <i>Neetika Gupta</i> <i>Omar Islam</i> <i>Adnan Sheikh</i>
	Cystic Renal Lesions/Bosniak Update <i>Gavin Sugrue</i>	Sacroiliac Joint Imaging <i>Robert Lambert</i>	
	Interventional Radiology Management of Renal Masses: Ablation and Embolization <i>John Kachura</i>	Imaging of Rotator Cuff Tears <i>Viviane Khoury</i> Imaging of Meniscal Tears <i>Hema Choudur</i>	
12:00 PM - 1:30 PM	Lunch & Visit the Electronic Posters • Exhibit Hall & Foyer (11th Floor)		
12:15 PM - 1:15 PM	Eisai co-Developed Accredited Symposium: The Critical Role of Imaging in Alzheimer's and ARIA Diagnosis St-Antoine (9th Floor- lunch provided) <i>Manish Joshi, moderated by Carlos Torres</i>		
1:30 PM - 2:30 PM	Plenary: Imaging from Africa: A Canadian Radiology Group's Experience Providing Support to Mercy Ships Fortifications (9th Floor) <i>Gregory Raymond, introduction by Christopher Fung</i>		
2:30 PM - 2:45 PM	Break		
2:45 PM - 4:15 PM	AI in Action: From Dictation to Detection Fortifications (9th Floor) <i>Moderators: Laurent Létourneau-Guillon & Jaron Chong</i>	"Is This Bad?": Lymph Nodes, Thyroid Lesions, and Other Pediatric Tumours St-Antoine (9th Floor) <i>Moderators: Katya Rozovsky & Pascale Grimard</i>	Radiologist-in-Training Research Project Competition Oral Presentations Ville-Marie (9th Floor) <i>Moderator: Elsa Ruprecht</i>
	Training in the Age of AI: Pearls, Pitfalls, and the Resident Perspective <i>Kay Wu</i>	Pediatric Lymphoma <i>Eman Marie</i>	<i>Judges:</i> <i>Scott Adams</i> <i>Natalia Gorelik</i> <i>Ian Macdonald</i>
	Say It Smarter: AI-Powered Dictation in Everyday Radiology Practice <i>Christopher Fung</i>	Pediatric Thyroid Cancer <i>Claudia Martinez Rios-Arellano</i>	
	Promise and Pitfalls: AI in Screening Mammography—A Case-Based Review <i>Raman Verma</i>	Pediatric Brain Tumors - Imaging Protocols and Updates <i>Tahani Ahmad</i>	
	Prospective Validation of AI Software for Interpretation of Musculoskeletal Radiographs: Lessons Learned <i>An Tang</i>	Neuroblastoma Updates <i>Ramy El Jalbout</i>	
4:15 PM - 5:45 PM	Vendor Cocktail • Exhibit Hall (11th Floor)		
5:45 PM - 7:45 PM	Trainee & Early Career Reception • Fortifications (9th Floor)		

Saturday, April 18

7:30 AM - 9:00 AM	Mastering the Manuscript: From Submission to Acceptance Ville-Marie (9th Floor) <i>Moderator: Caroline Reinhold</i> How to get your manuscript accepted by CARJ? <i>Michael Patlas</i> Handling Rejection <i>Kate Hanneman</i> How to Ace Peer Review <i>Bruce Forster</i>		
8:00 AM - 9:00 AM	Breakfast • Exhibit Hall (11th Floor)		
9:00 AM - 10:00 AM	Plenary: RadEqual: Leveraging the Power of our Community to Advance our Profession Fortifications (9th Floor) <i>Geraldine McGinty, introduction by Scott Adams</i>		
10:00 AM - 10:30 AM	Break & Visit the Electronic Posters • Exhibit Hall & Foyer (11th Floor)		
10:30 AM - 12:00 PM	Advances in Cardiothoracic Imaging: Guideline Updates and Diagnostic Pearls St-Antoine (9th Floor) <i>Moderators: Carolina Souza & Scott Adams</i>	Emergency Radiology in Action: Updates in Blunt and Abdominal Trauma Fortifications (9th Floor) <i>Moderators: Ferco Berger & Kelly Harper</i>	Quality Improvement Competition Oral Presentations Ville-Marie (9th Floor) <i>Moderator: Elsa Ruprecht</i>
	ILD Update – fILD guidelines and new IIP Classification <i>Micheal McInnis</i>	Blunt Cerebrovascular Injuries <i>Shobhit Mathur</i>	<i>Judges:</i> <i>Mona El Khoury</i> <i>Shivaprakash Hiremath</i> <i>Omar Islam</i>
	Noncoronary cardiac diseases you can diagnose on CT chest <i>Anastasia Oikonomou</i>	Renal Trauma <i>Ismail Ali</i>	
	Imaging of Airway Diseases <i>Constance de Margerie-Mellon</i>	Pancreatic Trauma <i>Michael Patlas</i>	
	Pulmonary Infections <i>Genevieve Belley</i>	Bowel and Mesenteric Injuries <i>Francesca Iacobellis</i>	
12:00 PM - 1:15 PM	Lunch & Visit the Electronic Posters • Exhibit Hall & Foyer (11th Floor)		
12:10 PM - 1:10 PM	Bayer co-Developed Accredited Symposium: The Changing Landscape of MRI Contrast St-Antoine (9th Floor- lunch provided) <i>Kate Hanneman, moderated by Adnan Sheikh</i>		
1:15 PM - 2:30 PM	Plenary Panel: Contrast Reactions in 21st Century: A Multidisciplinary Review of the 2025 CAR Update Fortifications (9th Floor) <i>Facilitator: Iain Kirkpatrick</i> <i>Panel: Adam Byrne, Andreu Costa, Magali Pham</i>		
2:30 PM - 3:00 PM	Break & Visit the Electronic Posters • Exhibit Hall & Foyer (11th Floor)		

Saturday, April 18 (continued)

3:00 PM - 4:30 PM	Beyond Stroke: Vascular Complications and Neuroimaging Mimics Ville-Marie (9th Floor) <i>Moderators: Carlos Torres & Adela Cora</i>	Breast Imaging in the 21st Century: Ultrasound, Contrast, and Special Populations St-Antoine (9th Floor) <i>Moderators: Carolyn Flegg & Saly Zahra</i>	What's New in Incidental Findings? A Review of Current Literature Fortifications (9th Floor) <i>Moderators: Iain Kirkpatrick & Isabelle Zheng</i>
	Small Vessel Disease and DDx <i>Eduardo Portela de Oliveira</i>	Mammographic Sonographic Correlation: Tips and Tricks for Localizing Mammographic Findings on Ultrasound <i>Kaitlin Zaki-Metias</i>	Splenic Serendipity: What to Do with Incidental Splenic Lesions <i>Gary Brahm</i>
	Vessel Wall Imaging <i>Danny Mandell</i>	Contrast Enhanced Mammography (CEM) Case Review <i>Matthew Seidler</i>	What do I do with these Nodes? <i>Isabelle Zheng</i>
	Cerebral Microbleeds: Imaging approach and differential diagnosis <i>Adela Cora</i>	Sonographic Features of DCIS <i>Michelle Zhang</i>	To Follow or Forget? Applying Gallbladder Guidelines in Daily Practice <i>Christopher Fung</i>
	Stroke Mimics (Interactive with ARS) <i>Carlos Torres</i>	Breast Screening in Pregnancy and Lactation <i>Samantha Fienberg</i>	The Nodule Frustration: Follow, Forget, or Fear? <i>Daria Manos</i>
4:30 PM - 5:15 PM	CAR Volunteer Appreciation Networking Event • Reporter (3rd Floor)		
5:15 PM - 5:45 PM	CAR Awards Reception • Foyer (9th Floor)		
5:45 PM - 6:45 PM	CAR Awards Ceremony • Fortifications (9th Floor)		

Sunday, April 19

8:00 AM - 9:00 AM	Breakfast • Foyer (9th Floor)
9:00 AM - 10:00 AM	AIRP Plenary: Unknown GU Case Seminar Fortifications (9th Floor) <i>Meghan Lubner, introduction by Christopher Fung</i>
10:00 AM - 10:15 AM	Break • Fortifications (9th Floor)
10:15 AM - 11:55 AM	Lessons I Have Learned Fortifications (9th Floor) <i>Moderators: Isabelle Zheng & Scott Adams</i>
	Lessons Learned: Multidisciplinary Tumor Conference <i>Meghan Lubner</i>
	Lessons Learned: Breast Imaging <i>Caitlin Ward</i>
	Lessons Learned: Spinal Pathology & Interventional Imaging <i>Kieran Murphy</i>
	Lessons Learned: Head & Neck Imaging <i>Mario Kontolemos</i>
	Lessons Learned: Emergency & Trauma Imaging <i>Ferco Berger</i>
11:55 AM - 12:00 PM	Closing Remarks <i>Christopher Fung</i>

Eisai co-Developed Accredited Symposium: **The Critical Role of Imaging in Alzheimer's and ARIA Diagnosis**

Friday, April 17, 2026 • 12:15-1:15pm ET



Moderator:
Dr. Carlos Torres



Speaker:
Dr. Manish Joshi

CO-DEVELOPED BY



The goal of this accredited symposium is to provide delegates with an in-depth learning opportunity in the field of neuroradiology. Delegates will learn about the critical role of imaging in the diagnosis of Alzheimer's disease and amyloid-related imaging abnormalities (ARIA), a common side effect of new anti-amyloid therapies. Magnetic Resonance Imaging (MRI) is the central tool for monitoring ARIA, allowing clinicians to manage treatment safely. This symposium will discuss the recent evidence on ARIA, guidance from leading experts, as well as resources and management tools to support implementation of new disease modifying treatments in Canadian practices.

The 45-minute presentation will be followed by a 15-minute question and answer segment with the audience.

Target Audience

This symposium is targeted for radiologists and trainees with an interest in neuroradiology, who are particularly engaged in imaging neurodegenerative diseases such as Alzheimer's disease and associated dementia diagnoses.

Needs Assessment

This accredited symposium was developed in response to a comprehensive assessment of CPD interests among Canadian Association of Radiologists (CAR) members, which identified a strong need for advanced education in neuroradiology. Expert consultations and input from the ASM planning committee further confirmed the importance of equipping radiologists with the knowledge and tools to diagnose Alzheimer's disease, recognize and manage amyloid-related imaging abnormalities (ARIA), and implement new anti-amyloid therapies safely and effectively in Canadian clinical practice.

Learning Objectives

At the end of this symposium, delegates will be able to:

1. Describe the current diagnostic criteria for Alzheimer's Disease and summarize updates on treatment options available in Canada.
2. Identify and report Amyloid-Related Imaging Abnormalities (ARIA) to ensure appropriate patient safety management.
3. Analyze strategies for real-world implementation of Alzheimer's therapies and propose approaches to build capacity within clinical settings.

Accreditation and Designation Statements

This symposium was co-developed with Eisai Inc and was planned to achieve scientific integrity, objectivity, and balance. This accredited symposium has been approved for a maximum of 1.0 credit, under Section 1 (Group Learning), as defined MOC program of the Royal College and approved by the CAR.

Bayer co-Developed Accredited Symposium: The Changing Landscape of MRI Contrast

Saturday, April 18, 2026 • 12:10–1:10pm ET



Moderator:
Dr. Adnan Sheikh



Speaker:
Dr. Kate Hanneman



CO-DEVELOPED BY



Bayer

Magnetic resonance imaging (MRI) contrast agents are undergoing rapid evolution, driven by advances in molecular design, increasing attention to patient safety, and a growing emphasis on environmental sustainability. This symposium will review the changing landscape of MRI contrast agents, with a focus on next-generation high-relaxivity gadolinium-based contrast agents (GBCAs), targeted MRI contrast agents, and non-gadolinium alternatives such as manganese-based agents.

Using a clinically focused, evidence-based approach, the session will examine how newer contrast agents can achieve equivalent or improved diagnostic performance at lower administered doses, with the potential to reduce gadolinium exposure, shorten scan times, and lessen environmental impact. Practical considerations related to relaxivity, dosing strategies, safety, and stability will be discussed, along with emerging directions in MRI contrast development.

The 45-minute presentation will be followed by a 15-minute question and answer segment with the audience.

Target Audience

This symposium is targeted for radiologists, technologists, and trainees with an interest in learning about new and innovative MRI contrast agents.

Needs Assessment

This accredited symposium was developed in response to a comprehensive assessment of CPD interests among Canadian Association of Radiologists (CAR) members. Expert consultations and input from the ASM planning committee further confirmed that targeted contrast agents have a variety of beneficial affects. With new products coming to market, there is an immediate need to discuss how these agents can improve image quality, lead to lower dosage requirements, and reduce scan times. All these factors positively impact environmental sustainability by lowering energy use and reducing chemical waste.

Learning Objectives

At the end of this symposium, delegates will be able to:

1. Describe the mechanisms underlying high-relaxivity, targeted, and non-gadolinium MRI contrast agents and how these differ from conventional gadolinium-based agents.
2. Compare the clinical performance, dosing considerations, and safety profiles of next-generation MRI contrast agents across common clinical applications.
3. Apply evidence-based principles to optimize MRI contrast agent selection and dosing in clinical practice, including consideration of patient safety and environmental sustainability.

Accreditation and Designation Statements

This symposium was co-developed with Bayer and was planned to achieve scientific integrity, objectivity, and balance. This accredited symposium has been approved for a maximum of 1.0 credit, under Section 1 (Group Learning), as defined MOC program of the Royal College and approved by the CAR.

Presentations Présentations



FRIDAY, APRIL 17, 2026

9:00 AM – 10:00 AM

Introduction by Christopher Fung

Opening Plenary Lecture

Work-work Imbalance and Burnout: Wicked Problems and Difficult Solutions

Frank Lexa

In recent years, radiologists around the world have seen their clinical workloads grow due to the growth in the number and complexity of imaging studies. This is exacerbated by increases in the number of images per examination and also by pressures to read time sensitive studies. Clinical workloads can crowd out other important radiologist tasks in both academic and private practice settings such as teaching, mentoring, practice governance and many others. This talk will analyze the drivers of work-work imbalance, work-life imbalance and burnout and examine ways that radiologists and their organizations can restructure workflow and protect the many other valuable radiologist contributions to healthcare.

Learning Objectives:

At the end of the presentation, delegates will be able to:

- Analyze the systemic and organizational drivers contributing to increasing clinical workloads in radiology.
- Evaluate how escalating clinical workloads diminish radiologists' ability to provide additional forms of clinical, professional, and system-level value.
- Assess the impacts of work-life imbalance and burnout on individual radiologists, their families, their organizations, and the profession.
- Evaluate current mitigation strategies for burnout and work-life imbalance and formulate evidence-informed alternatives that address their limitations.

Target Audience: Radiologist, Resident, Medical Student, Hospital and Practice Administrators, Lead Technologists

CanMEDS: Medical Expert, Communicator, Collaborator, Leader, Health Advocate, Scholar, Professional

FRIDAY, APRIL 17, 2026

10:30 AM – 12:00 PM

Moderators: Linda Probyn & Natalia Gorelik

Spine and Shoulders, Knees and Toes: Essentials of MSK Imaging

The session will consist of four lectures offering a diverse overview of musculoskeletal topics, including benign bone lesions, axial spondyloarthritis, rotator cuff pathology, and meniscal tears.

Learning Objectives:

At the end of this session, delegates will be able to:

- Recognize the classic imaging features of benign “do not touch” bone lesions across different imaging modalities and determine when further imaging work-up is warranted to ensure accurate diagnosis and avoid unnecessary intervention.
- Recognize the imaging patterns that occur at different stages of inflammatory sacroiliitis and apply to their own clinical practice the key principles of the internationally recommended MRI acquisition protocol for inflammatory sacroiliitis.
- Recognize the normal ultrasound appearance of the rotator cuff and common pathological lesions and identify pitfalls in cuff tear diagnosis.
- Classify meniscal tears on MRI using recognized imaging criteria and apply this knowledge to improve clinical decision-making in musculoskeletal imaging.

Target Audience: Radiologist, Resident, Medical Student

CanMEDS: Medical Expert, Communicator, Collaborator, Scholar

Don't Touch Lesions

Laura Fitzpatrick

This presentation will review the classic imaging features of common benign “do not touch” bone lesions across radiography, CT, and MRI. Emphasis will be placed on identifying hallmark characteristics that allow confident diagnosis, differentiating these lesions from more aggressive pathology, and recognizing when additional imaging or follow-up is appropriate.

Sacroiliac Joint Imaging

Robert Lambert

In this lecture, pitfalls in MRI interpretation of the sacroiliac joints will be reviewed, including the natural history of inflammatory sacroiliitis, and recently published international guidelines for radiology of the SI joints. Delegates will learn how to recognize the imaging patterns that occur at different stages of inflammatory sacroiliitis and how to apply the key principles of the internationally recommended MRI acquisition protocol for inflammatory sacroiliitis to their own clinical practice.

Imaging of Rotator Cuff Tears

Viviane Khoury

This presentation will discuss ultrasound imaging of the rotator cuff, emphasizing normal appearance and common pathological lesions, and including pitfalls in cuff tear diagnosis.

Imaging of Meniscal Tears

Hema Choudur

This presentation will review the imaging appearance of meniscal tears, focusing on MRI techniques, tear classification, and common diagnostic pitfalls in routine practice.

FRIDAY, APRIL 17, 2026

10:30 AM – 12:00 PM

**From Bosniak to Biopsy:
The Modern Approach to Renal Masses**

Moderators:
Gavin Sugrue & Gary Brahm

This session provides a comprehensive, imaging-centered approach to the evaluation and management of renal masses, spanning solid and cystic lesions through to interventional treatment considerations. Participants will explore modern diagnostic tools, including updated Bosniak classification, emerging CT and MRI-based scoring systems, and imaging biomarkers that inform tumour aggressiveness and guide multidisciplinary decision-making. The session emphasizes key imaging considerations and practical reporting elements that directly impact urologic decision making and patient management.

Learning Objectives:

At the end of this session, delegates will be able to:

- Apply contemporary imaging criteria to differentiate and risk-stratify solid and cystic renal masses.
- Interpret imaging biomarkers associated with renal tumour aggressiveness to support clinical decision-making.
- Report renal mass imaging findings using structured elements that influence urologic management.
- Describe imaging considerations for interventional treatment planning and post-treatment follow-up of renal masses.

Target Audience: Radiologist, Resident, Medical Student

CanMEDS: Medical Expert, Communicator, Collaborator, Scholar

Solid Renal Masses

Satheesh Krishna

This presentation will focus on how to optimize diagnostic accuracy in solid renal masses—starting from protocol and enhancement assessment, moving into emerging tools such as MRI-based ccLS, and CT-based CT-scorev2.0 scoring. How to evaluate tumor aggressiveness will then be discussed, including imaging biomarkers and reporting the key elements that impact urologic decision-making and patient management. This will be a double session presentation (40 minutes) - broken down into two 20-minute talks.

Cystic Renal Lesions/Bosniak Update

Gavin Sugrue

This presentation will review the updated Bosniak classification system for cystic renal lesions, with emphasis on imaging criteria, risk stratification, and implications for patient management.

Interventional Radiology Management of Renal Masses: Ablation and Embolization

John Kachura

This talk will provide an overview of contemporary Interventional Radiology treatment options for renal masses including ablation for renal cell carcinoma and embolization for angiomyolipoma and highlight key imaging considerations for pre-procedural planning and post-treatment follow-up.

FRIDAY, APRIL 17, 2026

1:30 PM – 2:30 PM
Plenary Lecture

Introduction by Christopher Fung

Imaging from Africa: A Canadian Radiology Group's Experience Providing Support to Mercy Ships

Gregory Raymond

This session will overview Medical Imaging Consultants of Edmonton's 18-year pro bono tele-radiology support for two NGO hospital ships (Mercy Ships International: Africa Mercy and Global Mercy) serving multiple African nations. Services include imaging interpretation, guidance on CT and CR protocols for MRTs, consultation for surgeons and physicians, and IT integration with ship RIS/PACS. The talk will cover the evolution and logistics of this work and showcase interesting cases involving rare tumors and infectious diseases uncommon in Canada. By sharing this experience, we hope to inspire other radiology groups and professionals to engage in similar global outreach.

Learning Objectives:

At the end of this plenary presentation, delegates will be able to:

- Describe the feasibility and scope of Canadian radiologists supporting medical and surgical care in Africa through teleradiology services on hospital ships.
- Identify the complex surgical and medical challenges and pathologies commonly encountered in nonprofit hospital ship settings in Africa.
- Reflect on the personal and professional impact of volunteering in underserved settings, including the challenges and rewards of providing care to vulnerable populations in the developing world.

Target Audience: Radiologist, Resident, Medical Student, Radiographer, Ultrasound and CT Technologists, DI and IT Administrators/ Managers

CanMEDS: Medical Expert, Communicator, Collaborator, Leader, Health Advocate, Scholar, Professional

FRIDAY, APRIL 17, 2026

2:45 PM – 4:15 PM

AI in Action: From Dictation to Detection

Vanessa Quinn-Laurin

Moderators:

Laurent Létourneau-Guillon & Jaron Chong

This year's Radiology AI session shifts from theoretical discussions to practical, real-world applications and experiences from Canadian centres. Presentations will cover the spectrum from resident use of AI tools to prospective independent clinical evaluation of AI models, highlighting both the benefits and challenges of AI in Radiology. The session will illustrate how AI is being adopted and tested in everyday radiology practice across the country.

Learning Objectives:

At the end of this session, delegates will be able to:

- Describe common pearls and pitfalls encountered by radiology trainees when using AI tools in clinical practice and discuss strategies to ensure responsible integration of AI.
- Explain the current applications, benefits, and limitations of AI-assisted dictation systems in radiology reporting.
- Recognize the role of AI in breast-imaging detection workflows and evaluate its impact on diagnostic accuracy, workflow, and patient care.
- Identify key challenges and lessons learned from the prospective validation of AI software for musculoskeletal radiograph interpretation.

Target Audience: Radiologist, Resident, Medical Student

CanMEDS: Medical Expert, Communicator, Collaborator, Leader, Health Advocate, Professional

Training in the Age of AI: Pearls, Pitfalls, and the Resident Perspective

Kay Wu

This presentation will highlight key pearls and pitfalls for the integration of AI into radiology practice, from the resident perspective. Practical insights, challenges, and opportunities that trainees experience will be shared as AI becomes increasingly embedded in clinical workflows.

Say It Smarter: AI-Powered Dictation in Everyday Radiology Practice

Christopher Fung

This presentation will provide a practical review of AI-based dictation platforms.

Promise and Pitfalls: AI in Screening Mammography—A Case-Based Review

Raman Verma

Using case-based examples, this presentation will provide a practical overview of AI in screening mammography, illustrating both the benefits and challenges encountered by radiologists.

Prospective Validation of AI Software for Interpretation of Musculoskeletal Radiographs: Lessons Learned

An Tang

This presentation will provide a real-world case study to illuminate the essential steps and common challenges involved in adopting AI software in clinical or educational settings. Attendees will also explore practical mitigation strategies that support effective validation and successful implementation.

FRIDAY, APRIL 17, 2026

2:45 PM – 4:15 PM

“Is This Bad?”: Lymph Nodes, Thyroid Lesions, and Other Pediatric Tumours

Moderators:

Katya Rozovsky & Pascale Grimard

The session will focus on imaging diagnosis and management of common pediatric neoplasms. It will provide updates on imaging diagnosis of pediatric lymphoma, evaluation of therapeutic response, and post-treatment surveillance. It will address the sonographic features of pediatric thyroid carcinoma which can help in guiding a management approach. It will describe current imaging protocols and advanced imaging techniques for pediatric brain tumors and provide key MRI features of common tumor types. It will outline imaging features of neuroblastomas across different modalities, describe image-defined risk factors and help to assess tumor resectability.

Learning Objectives:

At the end of this session, delegates will be able to:

- Describe the contributions of imaging to the diagnosis, therapeutic response assessment, and post-treatment surveillance of pediatric lymphoma, including the spectrum of imaging manifestations and key pediatric-specific clinical and technical considerations.
- Apply a practical sonographic approach to pediatric thyroid carcinoma to support evidence-informed decisions regarding biopsy versus follow-up of thyroid nodules in children.
- Analyze current imaging protocols, key MRI features of common pediatric brain tumors, and recent advances in neuroimaging to enhance diagnostic accuracy and support treatment planning.
- Evaluate the multimodality imaging features of neuroblastoma and apply image-defined risk factors to determine pre-treatment risk group and surgical resectability.

Target Audience: Radiologist, Resident, Medical Student

CanMEDS: Medical Expert, Communicator, Collaborator, Scholar, Professional

Pediatric Lymphoma

Eman Marie

This presentation examines the critical role of imaging in diagnosing pediatric lymphoma, assessing therapeutic response, and guiding long-term surveillance. Delegates will learn to recognize the diverse imaging appearances of lymphoma across modalities, appreciate the distinctive clinical and imaging features, and understand key considerations for optimal image acquisition.

Pediatric Thyroid Cancer

Claudia Martinez Rios-Arellano

This presentation will address the sonographic features of pediatric thyroid carcinoma and the challenges of reporting thyroid ultrasound. Awareness of the distinct imaging features of thyroid carcinoma can help in the management approach, deciding when it is best to biopsy or when to follow-up.

Pediatric Brain Tumors - Imaging Protocols and Updates

Tahani Ahmad

This presentation reviews current MRI protocols and imaging techniques in pediatric brain tumor evaluation. Emphasis will be placed on protocol optimization, advanced imaging sequences, and their role in tumor characterization, surgical planning, and post-therapy assessment. This includes MRS, perfusion, DTI, and fMRI.

Neuroblastoma Updates

Ramy El-Jalbout

This presentation will review the typical and varied imaging features of neuroblastomas across multiple modalities and demonstrate how image-defined risk factors are applied to determine pre-treatment risk groups and assess tumor resectability.

SATURDAY, APRIL 18, 2026

7:30 AM – 9:00 AM

Moderator: Caroline Reinhold

Mastering the Manuscript: From Submission to Acceptance

This interactive session offers a comprehensive guide to academic publishing within the Canadian Association of Radiologists Journal (CARJ). Participants will gain expert insights into the entire publication process—from manuscript submission to acceptance—while learning how to effectively navigate peer review and handle rejection. Led by seasoned editors and authors, the session will equip attendees with practical strategies to enhance their publishing success and confidently advance their academic radiology careers.

Learning Objectives:

By the end of this session, participants will be able to:

- Describe key strategies for preparing and submitting a manuscript that meets CARJ's standards for acceptance.
- Demonstrate effective approaches to conducting a scholarly peer review of a manuscript.
- Apply best practices to maximize the likelihood of successful academic publishing in radiology journals.

Target Audience: Radiologist, Resident, Fellow

CanMEDS: Communicator, Scholar, Professional

How to Get Your Manuscript Accepted by CARJ?

Michael Patlas

This presentation will describe a current status of Canadian Association of Radiologists Journal (CARJ). The speaker (Editor-In-Chief of the Journal) will review submission categories and provide a practical advice to potential CARJ authors.

Handling Rejection

Kate Hanneman

Rejection is an inevitable part of academic publishing, but it doesn't have to be the end of the story. This presentation will provide actionable advice on how to move forward after a manuscript is declined — by glean insights from reviewer comments, revising effectively, and turning setbacks into opportunities for stronger, more successful submissions.

How to Ace Peer Review

Bruce Forster

This presentation will focus on the key elements of an 'ace' peer review, and outline the most common mistakes made during this process.

SATURDAY, APRIL 18, 2026

9:00 AM – 10:00 AM

Plenary Lecture

Introduction by Scott Adams

RadEqual: Leveraging the Power of Our Community to Advance Our Profession

Geraldine McGinty

This session will describe the founding and growth of the RadEqual initiative that has created an inclusive community of belonging across radiology and industry.

Learning Objectives:

At the end of this plenary presentation, delegates will be able to:

- Explain the critical importance of community building in advancing the radiology profession.
- Demonstrate strategies to convene stakeholders and establish sustainable organizational structures that promote inclusivity and minimize barriers to participation.

Target Audience: Radiologist, Resident, Medical Student, Industry Attendees

CanMEDS: Medical Expert, Communicator, Collaborator, Leader, Health Advocate, Scholar, Professional

SATURDAY, APRIL 18, 2026

10:30 AM – 12:00 PM

Moderators: Carolina Souza & Scott Adams

Advances in Cardiothoracic Imaging: Guideline Updates and Diagnostic Pearls

This session will highlight relevant basic concepts in cardiothoracic imaging with a focus on practical diagnostic insights. Through expert-led presentations, participants will review the 2025 updates to fibrotic interstitial lung disease classification, recognize noncoronary cardiac conditions detectable on routine chest CT, apply structured approaches to airway disease imaging, and interpret feature-based patterns of pulmonary infections. Emphasis will be placed on translating imaging updates and pearls into accurate, clinically relevant radiologic practice.

Learning Objectives:

At this end of this session, delegates will be able to:

- Describe the 2025 updates to fibrotic interstitial lung disease terminology and interstitial pneumonia classification.
- Identify noncoronary cardiac diseases detectable on routine CT chest examinations.
- Apply a structured imaging approach to the evaluation of airway diseases on CT.
- Differentiate fungal, parasitic, and uncommon bacterial pulmonary infections using feature-based imaging patterns.

Target Audience: Radiologist, Resident, Fellow

CanMEDS: Medical Expert, Communicator, Scholar

ILD Update – fILD Guidelines and New IIP Classification

Micheal McInnis

The classification of interstitial pneumonias (ILD) was recently updated in 2025. This talk will provide an overview of the major changes in fibrotic interstitial lung disease terminology and classification.

Noncoronary Cardiac Diseases You Can Diagnose on CT Chest

Anastasia Oikonomou

This presentation will review a range of noncoronary cardiac conditions that can be identified on routine CT chest examinations. Emphasis will be placed on recognizing key imaging findings and avoiding missed cardiac diagnoses outside the primary indication of the study.

Imaging of Airway Diseases

Constance de Margerie-Mellon

This presentation will provide an overview of airway imaging, highlighting key techniques, common pathologies, and practical diagnostic approaches for daily radiology practice.

Pulmonary Infections

Genevieve Belley

This is a feature-based presentation on fungal, parasitic, and uncommon bacterial thoracic infections.

SATURDAY, APRIL 18, 2026

10:30 AM – 12:00 PM

Emergency Radiology in Action: Updates in Blunt and Abdominal Trauma

Moderators:

Ferco Berger & Kelly Harper

In this session, delegates will learn about a selected few topics that deal with imaging of the trauma patient and are often found to be challenging. They will come away with a better understanding of these injuries and how to best help trauma patients survive their injuries.

Learning Objectives:

At the end of this session, delegates will be able to:

- Describe imaging features that influence trauma patient management, focusing on specific injury patterns in the head, neck, and abdomen.
- Explain the grading systems for selected trauma-related injuries and their clinical implications.
- Reflect on the role of the radiologist as an integral member of the trauma team and its impact on patient care.

Target Audience: Radiologist, Resident, Fellow

CanMEDS: Medical Expert, Collaborator, Communicator, Scholar, Professional, Leader

Blunt Cerebrovascular Injuries

Shobhit Mathur

This presentation covers the critical role of imaging in identifying blunt cerebrovascular injuries, with a focus on accurate recognition, grading, and navigating common diagnostic challenges—including key pitfalls and mimics. Practical imaging tips will highlight how to avoid these traps and ensure prompt detection that can significantly influence stroke prevention and trauma care.

Renal Trauma

Ismail Ali

Provide an up-to-date overview of Renal Trauma imaging findings and management considerations in Emergency Radiology.

Pancreatic Trauma

Michael Patlas

Pancreatic trauma is an uncommon entity requiring prompt detection and management. This presentation will describe clinical features, American Association for the Surgery of Trauma (AAST) grading, multidetector computed tomography (MDCT) technique, and imaging findings in patients with pancreatic trauma.

Bowel and Mesenteric Injuries

Francesca Iacobellis

The presentation will focus on the imaging findings of bowel and mesenteric injuries, emphasizing the role of CT in early diagnosis, injury grading, and guiding management decisions. Clinical cases and key radiologic signs will be discussed to highlight practical approaches in emergency settings.

SATURDAY, APRIL 18, 2026

1:15 PM – 2:30 PM

Plenary Lecture

Facilitator: Iain Kirkpatrick

Contrast Reactions in 21st Century: A Multidisciplinary Review of the 2025 CAR Update

Adam Byrne, Andreu Costa, Magali Pham

This session will address the joint CAR/CSACI Practice Guidance for Contrast Media Hypersensitivity published in 2025. Evidence behind the recommendations will be reviewed along with the recommended algorithm for dealing with patients at risk for reactions. A review of the guidelines and evidence will be presented, including strategies for local implementation of the revised algorithm, followed by a question-and-answer period where the audience will be encouraged to interact with the panel.

Panel Presentations

Dr. Byrne will discuss the rationale for the changes outlined in the CAR/CSACI Practice Guidance for Contrast Media Hypersensitivity, reflecting perspectives from Canadian allergies. The presentation will highlight changes to recommendations on pretreatment, documentation and the investigation of hypersensitivity reactions to contrast media.

Dr. Costa will describe the approach and key evidence used by the joint CAR/CSACI working group on hypersensitivity reactions to develop the recent CAR consensus guidance.

Dr. Pham will present tips and tricks for implementing new recommendations on contrast media hypersensitivity based on her local experience.

Learning Objectives:

At the end of this plenary panel, delegates will be able to:

- Describe key evidence used in formulating the updated CAR/CSACI practice guidance for managing contrast hypersensitivity.
- Summarize the CAR/CSACI recommended patient management pathway for those at risk of a hypersensitivity reaction to contrast.
- Formulate strategies for local implementation of the updated national contrast hypersensitivity practice guidance.

Target Audience: Radiologist, Resident, Medical Student, Technologists, Administrators

CanMeds: Medical Expert, Communicator, Collaborator, Leader, Health Advocate, Scholar

SATURDAY, APRIL 18, 2026

3:00 PM – 4:30 PM

**Breast Imaging in the 21st Century:
Ultrasound, Contrast, and Special
Populations**

Moderators:

Carolyn Flegg & Saly Zahra



This session will explore advanced multimodality correlation techniques and diagnostic strategies across a range of clinical contexts. Participants will apply principles of triangulation for sonographic correlation of mammographic findings, review the sonographic appearances of ductal carcinoma in situ (DCIS), and interpret contrast-enhanced mammography (CEM) cases in both screening and diagnostic settings. The session will also address best practices for breast screening in pregnancy and lactation, emphasizing safety, protocol selection, and clinical decision-making. Through case-based discussion, attendees will enhance their interpretive accuracy and confidence in managing complex breast imaging scenarios.

Learning Objectives:

At the end of this session, delegates will be able to:

- Apply concepts of triangulation to sonographic correlation of mammographic findings.
- Describe the sonographic appearances of DCIS (ductal carcinoma in situ) and correlate that appearance with mammography and ultrasound.
- Interpret contrast-enhanced mammography (CEM) cases in both screening and diagnostic contexts, recognizing key imaging findings, common pitfalls, and appropriate clinical applications.
- Identify the appropriate breast screening modalities and protocols for pregnant and lactating patients.

Target Audience: Radiologist, Resident, Fellows

CanMEDS: Medical Expert, Communicator, Scholar, Health Advocate

Mammographic Sonographic Correlation: Tips and Tricks for Localizing Mammographic Findings on Ultrasound

Kaitlin Zaki-Metias

This presentation will review the concepts of mammographic positioning and triangulation, applying them to sonographic correlation of mammographic findings.

Contrast Enhanced Mammography (CEM) Case Review

Matthew Seidler

This interactive presentation will review a series of contrast-enhanced mammography (CEM) cases that highlight its utility in the screening and diagnostic settings, as well as provide interpretation pearls and pitfalls.

Sonographic Features of DCIS

Michelle Zhang

This presentation will examine the sonographic features of ductal carcinoma in situ (DCIS) and their correlations with mammography/MRI.

Breast Screening in Pregnancy and Lactation

Samantha Fienberg

This presentation will discuss challenges with diagnosing breast cancer in pregnancy and lactation. Breast screening recommendations for this population will also be reviewed.

SATURDAY, APRIL 18, 2026

3:00 PM – 4:30 PM

Beyond Stroke: Vascular Complications and Neuroimaging Mimics

Moderators:

Carlos Torres & Adela Cora



This session provides a comprehensive overview of advanced neuroimaging approaches in cerebrovascular disease, with a focus on small vessel disease, intracranial vessel wall imaging, cerebral microbleeds, and stroke mimics. Participants will review key imaging features, structured diagnostic frameworks, and practical differential diagnoses using CT and MRI-based techniques. Case-based and interactive components will enhance diagnostic reasoning and confidence in distinguishing true vascular pathology from mimics in clinical practice.

Learning Objectives:

At the end of this session, delegates will be able to:

- Differentiate imaging features of small vessel disease from its common mimics.
- Understand the role and the technique of intracranial vessel wall imaging in the evaluation of ischemic stroke and other clinical scenarios.
- Differentiate cerebral microbleeds from common mimics on MRI using a systematic imaging approach.
- Distinguish stroke from common and uncommon mimics using a case-based approach.

Target Audience: Radiologist, Resident

CanMEDS: Medical Expert, Communicator, Scholar

Small Vessel Disease and DDX

Eduardo Portela de Oliveira

This presentation will review key imaging features of small vessel disease and provide a practical differential diagnosis framework for common mimics encountered in neuroimaging.

Vessel Wall Imaging

Danny Mandell

This presentation will discuss how to use intracranial vessel wall MRI in the work-up of ischemic stroke.

Cerebral Microbleeds: Imaging Approach and Differential Diagnosis

Adela Cora

This presentation will outline a structured MRI-based approach to cerebral microbleeds, integrating current evidence on distribution patterns, susceptibility imaging techniques, and advanced diagnostic clues. Emphasis will be placed on refining the differential diagnosis and improving radiologist confidence in distinguishing common and uncommon etiologies.

Stroke Mimics (Interactive with ARS)

Carlos Torres

This presentation will explore common and uncommon stroke mimics using case-based imaging examples, engaging participants through audience response systems to reinforce diagnostic decision-making.

SATURDAY, APRIL 18, 2026

3:00 PM – 4:30 PM

What's New in Incidental Findings? A Review of Current Literature

Moderators:

Iain Kirkpatrick & Isabelle Zheng



This session will address CAR practice guidance on managing incidental findings of the spleen, lymph nodes, peritoneum, and gallbladder as well as pulmonary nodules. Evidence behind the recommendations will be reviewed along with the recommended algorithms for managing these incidental findings in a cost-effective manner.

Learning Objectives:

At the end of this session, delegates will be able to:

- Explain the rationale behind current CAR national practice guidance for incidental imaging findings.
- Outline recommended management pathways for incidental pulmonary nodules and other unexpected findings of the spleen, nodes, peritoneum, and gallbladder.
- Formulate strategies to implement CAR incidental findings guidance into practice.

Target Audience: Radiologist, Resident, Medical Student

CanMEDS: Medical Expert, Communicator, Collaborator, Leader, Health Advocate. Scholar

Splenic Serendipity: What to Do with Incidental Splenic Lesions

Gary Brahm

This presentation will discuss the incidental findings one might encounter in the spleen and will provide guidance on the management of these incidental findings in an evidence-based, cost-effective manner.

What do I do with these Nodes?

Isabelle Zheng

The Incidental Findings Working Group presents their latest recommendations for incidental findings of the spleen, lymph nodes, peritoneum, and mesentery. The authors include guidance for splenomegaly, focal splenic lesions, splenic artery aneurysms, lymphadenopathy, mesenteric panniculitis, and peritoneal nodules.

To Follow or Forget? Applying Gallbladder Guidelines in Daily Practice

Christopher Fung

This presentation will provide a brief and practical review of current national and international guidelines regarding the gallbladder.

The Nodule Frustration: Follow, Forget, or Fear?

Daria Manos

Incidental pulmonary nodules are common and, particularly in the age of widespread access to reports, a frequent cause of patient concern. Radiologists must balance strategies to limit inappropriate imaging with strategies to avoid missing opportunities for early cancer detection. Delegates will learn which nodules to follow, which to safely ignore and how to communicate the difference in a defensive but resource-aware practice.

SUNDAY, APRIL 19, 2026

9:00 AM – 10:00 AM
AIRP Plenary Lecture

Introduction by Christopher Fung

Unknown GU Case Seminar

Meghan Lubner

This plenary presentation will be a case-based review of genitourinary conditions with radiologic-pathologic correlation.

Learning Objectives:

At the end of this plenary, delegates will be able to:

- Analyze common and uncommon genitourinary conditions using case-based, multi-modality imaging.
- Explain radiologic-pathologic correlations relevant to selected genitourinary disease.

Target Audience: Radiologist, Resident, Medical Student

CanMEDS: Medical Expert, Scholar, Professional

SUNDAY, APRIL 19, 2026

10:15 AM – 11:55 AM
Lessons I Have Learned

Moderators:
Scott Adams & Isabelle Zheng

This multidisciplinary “Lessons I Have Learned” session brings together experts in oncologic imaging, breast imaging, spinal pathology and interventional imaging, head and neck imaging, and emergency and trauma imaging to share real-world cases that shaped their practice. Through open discussion of interpretive pitfalls, speakers will highlight practical insights to enhance image interpretation across subspecialties.

Learning Objectives:

At this end of this session, delegates will be able to:

- Identify where misses or misinterpretation can occur in cases from multiple radiology subspecialties.
- Apply practical lessons from expert cases and use them to improve everyday interpretation, diagnostic accuracy, and communication.
- Apply specific strategies that support ongoing self-reflection, error reduction, and continuous improvement as a radiologist.

Target Audience: Radiologist, Resident, Medical Student

CanMEDS: Medical Expert, Communicator, Leader, Scholar, Professional

Lessons Learned: Multidisciplinary Tumor Conference

Meghan Lubner

This presentation will review cases discussed at multidisciplinary tumor board where lessons were learned, including missed/added imaging interpretation, and/or changes in management.

Lessons Learned: Breast Imaging

Caitlin Ward

This presentation will challenge the assumption of stability and caution the use of a BI-RADS 5. The presenter will explore the demands of being a radiologist and the need to set clear boundaries to achieve a successful work/life balance.

Lessons Learned: Spinal Pathology & Interventional Imaging

Kieran Murphy

This presentation will discuss personal experience managing over 1000 women with Tarlov Cysts. While 80% are asymptomatic, approximately 20% are very symptomatic and can be safely treated.

Lessons Learned: Head & Neck Imaging

Mario Kontolemos

This presentation will highlight head and neck imaging cases from my hospital that shaped my practice, focusing on common interpretive pitfalls and subtle findings that may be commonly missed. Through case-based discussion, attendees will gain insight into common sources of error and apply strategies to improve their interpretation of similar head and neck studies.

Lessons Learned: Emergency & Trauma Imaging

Ferco Berger

The talk “Lessons Learned: Emergency & Trauma Imaging” will review cases that provided crucial insights, shaping best practices to optimize patient care. The discussion will include strategies for effective communication within a multidisciplinary team.

Oral Presentations and Posters

Présentations orales et résumés



FRIDAY APRIL 5, 2025

10:30 AM – 12:00 PM

Scientific Research Project Competition Oral Presentations

Moderator: Elsa Ruprecht

Judges: Neetika Gupta, Omar Islam, Adnan Sheikh

120730

Periportal Lymphadenopathy: Is There a Correlation with Metabolic Dysfunction-associated Steatotic Liver Disease (MASLD) at MR Elastography?

Hayley McKee¹, Zahra Kassam², Alexander Tsibulski³, Kaitlin Zaki-Metias⁴

¹University of Toronto, ²Western University, ³Trillium Health Partners, ⁴University of Manitoba

PRESENTER'S LEVEL OF TRAINING: Resident

OBJECTIVE: Metabolic-associated steatotic liver disease (MASLD) is the most prevalent cause of chronic liver disease globally with increasing prevalence paralleling the obesity epidemic. Periportal lymphadenopathy has been anecdotally associated with hepatic inflammation and steatosis, but its diagnostic and prognostic value in MASLD remains poorly defined. This study evaluates the relationship between the severity of hepatic steatosis and its relationship with periportal lymphadenopathy in patients undergoing magnetic resonance elastography (MRE) with fat fraction (FF) quantification.

METHODS: A retrospective cohort of 190 adult patients undergoing MRE with FF quantification between January and October 2024 was analyzed. Patients with cirrhosis, hemochromatosis, or prior liver transplant were excluded. Hepatic steatosis was categorized by FF as normal (<6%), mild (6-17%), moderate (17-22%), or severe (>22%), as per vendor guidelines. Presence and number of periportal lymph nodes were recorded. Multivariable logistic regression adjusted for age and sex evaluated associations between steatosis severity and lymphadenopathy.

RESULTS / DISCUSSION: Periportal lymphadenopathy was observed in 24% of patients and was more frequent with increasing steatosis severity ($p = 0.008$). The proportion of patients with enlarged periportal lymph nodes differed significantly across steatosis severity ($p = 0.03$). A higher proportion of patients with severe steatosis had >2 enlarged nodes. Severe steatosis was associated with 3.2 times higher odds of periportal lymphadenopathy compared to normal FF (OR = 3.23, 95% CI: 1.19-8.79, $p = 0.022$).

CONCLUSION: Periportal lymphadenopathy is significantly associated with more severe hepatic steatosis in MASLD. Recognizing this association may reduce unnecessary investigations for isolated lymphadenopathy and inform non-invasive risk stratification strategies in MASLD management.

120836

Understanding the Canadian Interventional Radiology Landscape Through the Canadian Association of Interventional Radiology (CAIR) Database: A Descriptive Study

Anand Dhatt¹, Ravjot Dhatt², Nevin de Korompay³, Manraj Heran², Matthew Chang⁴, Stephen Ho², David Liu², Leandro Cardarelli-Leite⁵, Bruce Forster¹, Alison Harris¹

¹University of British Columbia, ²Vancouver General Hospital, ³Kelowna General Hospital, ⁴Simon Fraser University, ⁵London Health Sciences Center

PRESENTER'S LEVEL OF TRAINING: Resident

OBJECTIVE: Physicians in Canada are disproportionately concentrated in urban centers, with rural regions facing significant gaps in specialist care. The geo-spatial characteristics of Interventional Radiology (IR) in Canada have not been systematically studied. This study examines the distribution of Canadian Association of Interventional Radiology (CAIR) members and the sociodemographic characteristics of the populations they serve.

METHODS: A list of active members of the Canadian Association of IR (CAIR) was obtained in May 2025. Data from the Canadian Census was used to gather census division (CD)-level information on population size and demographics including data on ethnicity, income, education, employment, and income. CDs were grouped and compared between those with access to IR care and those without, compared between top and bottom quartiles for each population characteristic, and mapped.

RESULTS / DISCUSSION: Of 293 CDs in Canada, only 48 (19.6%) had at least one IR, leaving 31.6% of the national population without local access. IRs were strongly clustered in high-population CDs, with Toronto, Vancouver, and Montreal alone accounting for 56.5% of IRs. CDs with IRs had significantly higher mean populations (527,322 vs. 47,675; $p < 0.001$), median incomes (\$82,760 vs. \$75,821; $p = 0.002$), and educational attainment (31% vs. 16%; $p < 0.001$). Conversely, CDs with higher proportions of the population being Indigenous were less likely to have IRs (5% vs. 14%; $p < 0.001$).

CONCLUSION: CAIR member IRs are disproportionately concentrated in large urban centers, leaving substantial geographic disparities. Addressing this maldistribution will require coordinated strategies, including outreach models, telehealth integration, and national workforce planning.

122792

Value of Dual-Energy CT in the Diagnosis of Gangrenous Cholecystitis: A Preliminary Single-Centre Retrospective Analysis

Osama Majeed¹, Qurat Ul Ain Khan Khan¹, Sobhan Mardan¹, Mohammed Al-Hasani¹, Bushra AlAhmadi², Savvas Nicolaou¹, James Byrne³, Candice Cheung¹, Sarah Barret¹

¹Department of Radiology, Vancouver General Hospital, ²University of British Columbia, ³Department of General Surgery, Vancouver General Hospital

PRESENTER LEVEL OF TRAINING: Fellow

OBJECTIVE: Acute cholecystitis (AC) is among the top six causes of emergency department (ED) visits in North America. Gangrenous cholecystitis, a severe complication of AC, remains challenging to diagnose pre-operatively using conventional CT. Evidence supporting the incremental value of dual-energy CT (DECT) is limited. This study evaluated whether DECT-derived features improve diagnostic accuracy for gangrenous cholecystitis compared with conventional CT alone.

METHODS: Radiology and pathology reports from January 2020 to January 2025 were retrospectively matched, identifying 315 patients who underwent cholecystectomy within 7 days of CT acquisition within ED. Cases were reviewed independently by two radiology fellows. Patient demographics, diagnostic performance metrics and rate of agreement were assessed, comparing conventional CT alone versus CT with DECT-derived features.

RESULTS / DISCUSSION: A total of 48 patients were included (mean age 65 ± 18 years; 71% male), of whom 10 had gangrenous cholecystitis. The median time between CT and cholecystectomy was 3 days (IQR 2-4). Inter-reader agreement was 46/48 for conventional CT and 45/48 with DECT. The addition of DECT features increased sensitivity from 15% (95% CI: 0-30%) to 45% (95% CI: 25-65%). Specificity changed from 96.1% (95% CI: 91-100%) to 89.5% (95% CI: 82-96%).

CONCLUSION: Preliminary findings suggest that DECT features enhance diagnostic sensitivity for gangrenous cholecystitis and reduce false-negative interpretations compared with conventional CT alone. Although specificity decreased modestly, DECT appears to offer meaningful incremental diagnostic value. Ongoing analysis of the full cohort is required to confirm these early results.

123606

Prognostic utility of Left Atrial (LA) and Left Ventricular (LV) Strain by Cardiac Magnetic Resonance Imaging (CMR) in Patients with Takotsubo Syndrome (TTS)

Jerald Garvin Lim¹, Yoshito Kadoya², Ian Paterson², Carole Dennie¹, Oscar Osorio Cruz¹, Suman Prabhakar¹

¹The Ottawa Hospital, ²University of Ottawa Heart Institute

PRESENTER LEVEL OF TRAINING: Fellow

OBJECTIVE: To evaluate the prognostic value of LA and LV strain parameters derived from CMR in predicting major adverse cardiac and cerebrovascular events (MACCE) in patients with TTS.

METHODS: This retrospective study included 151 patients with TTS (January 2017-January 2025) who underwent 1.5-T CMR. Imaging was re-analyzed for LV volumes, function, wall motion abnormalities, native T1, global T2, extracellular volume, LA long-axis strain, and LV global longitudinal (GLS), circumferential (GCS), and radial strain (GRS). The primary endpoint was MACCE (all-cause death, heart failure hospitalization, recurrent TTS, stroke, or transient ischemic attack). Prognostic associations were evaluated using multivariable Cox regression adjusted for pre-specified covariates and Kaplan-Meier curves with log-rank tests after stratification by global T2 (>59.5ms) and LA long-axis strain (<21.4%).

RESULTS / DISCUSSION: Mean age was 67.2±13.1 years; 89.4% were female. The mean ±SD values for LV GLS, LV GCS, LV GRS, and LA long-axis strain were -12.0 ±3.9%, -13.7 ±4.7%, 23.0 ±12.8%, and 24.0 ±14.3%, respectively. Over a mean follow-up of 1,022±718 days, 26 patients (17.2%) experienced MACCE. In multivariable analysis, LA and LV strain parameters were not independently associated with MACCE, whereas higher global T2 remained significantly associated with events (HR 1.2, 95%CI 1.1-1.4; p=0.005). Kaplan-Meier analysis demonstrated significantly worse MACCE-free survival in patients with global T2 >59.5ms and LA long-axis strain <21.4% (log-rank p=0.007).

CONCLUSION: In patients with TTS undergoing CMR, LA and LV strain were not independently associated with MACCE in multivariable analysis; however, combined impaired LA strain and elevated global T2 identified a higher-risk subgroup with shorter time to MACCE.

123634

Tracking Disease Progression using Cardiac Imaging in Hypertrophic Cardiomyopathy: Serial Imaging Data from a Retrospective Multicenter Study

Sara Etteedgui¹, Rafik Tadros¹, Sewanou Hermann Honfo²

¹Université de Montréal, ²Montreal Heart Institute

PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: To characterize longitudinal changes in hypertrophic cardiomyopathy through four key parameters - Maximum Left Ventricular Wall Thickness (MLVWT), Left Ejection Fraction (LVEF), Left Atrial Diameter (LAD) and Left Atrial Volume Indexed (LAVI) - and to assess the value of serial transthoracic echocardiography (TTE) and cardiac magnetic resonance (CMR) for monitoring disease progression.

METHODS: Patients were retrospectively enrolled from the National HiRO-HCM Registry. Each parameter was analyzed independently using serial baseline and follow-up studies from the same imaging modality, creating four corresponding study groups. Mixed linear models were used to calculate annualized change rates and quantify longitudinal trends.

RESULTS / DISCUSSION: The cohort included 1036 patients (37.7% female; mean age 50.7 ± 14.5 years) with a median follow-up of 5.31 years (IQR 2.48-9.64). Baseline values were: MLVWT 17.01 ± 4.46 mm (N = 638), LVEF 64.54 ± 6.95% (N = 597), LAD 39.59 ± 5.73 mm (N = 565), and LAVI 35.27 ± 12.77 mL/m² (N = 547). Over time, significant annualized increases occurred in MLVWT (0.065 ± 0.019 mm/year), LAD (0.315 ± 0.031 mm/year), and LAVI (0.528 ± 0.066 mL/m²/year), while LVEF decreased (-0.343 ± 0.039 %/year) (all p < 0.001). Follow-up duration explained only a small proportion of variability in parameter changes (R² < 0.07).

CONCLUSION: Longitudinal changes in key HCM imaging parameters were limited but statistically significant, reflecting the slow remodeling nature of the disease. However, inter-patient variability remained unexplained by time alone, highlighting the need to explore additional determinants of individual disease progression and ensure targeted monitoring.

123612

Evaluating Radiation Safety Knowledge and Dose Awareness Among Canadian Healthcare Trainees: A Multi-centre Study

Eray Yilmaz¹, Prisca Hsu², Adam Gaisinsky², Rushali Gandhi², Tiffany Ni², Sabreena Moosa², Justin Phung³, David Li¹, U Yeong Choi⁴, Amol Mujoomdar⁵, ¹

¹Western University, ²University of Toronto, ³University of Ottawa, ⁴McMaster University, ⁵London Health Sciences Centre, Victoria Hospital

PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: The utilization of medical imaging in Canada has doubled from 2000 to 2016. While advances in medical imaging technology have enhanced diagnostic capabilities, radiation exposure to patients and healthcare workers remains a consideration in clinical practice. Previous single-institution studies have identified knowledge gaps among trainees regarding radiation doses associated with common imaging examinations and core principles of radiation protection. However, a comprehensive assessment of radiation safety knowledge among the Canadian training programs has not yet been conducted. This study aims to evaluate radiation safety knowledge, dose awareness, and familiarity with radiation protection principles among medical, nursing, and radiography students, as well as residents from various specialties across Canada.

METHODS: A cross-sectional survey will be administered to 150 trainees via Qualtrics. The survey will assess self-reported knowledge, objective knowledge of radiation doses from common imaging studies, personal protective equipment use, and understanding of ALARA (As Low As Reasonably Achievable) principles. Descriptive and comparative statistical analyses will characterize responses across training levels and specialties. Participants may opt into semi-structured virtual interviews (30 mins) to explore sources of radiation safety education and perceived barriers to implementing best practices.

RESULTS / DISCUSSION: Data collection is ongoing with early results showing various levels of self-reported and demonstrated knowledge. We anticipate to identify variability across training site and practical barriers to radiation safety education implementation.

CONCLUSION: This study will provide the first national assessment of radiation safety knowledge among Canadian trainees across multiple disciplines. Findings will inform the development of standardized educational interventions to enhance radiation safety practices in training programs.



123584

Performance of CEUS LI-RADS v2017 Major Feature Combinations: Individual Patient Data Meta-Analysis

Rawan Awad¹, Haresh Naringrekar², Robert G. Adamo³, Eric Lam⁴, Mostafa Alabousi⁵, Mohammed Kashif Al-Ghita¹, Jean-Paul Salameh³, Mustafa R. Bashir⁶, Andreu F. Costa⁷, Christian B. van der Pol⁸, Hyo-Jin Kang⁹, Matthew DF McInnes³

¹University of Ottawa, ²Thomas Jefferson University Hospital, ³The Ottawa Hospital, ⁴Ottawa Hospital Research Institute, ⁵William Osler Health System, University of Toronto, ⁶Duke University Medical Center, University of North Carolina, ⁷Queen Elizabeth II Health Sciences Centre, Dalhousie University, ⁸Juravinski Hospital and Cancer Centre, Hamilton Health Sciences, McMaster University, ⁹Seoul National University Hospital

PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: The LI-RADS diagnostic algorithm uses contrast-enhanced ultrasound (CEUS) imaging features to standardize hepatocellular carcinoma (HCC) diagnosis in at-risk patients. However, the diagnostic performance of specific major feature combinations has not been comprehensively evaluated. The purpose of this study is to evaluate the diagnostic performance of CEUS LI-RADS v2017 major feature combinations for HCC in at-risk individuals across LI-RADS categories 3-5.

METHODS: A living systematic review and individual participant data meta-analysis was conducted, including studies using CEUS LI-RADS v2016 or v2017 in at-risk patients, identified through searches updated to February 2024. Observations were categorized per LI-RADS guidelines, and PPVs for HCC were calculated for major feature combinations in categories 3-5 using a random-effects one-step model. Risk of bias was assessed using a customized QUADAS-2 tool.

RESULTS / DISCUSSION: Thirteen studies were included, comprising 1575 patients (mean age, 62.8 ± 11.2 years; 79.3% male) with 1594 liver observations (median size, 37.1 mm). Pooled PPVs for HCC increased with higher LI-RADS categories: LR-3, 40.4% (95% CI: 27.2-55.1); LR-4, 69.7% (95% CI: 49.7-84.3); and LR-5, 95.1% (95% CI: 90.2-97.6). Major feature combinations performed similarly within each category. Most studies had moderate to high risk-of-bias due to retrospective design, but sensitivity analysis of low risk observations showed similar results.

CONCLUSION: CEUS LI RADS demonstrated progressively higher PPVs from LR 3 to LR 5, and major feature combinations performed similarly within categories, supporting internal consistency of the system. Although only PPVs were assessed, the results align with CT/MRI LI-RADS trends, with wider confidence intervals in CEUS reflecting smaller sample sizes.

123610

Automated and Anonymized On-Device Computer Vision Model to Classify CT-Suite Workflow and Derive Operational Performance Indicators

Maliha Imami¹, Alex Yu¹, Aly Fawzy¹, Marienell Talla², Khibshan Pathmanathan³, Andrew Brown¹

¹University of Toronto, ²Saint Michael's Hospital, ³Toronto Metropolitan University

PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: Timely CT access depends on efficient patient throughput, yet most sites lack continuous, objective measurement of CT processes. We developed and evaluated a fully automated, privacy-preserving computer-vision (CV) method to classify CT room states and derive key performance indicators (KPIs) for CT workflow.

METHODS: A dual-spectrum ceiling camera provided visible video for on-device analysis and thermal video for anonymized ground truth. The system tracked room person-count and CT-bed occupancy to identify four in-room events (preparation, scan, discharge, empty). Thermal clips were double-annotated for the same in-room events by four readers blinded to model outputs; interrater reliability was quantified with Cohen's κ . Model performance was evaluated as overall and per-event accuracy and F1 (see Figure 1c for all metrics, and 1b for confusion matrix). Workflow KPIs included number of scans, patients per hour, cycle time, and scanner utilization.

RESULTS / DISCUSSION: We analyzed 47.62 hours of CT operating time across 3 days (July 28-30, 2025). Interrater agreement for dual-annotation was almost perfect ($\kappa=0.976$, 95% CI 0.9748-0.977). Overall model performance was 90.2% accuracy with macro-F1 79.2%. Per-event metrics are displayed in Figure 1b-c. KPIs (model vs ground truth) were: 51 vs 52 scans, patients per hour of 2.74 vs 2.68 ($p>0.99$), cycle time of 14.42 vs 16.45 minutes per patient and room utilization of 75.84% vs 70.80%.

CONCLUSION: Our CV approach accurately classified CT room states and produced practical KPIs without PHI or added staffing resources. This can support bottleneck identification, targeted interventions, and ongoing monitoring. Prospective, multi-site trials are planned to evaluate generalizability and operational impacts.

FRIDAY APRIL 17, 2026

2:45 PM – 4:15 PM

Radiologist-in-Training Research Project Competition Oral Presentations

Moderator: Elsa Ruprecht

Judges: Scott Adams, Natalia Gorelik, Ian Macdonald

122811

F-DOPA PET/CT for Differentiating Primary Brain Tumor Recurrence from Radiation Necrosis: A Canadian Experience

Shihan Chen, Jessica Duma, Egirah Omene, Jay Easaw, Kelvin Young, Jonathan Abele,

University of Alberta

PRESENTER'S LEVEL OF TRAINING: Resident

OBJECTIVE: Gliomas are the most common adult CNS tumors. Subtypes include astrocytoma, oligodendroglioma, and glioblastoma, the latter showing up to 90% progression within two years. Differentiating post-treatment tumor progression from radiation necrosis (RN) is critical, as management strategies differ, yet MRI is often inconclusive. While FDG-PET has limited value, amino acid tracers such as F-DOPA show higher sensitivity and specificity. This retrospective study evaluates the diagnostic accuracy of F-DOPA PET/CT in distinguishing post-treatment tumor progression from RN and assesses the prognostic value of F-DOPA PET quantitative parameters.

METHODS: We reviewed F-DOPA PET/CT scans from 51 patients (86 lesions) with suspected primary brain tumor progression. Images were analyzed quantitatively, obtaining the following parameters: SUVmax, lesion-to-striatum (L/S) and lesion-to-contralateral-cortex (L/CC) ratios, metabolic tumor volume (MTV), and total lesional glycolysis (TLG). Diagnostic validity was assessed, and optimal thresholds were determined. Survival and glioblastoma subgroup analyses were also performed. PET results were compared with clinical-radiological follow-up and/or histopathology.

RESULTS / DISCUSSION: Post-treatment tumor progression was identified in 85% of brain lesions, with a sensitivity of 92%. The tumor progression and RN groups differed significantly in L/S ratio ($p < 0.05$), L/CC ratio ($p < 0.05$), MTV ($p < 0.001$) and TLG ($p < 0.001$). Optimal F-DOPA thresholds with best diagnostic performance were L/S=1.18, L/CC=1.61, MTV=0.155 and TLG=0.545. Tumor progression group showed shorter progression-free survival.

CONCLUSION: F-DOPA PET/CT represents a valuable modality for differentiating tumor progression from RN in post-radiotherapy primary brain tumors. Incorporation of quantitative parameters may further enhance diagnostic accuracy and provide prognostic information; however, the establishment of standardized guidelines is required to ensure consistent clinical implementation.

122895

Accuracy of RapidAI Compared to Neuroradiologist Interpretation in Evaluating Acute Ischemic Stroke: A Local Experience

Justin Phung¹, Alexandra De Sequeira², Joycelyne Ewusie³, Derek Karanwal³, Asma Al Hatmi³, Crystal Fong³

¹University of Ottawa, ²Royal College of Surgeons in Ireland, ³McMaster University

PRESENTER'S LEVEL OF TRAINING: Medical Student

OBJECTIVE: Despite RapidAI's widescale adoption for acute stroke management, gaps remain in validating its real-world diagnostic impact. Given local observations of RapidAI overestimating infarct size, we sought to evaluate the reliability of RapidAI vs. neuroradiologists at a Canadian comprehensive stroke centre.

METHODS: All CT head and carotid studies (Jan 2020-Aug 2021) from acute stroke activations were retrospectively reviewed. Repeat presentations, no follow-up imaging within 10 days, bilateral infarcts, or hemorrhages were excluded. Alberta Stroke Program Early CT score (ASPECTS) from RapidAI and neuroradiologists were compared to follow-up MR or CT imaging using intraclass correlation coefficient (ICC). Linear mixed-effects model was adjusted for age and sex. Subgroup analyses examined infarct burden and infarct location (cortical vs. deep basal ganglia).

RESULTS / DISCUSSION: 490 patients (48% female, 52% male; median age 71 years) were included. Neuroradiologists had higher agreement with the reference standard compared to RapidAI (ICC: 0.632 vs. 0.521). RapidAI had a smaller adjusted difference ($\beta = -0.19$; $p = 0.009$) compared to neuroradiologists ($\beta = 0.68$; $p < 0.001$). RapidAI tended to underestimate ASPECTS (overcall infarct volume) and neuroradiologists overestimated ASPECTS (undercall infarct volume). Neuroradiologists had higher ICCs compared to RapidAI in deep infarcts (0.689 vs. 0.453) and ASPECTS 6-10 cases (0.477 vs. 0.204), while RapidAI had higher agreement for ASPECTS 0-5 cases (0.245 vs. 0.148).

CONCLUSION: Neuroradiologists demonstrated greater consistency in ASPECTS interpretation for higher ASPECTS cases and deep infarcts, while RapidAI exhibited higher agreement in lower ASPECTS cases. RapidAI is a valuable adjunct requiring cautious use alongside expert neuroradiologist interpretation for clinical judgement.

123060

Automated Calculation of Evan's Index and Midline Shift Using Anatomical Segmentation on Non-Contrast CT

Isaac Valin¹, Guillaume Théaud², Laurent Létourneau-Guillon³, Maxime Cinq-Mars¹

¹Université de Montréal, ²Centre de recherche du Centre Hospitalier de l'Université de Montréal (CHUM), ³CHUM

PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: To develop a multiclass deep learning segmentation pipeline enabling accurate and interpretable quantification of the Evans index and midline shift (MLS) on non-contrast brain CT for neurocritical screening.

METHODS: A multicentre dataset of 105 annotated non-contrast CTs from public sources was constructed, including a spectrum of neurocritical findings. Structures labeled included lateral, third, fourth ventricles, septum pellucidum, falx cerebri. Segmentation architectures (nnU-Net, AutoSeg3D) were evaluated using the Dice coefficient. Post-processing included rigid registration, brain extraction, and automated computation of: (1) MLS via landmark identification with slice-wise measurement, and (2) Evans index (frontal horn to maximal inner diameter of skull ratio). Standardized visual reports enabled rapid verification. External validation used 54 public examples (public dataset not included in the training set). Agreement with manual measurements was assessed by Bland-Altman analysis and intra-class correlation (ICC).

RESULTS / DISCUSSION: Ventricular segmentation achieved high accuracy (Five fold cross-validation Dice ~ 0.98); midline Dice scores ranged 0.56-0.64. External validation on 54 independent examples demonstrated high concordance with clinical reference standards. Evans index agreement was good (ICC 0.79), with a mean error of 0.0141 [95% CI 0.0074-0.0208], demonstrating precise automated quantification for hydrocephalus screening and aligning with published ICC values for inter-rater agreement (0.81-0.98). MLS measurements exhibited good agreement (ICC 0.85) and a mean error of 0.71 mm [95% CI -3.4 to 4.8 mm], mirroring previously reported inter-observer variability (~2 mm).

CONCLUSION: This interpretable segmentation-based pipeline offers reliable extraction of Evans index and MLS for hydrocephalus and brain herniation screening, matching expert reference standards. Model and annotations will be released publicly.

123311

The Environmental Impact of Patient Travel for Outpatient Medical Imaging

Jimin Lee, Hayley Panet, Kate Hanneman

University of Toronto

PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: To quantify greenhouse gas (GHG) emissions occurring from patient travel for outpatient medical imaging procedures to identify reducible emissions from same-day scheduling.

METHODS: Across five imaging sites in an academic center, outpatient CT, MRI, ultrasound, and interventional imaging between April 2022 and March 2025 were evaluated for date of acquisition, location of imaging center, and patient residential postal code. Roundtrip of the shortest geographical route from the patient's residential postal code and the imaging site was multiplied by 400 grams CO₂ equivalents (CO₂e) per mile, an estimated emission in an average passenger vehicle. Potential emission reductions from same-day scheduling for a patient with multiple imaging procedures scheduled within a 30-day period but not the same day were calculated.

RESULTS / DISCUSSION: A total of 672,442 imaging procedures were performed over three years in 112,197 unique patients (54% female, mean age 54.7±17.7 years). Total patient travel-related GHG emissions were 4979 metric tons CO₂e/year, equivalent to 1038 homes' annual electricity use. Median patient travel-related GHG emissions were 6.4 kg CO₂e (IQR 2.4, 14.9) per imaging test. Same-day scheduling could reduce annual travel-related emissions by 733 metric tons CO₂e (14.7%), equivalent to 153 homes' annual electricity use.

CONCLUSION: Patient travel for outpatient imaging generates substantial GHG emissions, equivalent to 1038 homes' electricity use at a single medical imaging department in one year. This data can inform strategies to reduce travel-related GHG emissions in radiology such as scheduling multiple imaging appointments on the same day.

123335

A Cross-sectional Study Assessing the Consistency of Liver Elastography Readings Between 2D-Shear Wave Elastography and Vibration Controlled Transient Elastography in patients with Metabolic Dysfunction-Associated Steatotic Liver Disease

Jacinta Specht, Juan Gonzalez-Abraldes, Toni Whitaker, Mang Ma, Matthew Tam, Christopher Fung

University of Alberta

PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE: To determine if shear wave elastography (SWE) can provide similar diagnostic outcomes for patients with metabolic dysfunction-associated steatotic liver disease (MASLD) as vibration-controlled transient elastography (VCTE).

METHODS: Each MASLD participant (n=106) had elastography measures obtained via both SWE and VCTE. Mean elastography values were obtained from a minimum of ten measurements and were compared to their clinical fibrosis-4 (FIB-4) scores. Pearson's correlation analysis and Bland-Altman plots were used to assess agreement between modalities. Ordinal logistic regression was used to compare predicted liver stiffness values between modalities based on FIB-4 scores. Linear mixed-effects models examined the effect of participant characteristics on predicted liver stiffness. Wilcoxon testing was used to assess within-patient variability measurements.

RESULTS / DISCUSSION: The mean measurement for SWE was 6.65±2.07 kPa compared to 6.95±5.70 kPa for VCTE. There was a moderate positive correlation (0.69, p<0.001) between the modalities and the mean difference was 0.13kPa (limits of agreement: 9.53kPa and -9.26kPa). As mean liver stiffness values increased, VCTE predicted greater mean liver stiffness compared to SWE. Lobulated livers (t = 5.29, p < 0.001) and increased BMI (t = 4.57, p<0.001) were factors more likely to contribute to higher outlier measures, particularly for VCTE compared to SWE. However, for higher risk FIB-4 scores, SWE (37.89%) was predicted to be slightly more likely, compared to VCTE (30.66%), to obtain liver stiffness values that pass the threshold (≤9kPa) for consideration of additional follow-up.

CONCLUSION: SWE provides similar liver stiffness values to VCTE in MASLD patients, however early disease progression may be earlier identified by SWE.

123390

Characteristics of Pancreatic Neuroendocrine Tumours Missed on CT: A Retrospective Analysis to Aid Earlier Detection

Nathan Pitts, Brandon Collins, Timothy Noble, Jacob Kennedy, Eric Sala, Sohaib Al-Asaaed

Memorial University

PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: Determine the percentage of missed pancreatic neuroendocrine tumours (pNETs) on CT imaging and determine common imaging characteristics of missed pNETs to aid radiologists in earlier detection.

METHODS: Patients diagnosed with pNETs between 2010 and 2022 were identified from the regional cancer registry. A retrospective review identified all pre-diagnostic CTs. Requisitions and reports were reviewed to determine whether a pNET was suspected. An abdominal radiologist read the examinations, which did not mention a pNET, to determine if one was present. Detected pNETs were then characterized by the abdominal radiologist using predefined features. Statistical analyses (χ^2 , Fisher's Exact Test, and multiple correspondence analysis) are underway to examine associations among tumour features.

RESULTS / DISCUSSION: Seventy-two patients were identified, of whom 71 had prior imaging (241 CTs). The most common requisition indications were non-specific gastrointestinal or genitourinary symptoms (49.1%) and follow-up of a pancreatic mass (12.7%). Among the included studies, 116 reports (48.1%) did not mention a pNET. When a lesion was misinterpreted, common alternate impressions were a normal pancreas (51.8%) or pancreatic adenocarcinoma (11.8%). Retrospective review identified lesions in 84 (72%) of these scans. Missed pNETs most often involved the pancreatic body or tail, lacked calcifications, cystic change, or ductal obstruction and were primarily hyperattenuating (58.3%). Tumour volumes were right-skewed, with a median of 21.3 cm³ (IQR 8.1-68.5) and a mean of 78.9 cm³ (SD 219.5).

CONCLUSION: pNETs are frequently missed on non-specific abdominal CTs. Characteristic features of missed tumours include hyperattenuating, body- or tail-predominant lesions without ductal obstruction.

123467

Clinical and Sociodemographic Factors Linked to Missed Outpatient Breast Imaging Appointments

Brian Tsang, Jean Seely

University of Ottawa

PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE: Excessive imaging wait times remain a major concern in Canada, with delays costing an estimated \$3.4 billion annually. Although investment in imaging infrastructure is needed, the impact of missed appointments is poorly studied. Breast imaging provides an effective model for studying non-attendance because it is a high-volume outpatient service with standardized time-sensitive pathways. This study measures the prevalence of missed outpatient breast imaging appointments and identifies the sociodemographic and clinical factors associated with non-attendance.

METHODS: We conducted a retrospective cohort study of outpatient breast imaging appointments over a 12-month period (N=53,347). Missed appointments were defined as no-shows or patient-initiated cancellations with <1 day's notice. Factors examined included age, appointment type, prior missed appointments, neighbourhood income, emergency department visits, and imaging wait times. Univariate analyses and multivariable logistic regression identified significant associations.

RESULTS / DISCUSSION: Annual missed-appointment rate was 6.8%. Screening exams had higher non-attendance than diagnostic (OR=1.70, p<0.001). Patients with three or more prior missed appointments had increased odds of missing again (OR=1.60, p<0.001). Living in lower income neighbourhoods was associated with non-attendance (OR=2.03, p<0.001). Three or more emergency department visits within six months was linked to fourfold higher odds of missing an appointment (OR=4.4, p<0.001). Imaging wait times were significantly different, with a median 7-day difference between missed and completed appointments (p<0.001).

CONCLUSION: Missed breast imaging appointments are associated with screening exams, history of prior missed appointments, living in lower-income neighbourhoods, higher healthcare use and longer wait times. Addressing these factors offers an important opportunity to reduce wait times, lower healthcare costs, and improve equitable access to imaging.

123489

Differentiating Inflammatory Myopathies from Muscular Dystrophies Using Functional IVIM and Structural Whole-Body MRI

Sono Khan¹, Fadi Esttaifo¹, Tanay Satarkar¹, Ian Smith², Gerd Melkus^{2, 1, 3}, Kaitlynn Meier-Ross¹, Jodi Warman-Chardon^{2, 1, 4}, Marcos Sampaio^{1, 2}

¹University of Ottawa, ²The Ottawa Hospital Research Institute, ³Carleton University, ⁴The Ottawa Hospital, Children's Hospital of Eastern Ontario

PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: Differentiating inflammatory myopathies (IM) from muscular dystrophies (MD) is important for patient management, yet challenging due to overlapping fat-replacement patterns. We investigated whether integrating functional intravoxel incoherent motion (IVIM) imaging with structural whole-body MRI could identify disease-specific signatures.

METHODS: Multiparametric MRI (Dixon, DWI, IVIM) was performed on controls (N=6), IM (N=11) and MD (N=26) patients. Fat fraction (FF) and apparent diffusion coefficient (ADC) were quantified across 97 whole-body muscles, plus IVIM perfusion fraction (f), diffusion (D), and pseudodiffusion (D*) in 24 mid-thigh muscles. Disease discrimination (IM vs MD) was assessed using ANOVA and ROC for (1) global per-patient averages and (2) per-muscle analyses for evaluation of regional differences. Left/right sides analyzed separately.

RESULTS / DISCUSSION: Global mid-thigh perfusion (f) differed between IM and MD ($16.4\% \pm 7.8$ vs. $11.5\% \pm 2.4$, $p < 0.0001$) with an AUC of 0.76 ($p < 0.05$). Conversely, global FF did not differ between disease categories (AUC 0.58; $p = 0.43$). Per-muscle regional analyses suggest disease-specific signatures: IM patients showed increased perfusion in the anterior thigh (Left Vastus Medialis f; AUC 0.82, $p < 0.01$) and increased diffusion in masticatory muscles (Lateral Pterygoid ADC; AUC 0.95, $p < 0.01$). MD patients, however, showed preferential fatty replacement in the trunk (Trapezius FF; AUC 0.75, $p < 0.05$). Increased FF correlated more strongly with f in IM ($r = 0.42$, $p < 0.0001$) than MD ($r = 0.24$, $p < 0.0001$), supporting distinct disease mechanisms identifiable via imaging.

CONCLUSION: ADC and perfusion, which characterize tissue function, provided better discrimination between IM and MD than FF, a marker of tissue composition. These findings provide support for targeting specific inflammatory hotspots for myopathy assessment.



SATURDAY APRIL 18, 2026

10:30 AM – 12:00 PM

Quality Improvement Competition Oral Presentations

Moderator: Elsa Ruprecht

Judges: Mona El Khoury, Shivaprakash Hiremath, Omar Islam

123148

Reducing Wait Times for Outpatient Liver Biopsy in a Regional Health Authority in Canada

Justin Blackman¹, Vamshi Kotha²

¹University of British Columbia, ²South Island Medical Imaging, Vancouver Island Health Authority

PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE AND BACKGROUND: As the population ages and awareness of early cancer detection rises, healthcare systems face escalating demand for diagnostic investigations, leading to extended wait times for imaging and biopsy services. The purpose of this initiative was to shorten the interval between liver biopsy requisition and procedure completion for outpatients in a regional health authority in Canada. Our project goal was to reduce the median wait time from biopsy requisition to procedure by half.

METHODS: We prospectively collected biopsy requisition and procedure dates for all outpatients at the single medical imaging department for our health region as an outcome measure. There is no 'standard of practice' governing acceptable wait times for outpatient liver biopsies. The impact of delays in cancer diagnosis and treatment varies by tumour type and stage; on average, a 4-week delay in treatment has demonstrated a 6-14% increase in mortality. We documented which biopsies were performed as fine-needle aspirates (FNA) versus core biopsies, and how many angiography beds were appropriated for recovery of liver biopsy patients, as balancing measures. Interventions implemented included centralizing procedure bookings to a dedicated clerk, leveraging excess nursing capacity from the CT and Angiography units to assist with biopsy recovery, and introducing a dedicated proceduralist radiologist shift. A department-wide discontinuation of liver FNAs was simultaneously implemented. Data collection began October 2024 and ended September 2025.

RESULTS: At baseline, the median wait time from requisition to biopsy was 44 days (range 0-116). Following the discontinuation of FNAs, the median wait initially increased to 62.5 days (range 7-83). However, we ultimately achieved a median of 20 days (range 8-47) with exclusively core biopsies performed.

CONCLUSION: In Canada's complex, interdependent healthcare system, durable improvements depend on aligning cultural and structural changes. Targeted workflow redesign and stakeholder collaboration can translate directly into measurable gains in patient care.

123306

Dose Optimization and Image Quality in PET-CT: Aligning with Provincial Technical Recommendations

Hannah Brown¹, Karla Miller², Marne Jamieson², Roshini Kulanthaivelu¹

¹Queen's University, ²Kingston Health Science Center

PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE AND BACKGROUND: PET/CT is inherently a higher-dose modality due to the combined radiation from the CT scan and administered radiotracer, with an average effective dose of 25 mSv. While technical advances have reduced CT-related exposure, FDG doses have remained static at around 5 MBq/kg. Our aim was to reduce PET/CT radiation dose by lowering the administered FDG activity, while confirming ongoing image quality. Image quality was assessed through compliance with the recently published Ontario Health provincial technical standards. A target of >90% was selected.

METHODS: Retrospective analysis comparing radiation dose and technical parameters for PET/CT scans performed before and after reduction of administered FDG dose. From April to June 2025, patients received 5 MBq/kg of FDG. Following pilot testing in July, the dose was reduced to 4.5 MBq/kg from August to October. Patient demographic data including age, sex and BMI were recorded as well as scan indication. Technical parameters assessed outside FDG dose included uptake time, bed position time, serum glucose, CT dose and scan coverage. Additional image quality metrics measured included mediastinal blood pool (MBP) and liver SUVmax, SUVmean, liver standard deviation and calculated SNR. This multidisciplinary initiative involved radiologists and nuclear medicine technologists.

RESULTS: FDG dose was successfully reduced from 5MBq/kg to 4.5 MBq/kg without compromising image quality. 100% of scans pre and post FDG dose reduction fell within the surveyed technical standards reported within the province. Variability in administered FDG dose was observed related to logistics from ordering, delivery, and timing, which affected tracer decay. Additional image quality metrics showed no significant differences pre and post dose reduction. Our results align with published literature demonstrating that dose optimization reduces radiation exposure while preserving diagnostic performance.

CONCLUSION: Successful reduction in FDG dose and subsequent radiation exposure was achieved without compromising image quality, with 100% of scans performed in alignment with provincial technical standards.

123341

Straining to Get It Right: Evaluating the Reporting of Right Heart Dysfunction in CT Pulmonary Angiograms

Navjit Singh, Omid Ebrahimzadeh, Ismail Ali, Lulu Liu, Sobhan Mardan, Brian Lee, Candice Cheung

University of British Columbia

PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE AND BACKGROUND: Pulmonary embolism (PE) is a leading cause of cardiovascular mortality secondary to right heart dysfunction (RHD). The most robust signs of RHD include right ventricle to left ventricle ratio greater than 1.0, interventricular septal bowing, and inferior vena cava contrast reflux. Reporting these findings accurately and consistently is essential. The American Journal of Radiology (AJR) recommends structured reports as this promotes clarity, facilitates decision-making, and is preferred by clinicians. Our objective was to assess the current consistency of reporting RHD on positive PE studies at a Canadian Hospital and implement an intervention to improve this consistency.

METHODS: Pre-intervention, we conducted a retrospective chart review for positive PE studies that mentioned RHD between January 1, 2024 and June 30, 2025. Reports were analyzed for the consistency of describing RHD. Our intervention was an adapted template from AJR listing the three signs of RHD. Our goal was to achieve 100% reporting of the presence or absence of RHD and the three signs of RHD. Post-intervention studies between August 20, 2025 and October 20, 2025 were reviewed. Chi-square analyses were performed at a confidence interval of 95%, comparing pre- and post-intervention results.

RESULTS: 446 pre-intervention and 113 post-intervention studies were included. Post-intervention, we saw a statistically significant increase in reports describing all three signs of RHD (13% vs 37%, p-value <0.001). There was no difference in reporting the presence or absence of RHD (79% vs 80%, p-value 0.83), with a similar percentage of cases not reporting RHD post-intervention.

CONCLUSION: After implementing our template, we saw an improvement in describing the signs of RHD, but there is room for improving the interpretation of these findings to provide a meaningful report. We plan to continue this audit after introduction of PE-RADS and conduct a study comparing axial images versus 4-chamber reformat for reporting RV to LV ratio.

123363

Technetium-99m HMPAO Leukocyte Labelling Efficacy Between Nuclear Medicine Departments in a Canadian City

Cindy Qian¹, Jan Andersson^{1, 2}, Ryan Hung¹

¹University of Alberta, ²Edmonton Radiopharmaceutical Centre & Cyclotron

PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE AND BACKGROUND: Combined technetium-99m (Tc-99m) hexamethylpropylene amine oxime (HMPAO)-labelled leukocyte and Tc-99m sulphur colloid (SC) bone marrow imaging is a well-established technique for diagnosing musculoskeletal infection. In this city, hospital facilities differ in leukocyte labeling capabilities. The Hospitals A & B perform on-site leukocyte labelling, whereas the Hospitals C & D receive labelled leukocytes from the city's central radiopharmacy. This quality-improvement initiative aimed to evaluate the leukocyte-labelling efficacy across the four hospitals.

METHODS: We targeted a 2:1 ratio between labelled leukocyte activity and SC activity based on our local practice. We expect $\geq 90\%$ of combined leukocyte and bone marrow imaging studies should meet this threshold. Pre-intervention data including patient demographics, labelled leukocyte activity, SC activity, and study positivity were collected for all combined Tc-99m-HMPAO leukocyte and Tc-99m-SC bone marrow studies at the various hospitals from November 1, 2023 to January 31, 2024. With collaboration from radiochemists at the radiopharmacy, a review of their leukocyte labelling protocol revealed the use of lower Tc-99m-HMPAO activity and shorter incubation times relative to other sites within the city. The intervention consisted of increasing the Tc-99m-HMPAO activity from 1.4-1.6GBq to 2.7GBq and the incubation period from 10 minutes to 15 minutes. Following the intervention implementation on January 1, 2025, post-intervention data were collected from May 12, 2025 to August 12, 2025.

RESULTS: Pre-intervention, only Hospital A met the target leukocyte to SC activity ratio, with Hospital B approaching the benchmark. After implementing the revised labelling protocol at the radiopharmacy, all four sites achieved the target ($p < 0.0001$).

CONCLUSION: Labelled WBC activity impacts the quality of combined Tc-99m-HMPAO leukocyte and Tc-99m-SC bone marrow studies. This audit identified suboptimal leukocyte labelling at select hospitals requiring off-site labelling. Protocol standardization successfully improved consistency and study quality across all centers.

123571

Diagnostic Performance and Surgical Delay in Parathyroid Imaging: A Calgary Zone Quality Improvement Initiative

Jason Kreutz, Andrew Szava-Kovats

University of Calgary

PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE AND BACKGROUND: Accurate adenoma localization in primary hyperparathyroidism (PHPT) enables minimally invasive parathyroidectomy. Nuclear medicine (NM) sestamibi imaging and four-dimensional CT (4DCT) are widely used, but strategies vary-some centres employ NM, 4DCT, or both modalities. Since the introduction of 4DCT in Calgary, its role in the PHPT pathway has not been studied. Anecdotally, many NM studies are non-localizing, prompting subsequent 4DCT and potential surgical delays. The purpose of this initiative was to assess whether local practice achieves published benchmarks for diagnostic accuracy.

METHODS: 200 patients who underwent NM and/or 4DCT before parathyroidectomy were reviewed retrospectively. Patients were excluded if they lacked biochemical evidence of PHPT or if surgery had not yet occurred. Operative findings served as the reference standard. A per-gland analysis was performed to calculate sensitivity and positive predictive value (PPV), and these results were compared with published ranges.

RESULTS: 85 patients met inclusion criteria. NM demonstrated a sensitivity of 36.8% and a PPV of 68.6%, values that fall well below the published sensitivity range of 67-86% and the reported PPV of approximately 91%. 4DCT achieved a sensitivity of 60.3% and a PPV of 80.9% - near the lower end of the published sensitivity range of 62-88% and PPV range of 84-90%, but more closely approximating expected benchmarks than NM. The findings indicate that NM performance in Calgary is substantially lower than reported in the literature, often necessitating additional 4DCT and plausibly contributing to delays in operative management. By comparison, 4DCT demonstrated performance closer to benchmark values, though still slightly reduced. Improving NM imaging technique and reporting, or alternatively shifting toward broader initial use of 4DCT, may reduce the need for sequential imaging.

CONCLUSION: NM parathyroid imaging in Calgary performs significantly below published benchmarks. Broad stakeholder engagement-including surgeons, radiologists, and technologists-will be required to improve diagnostic performance and streamline imaging pathways.

123608

Ultrasound and Gallbladder Polyps: Appropriateness of Current Reporting Practice and Follow-Up Recommendations

Michaela Perla, David Leswick

University of Saskatchewan

PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE AND BACKGROUND: There is significant variation in reporting practices and management recommendations of gallbladder polyps visualized on ultrasound. This is likely due to multiple different, often changing guidelines, and paucity of data on malignant potential of polyps. New research suggests most polyps are benign and previous management recommendations were too conservative. We utilize the 2022 SRU consensus on the Management of Incidentally Detected Gallbladder Polyps, which the CAR endorsed in June 2025, with clear risk stratification and management based on polyp morphology, size, and patient risk factors.

METHODS: 2420 abdominal ultrasounds performed over three months were reviewed for the presence of gallbladder polyps. 141 cases met inclusion criteria. Each report was assessed for polyp number, size, morphology, and appropriate follow-up recommendation based on the SRU guidelines. Our intervention stage then recommended use of Powerscribe templates and technologist worksheets containing the endorsed guidelines. Following intervention, another 1391 abdominal ultrasounds performed over two months were reviewed. 91 cases met inclusion criteria. The third month of post-intervention data will be presented at the CAR meeting.

RESULTS: Pre-intervention, 111/141 cases (79%) reported number of polyps, 136/141 (96%) reported polyp size, and 12/141 (9%) reported polyp morphology, with only 40/141 (28%) providing appropriate follow-up recommendation using the referenced SRU guidelines. After two months of post-intervention data, 80/91 (88%) reported number of polyps, 89/91 (98%) reported polyp size, 33/91 (36%) reported polyp morphology, and 72/91 (79%) provided the appropriate management recommendation.

CONCLUSION: Before intervention, our institution had wide variability in polyp characterization and management recommendations. Preliminary post-intervention results show improved consistency of polyp description and adherence to the 2022 SRU guidelines. However, polyp morphology remains infrequently reported, emphasizing difficulty in assessing morphology of small polyps. Overall, post-intervention results are promising to reduce patient anxiety and judiciously use healthcare funds to decrease unnecessary follow-up exams and surgical referrals.

123613

Preparing Residents for AI-Integrated Radiology Practice: Needs Assessment and Curriculum Innovation at a Canadian Radiology Program

Kay Wu, Rakhshan Kamran, Alameen Damer, Pascal Tyrrell, Charles Yan

University of Toronto

PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE AND BACKGROUND: Artificial intelligence (AI) is increasingly embedded in radiology workflows, creating an urgent need for resident training that supports safe, effective, and informed patient care. However, specific AI learning needs and preparedness of radiology residents in Canada remain ill-defined. The purpose of this initiative was to evaluate resident knowledge, confidence, and educational needs related to AI and to develop a structured, reproducible curriculum.

METHODS: A cross-sectional, single-site, anonymous survey was distributed to radiology residents (n=44; 75% response rate) across all training years. Measures included prior AI exposure (eg. coursework, degree), confidence across AI competencies (eg. understanding AI outputs, model limitations, and ethical/regulatory considerations), attitudes toward AI, barriers to AI-work-related participation, and preferred curricula formats. Quantitative responses were analyzed descriptively and qualitative responses analyzed thematically. Results were compared against best-practice guidelines for AI education in radiology to identify gaps relative to desired competency standards. A multidisciplinary team of radiologists, residents, data scientists, and medical educators used this data to design a five-module curriculum.

RESULTS: Most residents (93%) reported no formal background in AI, yet 75% used AI tools in clinical and educational contexts and 64% were optimistic about AI's impact on radiology. The majority (68%) expressed low confidence in key competencies. Residents felt current teaching was insufficient and lacked relevance, strongly endorsing a desire for a structured, longitudinal curriculum emphasizing practical skills, clinical use cases, and clear pathways to AI research participation. Barriers to research involvement included lack of mentorship and limited data access. These findings informed an interactive, new five-module curriculum covering machine and deep learning fundamentals, ethics/bias, regulation, deployment, and research engagement.

CONCLUSION: There are significant gaps in AI preparedness among radiology residents. The new proposed curriculum represents a targeted quality-improvement intervention to enhance resident readiness for AI-integrated clinical practice. Future steps include implementation, iterative refinement, and potential expansion to national residency programs.

123638

Striking a Balance: Neuroimaging in the Vertiginous Patient

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PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE AND BACKGROUND: Non-contrast CT and CTA head and necks are frequently requested for patients with vertigo, despite known low diagnostic yields. While no Canadian guidelines exist, the American College of Radiology (ACR) recently released consensus guidelines on appropriate imaging utility in the work-up of vertigo. The goals of this quality improvement study were to: 1) Evaluate department compliance with ACR consensus guidelines on CT imaging for vertigo, 2) Evaluate clinical factors influencing imaging requests and scan outcomes in the vertiginous patient.

METHODS: Imaging reports for CT scans performed for vertigo over the past three years were collected from a Canadian Hospital (n=1554). From these, pertinent data were extracted, including patient age, vertigo features, neurologic deficits, risk factors, and imaging findings. These data were used to determine case compliance with the 2023 ACR guidelines, namely that CT scans be performed only for patients presenting with either: 1) Acute persistent vertigo with neurologic deficits on physical exam, or, 2) Chronic recurrent vertigo associated with brainstem/cerebellar localizing deficits. Our primary outcome was the percent of compliant scans, with a target of 100%. Secondary analyses assessed the influence of vertigo features and extracted clinical variables on scan outcomes using Chi-squared tests and logistic regression. False discovery rate was used to correct for multiple comparisons, with significance set at $q < 0.05$.

RESULTS: Only 10.6% of CT scans were compliant with ACR guidelines. Detection rates of underlying pathology were greater in cases compliant vs non-compliant with ACR criteria (14.8% vs 4.6%, OR=3.6, 95% CI=2.2-6.1). Presence of localizing neurologic deficits was the only clinical variable predictive of imaging pathology in logistic regression (OR=4.0, 95% CI=1.7-5.3).

CONCLUSION: Our findings suggest CT scans are over-utilized in the work-up of vertigo. Further, the data supports the utility of focal neurologic deficits in selecting patients for imaging. This should be emphasized in future quality improvement interventions.



120644

MRI Features of Endometrial Carcinoma with Exophytic Polypoidal Growth and Endocervical or Vaginal Protrusion: A Pictorial Essay

Sergio Rangel-Suarez, Jacob McGee, Ji-Hyun Jang, Mousumi Bhaduri

Western University-LHSC

PRESENTER LEVEL OF TRAINING: Fellow

LEARNING OBJECTIVES:

- Illustrate MRI findings of Endometrial Carcinoma with Exophytic Polypoidal Growth and Endocervical or Vaginal Protrusion
- Review surgical nuances and their radiologic correlation.
- Describe oncologic management and prognostic considerations.

BACKGROUND: Exophytic polypoidal endometrial carcinoma (EC) extending into the endocervical canal or vagina is an uncommon but clinically significant presentation. It poses diagnostic and staging challenges, impacts surgical approach, and occasionally alters adjuvant treatment decisions. This pictorial essay illustrates MRI findings of such cases, and reviews surgical nuances, prognostic considerations, and oncologic management.

CONCLUSION: After reviewing this educational exhibit, the reader will be able to recognize and understand the key imaging features, clinical implications, and differential considerations related to this topic. The content is intended to enhance familiarity with these concepts and support their integration into daily radiologic practice. In particular, exophytic polypoidal endometrial carcinoma with endocervical or vaginal protrusion is a rare but critical MRI finding. Meticulous multiplanar evaluation and awareness of pathologic patterns are essential for accurate staging and for providing appropriate surgical guidance.

120723

Basic Guide on Abdominal Imaging Radiogenomics and Its Implication on Clinical Practice

Xiaoyang Liu

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PRESENTER LEVEL OF TRAINING: Radiologist

LEARNING OBJECTIVES:

- Understand basic concepts of radiogenomics and influence on radiology practice.
- Overview of common mutations and imaging phenotypes by organ system in a case-based manner.
- Learn how imaging interpretations become more meaningful and specific, when cancer genomics and imaging characteristics are integrated.

BACKGROUND: Clinical cancer care has entered an era of genomics and personalized medicine, allowing improved appreciation of tumor diversity, and the development of new tumor classifications, biomarkers and treatments. Radiologists play a key role in cancer patient management and need to be familiar with the clinical implication of cancer genomics and imaging characteristics. By grasping these concepts, the radiologists will be able to make their imaging interpretations more meaningful and specific, facilitate their multidisciplinary clinical dialogue and provide a better patient-centred care.

CONCLUSION: The “Omics” revolution allows for personalized medicine, where diagnosis, treatment options, and prognostication rely heavily on genomic, epigenomics and transcriptomics profiles for each patient. Radiogenomics is an emerging radiology field that seeks to correlate imaging phenotypes with cancer genotypes. Radiogenomic features, molecular pathways, key radiological findings and their implication in diagnosis, treatment and prognostication will be discussed by organ system, including liver (hepatocellular carcinoma), pancreas (pancreatic ductal adenocarcinoma), colorectal cancer, small bowel (gastrointestinal stromal tumor), adrenal glands (pheochromocytomas and paragangliomas).

120780

Implementing Cardiovascular Risk Screening Using Breast Arterial Calcifications on Screening Mammography: A Multidisciplinary Framework

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PRESENTER LEVEL OF TRAINING: Radiologist

LEARNING OBJECTIVES:

- Explain the significance of breast arterial calcifications (BAC) detected on routine mammography as a marker of cardiovascular risk in women.
- Describe the multidisciplinary roles and collaboration required among radiologists, cardiologists, primary care providers, and other stakeholders in implementing BAC-based cardiovascular screening.
- Identify the clinical workflow and infrastructure needed to integrate BAC assessment into routine mammographic interpretation and reporting.
- Develop strategies to educate patients and healthcare teams about the relevance of BAC findings and appropriate follow-up care pathways.
- Assess the opportunities, challenges, and health equity implications in opportunistic screening through BAC reporting on mammography.

BACKGROUND: Cardiovascular disease (CVD) is the leading cause of death in women. Women are five times more likely to die from heart disease than from breast cancer, however, most women are unaware of their cardiovascular risk status. There are limited opportunities or awareness on how to proactively screen for CVD in women, and many at-risk women are missed by current screening tools. Breast arterial calcifications (BAC) are associated with increased cardiovascular risk and may serve as a surrogate tool for early identification of asymptomatic patients at higher risk of cardiovascular disease. With recent changes to breast cancer screening guidelines recommending screening mammography beginning at age 40, more women are attending routine screening mammogram appointments, increasing the potential for impactful opportunistic or dual screening for cardiovascular risk using BAC. Binary reporting of BAC on mammography, with an emphasis in women under 55 years of age, can identify women at higher cardiovascular risk and allow for earlier implementation of risk-mitigating strategies. The purpose of this educational exhibit is to provide an overview of the clinical relevance and utility of harnessing breast arterial calcifications (BAC) and their association with increased cardiovascular risk as a tool for opportunistic screening, and to describe a framework for implementation of BAC reporting and management.

CONCLUSION: Multidisciplinary collaboration, education, and engagement between radiologists, primary care, and cardiologists is vital to ensure sustainable implementation and to optimize patient outcomes. Leveraging artificial intelligence offers the potential to enhance BAC detection and establish standardized methods for assessment and quantification. Establishing a combined breast cancer and cardiovascular screening program outlining workflow integration and defining clinical management pathways will better enable women and their healthcare providers to understand and implement preventive strategies that enhance overall health outcomes.

122358

A Novel Visual Algorithmic Framework for Teaching Imaging Indications and Decision Pathways: Bridging the Educational Gap in Undergraduate Radiology Education

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McMaster University

PRESENTER LEVEL OF TRAINING: Medical Student

LEARNING OBJECTIVES:

- Highlight the importance of imaging indication education in the undergraduate medical curriculum
- Offer a user-friendly visual framework that integrates evidence-based imaging guidelines (CAR and ACR Appropriateness Criteria)
- Promote evidence-based, resource-conscious, and sustainable imaging
- Discuss its benefit in fostering interdepartmental collaboration and cross-disciplinary learning

BACKGROUND: Imaging appropriateness and indications are critical yet underrepresented components of undergraduate medical education. Learners often encounter imaging requisitions with limited guidance or prior teaching, resulting in a gap between guideline knowledge and clinical application. The Imaging Algorithm Handbook is developed at a Canadian University to bridge this gap through a novel visual and algorithmic framework. Each section presents a concise flowchart that synthesizes Canadian Association of Radiologists (CAR) and American College of Radiology (ACR) imaging indication guidelines, applied to common clinical scenarios (e.g., right lower quadrant pain, pulmonary embolism, minor head trauma). By introducing this framework early in medical training within clinical settings, learners can develop practice patterns that reinforce evidence-based, resource-conscious, and sustainable imaging from the outset. Furthermore, it fosters interdisciplinary learning, highlighting radiology as an integral component of other medical disciplines.

CONCLUSION: The Imaging Algorithm Handbook is a novel, visually driven framework for teaching imaging indications and decision pathways. It could serve as a valuable tool for bridging the educational gap while promoting evidence-based, sustainable, and collaborative radiology education.

122515

MRI Evaluation of Polyethylene Glycol Hydrogel Spacer in Treatment of Prostate Cancer: A Pictorial Review

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PRESENTER LEVEL OF TRAINING: International Medical Graduate

LEARNING OBJECTIVES:

- To review the role and mechanism of polyethylene glycol (PEG)-based hydrogel spacer during prostate brachytherapy.
- To briefly review the workflow of SpaceOAR™ insertion
- To outline the MRI protocol for spacer gel evaluation.
- To illustrate normal MRI appearances of spacer gel.
- To demonstrate MRI evaluation of malpositions and complications.

BACKGROUND: Introduction - Prostate cancer is one of the most common malignancies in men, and radiation therapy remains a cornerstone of curative management. However, the rectum's close proximity to the prostate makes it vulnerable to radiation toxicity, including proctitis and rectal bleeding. To mitigate this, polyethylene glycol (PEG)-based hydrogel spacers, such as SpaceOAR™, are injected into the rectoprostatic space to increase the separation between the prostate and rectum, reducing rectal dose by up to 80%. The gel remains stable for approximately three months and is naturally resorbed thereafter. At a Canadian provincial cancer program, SpaceOAR™ is routinely employed for radiotherapy planning, and MRI serves as the reference imaging modality for evaluating spacer position, morphology, and complications. **MRI Protocol** MRI is performed one week post-insertion using the following sequences: • Sagittal T2-weighted: evaluates prostate-rectum separation and craniocaudal gel extent. • Axial T2-weighted: assesses symmetry, thickness (5-15 mm considered optimal), and proximity to rectal wall. • Coronal T2-weighted: confirms lateral extension and uniform distribution. No antiperistaltic agents or rectal preparation are required. **Normal MRI Appearance** A correctly placed hydrogel spacer appears as a T2-hyperintense, well-defined cushion between the prostate and rectum, extending from the apex to the base. Uniform thickness and midline positioning are expected. Minor asymmetry is acceptable if rectal displacement is adequate. **MRI-Detected Malpositions and Complications** Malposition includes superior (posterior to seminal vesicles) or inferior (toward perineum) displacement. Rectal wall infiltration (RWI) is graded on T2 MRI: • Grade 0: no wall signal change • Grade 1: edema without penetration • Grade 2: partial muscularis involvement • Grade 3: full-thickness infiltration or Other complications including fistula formation, venous intravasation (linear T2 signal), and abscess formation (T2-bright fluid) have been significantly rare.

CONCLUSION: MRI provides superior soft-tissue resolution for evaluating spacer geometry, detecting rectal wall infiltration, and identifying complications. Accurate MRI interpretation ensures optimal radiotherapy planning and enhances treatment safety in prostate cancer patients treated with SpaceOAR™ hydrogel.

122673

MRI-Guided Cervical Cancer Brachytherapy: Technique and MRI Evaluation - A Pictorial Review

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PRESENTER LEVEL OF TRAINING: International Medical Graduate

LEARNING OBJECTIVES:

- To summarize the role of brachytherapy in the definitive management of cervical cancer.
- To describe the structure and workflow of the Geneva Universal Gynecological Applicator (Elekta).
- To illustrate magnetic resonance imaging (MRI) interpretation following applicator insertion and during post-treatment tumour response assessment.

BACKGROUND: Cervical cancer remains one of the most common gynecologic malignancies. For locally advanced disease, the standard of care involves combined external-beam radiation therapy (EBRT) and high-dose-rate brachytherapy with concurrent cisplatin chemotherapy. Brachytherapy enables precise delivery of a highly conformal dose to the cervix and parametrium while sparing adjacent organs. The introduction of MRI-guided adaptive brachytherapy (IGABT) has revolutionized treatment planning by providing unparalleled soft-tissue contrast, allowing accurate visualization of tumour extent, applicator geometry, and organs at risk. This imaging-based approach has led to improved local tumour control and decreased treatment-related morbidity compared with traditional point-based dosimetry. Brachytherapy Applicator and Insertion WorkflowAt our facility - a Canadian Cancer Centre - the -Geneva Universal Gynecological Applicator (Elekta) is used for cervix brachytherapy delivery. It is a versatile modular system used for intracavitary and interstitial brachytherapy. It consists of an intrauterine tandem, interchangeable ovoids or ring components, and integrated channels for interstitial needle placement. Under general anesthesia or conscious sedation, the tandem is inserted through the cervical canal, followed by attachment of ovoids or a ring. When parametrial involvement exists, interstitial needles are inserted through guiding tubes to enhance coverage. Vaginal packing and a rectal retractor maintain implant stability and help to reduce dose to the vaginal walls and rectum. MRI Evaluation and Tumour Response AssessmentFollowing applicator insertion, T2-weighted sagittal, axial, and coronal MRI sequences are obtained to confirm correct tandem orientation, ovoid symmetry, and needle trajectory. MRI also delineates the gross tumour volume, high-risk, and intermediate-risk clinical target volumes. During subsequent fractions, MRI demonstrates progressive loss of high T2 signal intensity within the cervix and parametria, indicating therapeutic response. Persistent focal hyperintensity suggests residual viable tumour, guiding adaptive plan modification to achieve optimal local control while decreasing adverse effects with respect to bladder or bowel function at 1 and 3 months after completing treatment.

CONCLUSION: MRI-guided brachytherapy provides precise, image-adapted radiation delivery. Radiologist expertise in MRI interpretation of applicator placement and treatment response is key to optimizing accuracy and improving outcomes.

122741

AI Powered Tools for Radiology Residency Program Administration

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PRESENTER LEVEL OF TRAINING: Medical Student

LEARNING OBJECTIVES:

- Identify high-impact applications of AI that can enhance radiology program administration.
- Examine how AI tools can improve efficiency in scheduling, curriculum oversight, and radiology trainee evaluation within postgraduate medical education (PGME).
- Appraise the ethical, privacy, and bias-related considerations when adopting AI solutions in radiology education.

BACKGROUND: Radiology program leaders face increasing administrative burdens including curriculum mapping, competency tracking, and complex scheduling, all amid growing accreditation and wellness demands. Strategic applications of artificial intelligence (AI) tools reduces repetitive workloads and offers scalable solutions, allowing radiology administration to divert greater focus towards radiology mentorship and educational quality improvement. This exhibit presents emerging evidence-based AI techniques for radiology program administration in a comprehensive and digestible format, highlighting the current state of each application, its potential for success, and best tips and practices to implement these tools. We also highlight ethical challenges, privacy barriers, and bias considerations to evaluate before adoption by radiology program leaders.

CONCLUSION: AI tools have the potential to change radiology administrative practices by providing more workload support, allowing program leaders to reclaim time for strategic PGME planning and operations. By applying an evidence-based approach that responsibly manages the systemic risks of bias and data security, programs can employ evidence-based AI tools to sustain high-quality training for future radiologists.

122873

Establishing a Workplace-Based Assessment (WPBA) Tool for Resident Report Crafting

John Karp, Scott Simpson

University of Pennsylvania

PRESENTER LEVEL OF TRAINING: Resident

LEARNING OBJECTIVES:

- Describe workplace-based assessments (WPBA) as they relate to entrustable professional activities (EPAs), competency-based medical education (CBME) and formative feedback
- Review how we instituted the first non-procedural diagnostic radiology WPBA on resident report crafting
- Describe barriers, solutions and evaluation methods for WPBA deployment.

BACKGROUND: Competency-based medical education (CBME) establishes and appraises proficiency in entrustable professional activities through real-time assessments of specific, observable tasks necessary for effective healthcare practice. This is in contrast to most current radiology residency educational models that focus on time to complete specific tasks, summative feedback, and passing high-stakes exams. Although CBME has been implemented in Canadian and United Kingdom radiology education, the United States has yet to widely adopt these practices. We created a workplace-based assessment (WPBA) to help guide and capture real-time formative feedback delivered by attending radiologists on resident report crafting during the workday. This form focuses on answering three critical questions: 1. Was the report clear, concise, organized and proofread, 2. Did the report attempt to resolve key clinical questions and synthesize findings, 3. Were the comparisons and history provided sufficient to avoid unnecessary chart review.

CONCLUSION: This educational exhibit will provide an overview of our WPBA tool, review methodology in form creation, assessment, and deployment, and provide guidance for other radiology programs interested in adopting similar assessments. In addition, early insights from our implementation experience will be discussed.

122911

Practical Approach to Using Contrast-Enhanced Mammography in Your Everyday Breast Imaging Practice

Caitlin Ward

Huron Perth HealthCare Alliance

PRESENTER LEVEL OF TRAINING: Radiologist

LEARNING OBJECTIVES:

- Identify appropriate uses of CEM
- Understand what findings may or may not enhance
- Learn how to interpret enhancement
- Develop a workflow to help in your practice
- Identify special scenarios and skills

BACKGROUND: Contrast enhanced mammography (CEM) has been available in Canada for under ten years. In the past few years, as literature has again and again lauded its incredible performance and proven its efficacy, CEM has rapidly become more prevalent and widespread. This is owed much to its relative affordability and accessibility in comparison to other vascular based imaging such as MRI. It is less user dependent than ultrasound and relies on infrastructure that is already present in most medical imaging departments which have mammography and/or CT. Many radiologists however may have had limited or no exposure during their training or previous work experiences. CEM was developed on the premise of capitalizing on neoangiogenesis in neoplasia and malignancy, similar to CT or MRI. In studies thus far, CEM has been shown to have similar specificity to digital mammography and only slightly inferior sensitivity to MRI, with a cancer detection rate up to 15/1000. Current uses include for assessment of the symptomatic breast; problem solving in diagnostic setting; for local staging of breast malignancy; as an alternative to MRI; for biopsy of sonographically occult findings. Both benign and malignant pathologies may enhance, however, findings which do not enhance are likely to be benign. Therefore, the imaging features on all modalities, including morphology and ancillary features must be interpreted in concert along with the enhancement in order to accurately and appropriately interpret CEM. Many users will be more familiar with tomosynthesis. Although it may sometimes be necessary, the use of both tomosynthesis and CEM on a single patient will increase radiation dose. In addition, CEM has the added risk of a contrast reaction/hypersensitivity and requires more skill and time for the technologist.

CONCLUSION: CEM is a valuable, accessible tool for radiologists and patients and can greatly improve patient care. Identifying an appropriate workflow for your practice setting and understanding the advantages and disadvantages of CEM in comparison to other imaging modalities including tomosynthesis, is important to understanding how it may help your practice.

123012

A Radiology Resident's Guide to Traumatic and Non-Traumatic Bowel Emergencies: A Case-Based Review

Sushmitha Puttappa Shivagange, Blair Macdonald

University of Ottawa

PRESENTER LEVEL OF TRAINING: Fellow

LEARNING OBJECTIVES:

- Review the spectrum of acute bowel abnormalities encountered in the setting of trauma and emergency.
- Identify imaging findings and recognize patterns of blunt and penetrating bowel injury.
- Discuss the clinical presentation, pathophysiology, and imaging features of non-traumatic acute bowel pathologies.
- Outline the role of imaging in guiding clinical management and surgical decision-making in patients with acute bowel pathology.

BACKGROUND: Bowel and mesenteric injuries are reported in 1-5% of patients with blunt abdominal trauma. The small bowel vasculature is more frequently injured than the colon, while the ileocecal region being the most frequently affected. In cases of penetrating trauma, the incidence of bowel injuries increases markedly, occurring in up to 17% of patients, and represents the most commonly injured sites. Computed tomography (CT) offers excellent sensitivity and specificity for identifying bowel injuries and serves as the primary diagnostic tool in hemodynamically stable patients. Acute non-traumatic bowel emergencies comprise a broad spectrum of life-threatening conditions, including ischemia, obstruction, perforation, internal hernia and volvulus. Clinical presentations are often nonspecific with overlapping history and physical examination findings making imaging essential for rapid and accurate diagnosis. CT serves as the primary modality for detecting key imaging findings and assessing severity. Understanding the clinical context, pathophysiology, and characteristic imaging patterns is crucial for distinguishing etiologies and guiding timely management and surgical decision-making in patients with acute bowel pathology.

CONCLUSION: Acute traumatic and non-traumatic bowel pathologies are frequent and challenging scenarios, with potentially significant clinical consequences. Prompt recognition and accurate characterization on imaging is crucial for guiding management and emergent surgical interventions. This case-based review equips radiology residents and clinicians to approach these cases with confidence and make timely, informed decisions in emergency and trauma settings.

123020

To Perform a Screw Fixation in Interventional Radiology

Sylvain Grange^{1,3}, Nicolas Stacoffe², Jean-Pierre Pelage³, Rémi Grange¹, Louis-Martin Boucher³, Natalia Gorelik³

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PRESENTER LEVEL OF TRAINING: Radiologist

LEARNING OBJECTIVES:

- To introduce the learner to the principles and practice of percutaneous screw fixation in Interventional Radiology
- To explain the main indications for screw fixation and describe the planning and technical steps of the procedure
- To identify the necessary equipment, anticipate potential complications, and summarize the clinical outcomes and teaching points that make this technique a valuable component of modern image-guided therapy.

BACKGROUND: Screw fixation is increasingly performed by interventional radiologists as part of the minimally invasive management of bone instability. Traditionally considered the domain of orthopedic or spine surgery, advances in imaging guidance, implant technology, and percutaneous techniques have allowed radiologists to extend their role beyond cementoplasty or vertebroplasty into the field of mechanical stabilization. The procedure involves the insertion of cannulated screws under fluoroscopic or CT guidance to provide structural reinforcement to bones weakened by trauma and/or tumor. It can be performed as a stand-alone treatment or in combination with cement augmentation to maximize stability.

CONCLUSION: From an educational perspective, screw fixation illustrates the progressive expansion of the interventional radiologist's role into domains once reserved for open surgery. It requires not only technical dexterity but also strong anatomical knowledge, a capacity for three-dimensional visualization, and careful patient selection. For the learner, several teaching points are worth emphasizing. First, accurate imaging review and trajectory planning are the cornerstone of safety and success. Second, the procedure should always be controlled in multiple planes, as a trajectory that seems correct in one view may be dangerous in another. Third, in osteolytic disease, cement augmentation can provide additional mechanical strength, but the operator must remain alert to the possibility of leakage. Finally, a CT performed immediately after the procedure is invaluable to document correct screw placement and to rule out complications before the patient leaves the interventional suite. In conclusion, percutaneous screw fixation in Interventional Radiology is a safe and effective minimally invasive technique for stabilizing fractures and reinforcing weakened bone. It reduces pain, improves mobility, and offers an alternative to open surgery in patients with significant comorbidities or oncological disease. The procedure demands careful planning, skilled execution, and constant vigilance for complications. For teaching purposes, it provides an excellent example of how image-guided interventions can directly improve patient outcomes by combining anatomical knowledge, technological precision, and multidisciplinary collaboration.

123024

Launching a Percutaneous Osteosynthesis Activity under Image Guidance in Interventional Radiology: Lessons from French and Canadian Experiences

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PRESENTER LEVEL OF TRAINING: Radiologist

LEARNING OBJECTIVES:

- To introduce learners to the principles and practical implementation of percutaneous screw fixation performed under image guidance in interventional radiology.
- To describe the main indications for screw fixation and outline the procedural workflow, from preprocedural planning to technical execution.
- To review the required equipment, anticipate potential complications, and summarize key clinical outcomes supporting this technique as a valuable addition to modern image-guided musculoskeletal therapy.

BACKGROUND: Percutaneous screw fixation has recently emerged as a natural extension of the interventional radiologist's role in musculoskeletal interventions. Initially limited to cementoplasty and vertebroplasty, image-guided bone stabilization can now be achieved using cannulated screws inserted under CT, cone-beam CT, or fluoroscopic guidance. This technique is indicated in two main settings: 1. Oncologic lesions (osteolytic metastases, pathological fractures, bone insufficiency) where mechanical stability is necessary to complement cementoplasty. 2. Traumatic fractures in frail, elderly, or comorbid patients who may not be eligible for open surgery. Screw fixation provides immediate structural reinforcement, facilitates rapid mobilization, and improves pain and quality of life. It may be performed alone or in combination with PMMA injection when additional rotational or shear resistance is required.

CONCLUSION: Percutaneous screw fixation is a safe, effective, and minimally invasive method to stabilize fractures and reinforce weakened bones, offering an alternative to open surgery in fragile or oncologic patients. Its implementation requires technical expertise, careful planning, and a solid understanding of musculoskeletal anatomy and biomechanics. As a teaching topic, it highlights the capacity of interventional radiologists to expand their therapeutic role, integrating imaging precision, clinical judgment, and multidisciplinary collaboration to improve patient outcomes.

123066

Spontaneous Intracranial Hypotension: From Presentation to Imaging Diagnosis

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PRESENTER LEVEL OF TRAINING: Medical Student

LEARNING OBJECTIVES:

- Principal clinical manifestations of spontaneous intracranial hypotension
- Identify characteristic radiographic findings on brain and spine MRI
- Summarize the four major categories of spinal CSF leaks
- Recognize important complications of SIH

BACKGROUND: Spontaneous intracranial hypotension (SIH) arises from unprovoked spinal CSF leakage and leads to reduced CSF volume, impaired buoyancy, and brain sagging. Clinically, patients present with orthostatic headache, nausea, neck pain, and occasionally cranial neuropathies. Opening pressures may be normal, making imaging central to diagnosis. Brain MRI identifies classic markers of low CSF volume, while spine MRI helps localize leaks and characterize their etiology. Prompt recognition is essential to guide targeted interventions and prevent chronic complications.

CONCLUSION: SIH is often underrecognized despite having characteristic clinical and imaging features. Radiologists play a central role in diagnosis by identifying the key brain MRI findings associated with low cerebrospinal fluid volume. These include smooth diffuse pachymeningeal enhancement, venous sinus engorgement, pituitary enlargement, and measurable indicators of brain sagging such as a reduced mamillopontine distance or mildly low cerebellar tonsils. These signs may be evident even when clinical suspicion is limited. Spine MRI is equally important. The presence of extradural fluid, ventral epidural collections, meningeal diverticula, or subtle thinning of the thecal sac can assist in categorizing the underlying cerebrospinal fluid leak. The four recognized categories include dural tear, meningeal diverticulum related leak, cerebrospinal fluid venous fistula, and cases without a clearly identified source. Distinguishing among these patterns directly influences treatment. Targeted epidural blood patching is most effective when the leak level is known, while structural lesions or fistulas may require surgical or endovascular intervention. Radiologists should also remain attentive to the potential complications of untreated or prolonged SIH. Ongoing leakage may result in subdural hematomas, superficial siderosis, and cognitive or behavioral changes that reflect chronic brain sagging. After the leak is sealed, some patients experience rebound intracranial hypertension. Developing a strong familiarity with the clinical presentation, radiographic features, and classification of leak types improves diagnostic accuracy and facilitates timely, appropriate management, ultimately leading to better patient outcomes.

123070

Common Benign and Incidental Bone Lesions Encountered on Pylarify (Piflufolastat F-18) PET-CT

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University of Chicago

PRESENTER LEVEL OF TRAINING: Radiologist

LEARNING OBJECTIVES:

- Recognize that Piflufolastat F-18 uptake can be associated with benign bone lesions.
- Provide a reasonable differential diagnoses for the most common benign and incidental bone lesions seen on prostate PET-CT imaging.
- Recognize anatomic imaging findings that warrant further follow up.

BACKGROUND: The role of prostate specific PET/CT imaging in staging prostate cancer is increasing. Piflufolastat F-18 PSMA PET-CT offers superior sensitivity for detection of recurrent/metastatic prostate cancer. This improved detection frequently identifies benign incidental bone lesions with PSMA avidity. Being aware of common benign bone lesions that are PSMA avid is crucial to prevent patient over-staging and triggering unnecessary invasive procedures, while potentially delaying curative treatment.

CONCLUSION: Many benign bone lesions can demonstrate uptake on Piflufolastat F-18 PSMA PET, which should not be mistaken for metastatic prostate cancer.

123147

The Power of Suggestion: Actionable Radiology Recommendations Guide Timely, Effective Patient Care

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PRESENTER LEVEL OF TRAINING: Medical Student

LEARNING OBJECTIVES

- Recognize that including specific follow-up recommendation in radiology reports alters downstream management in ~ 31% of cases
- Appreciate that direct, unambiguous language markedly improves recommendation compliance (78.8% → 43.8% drop when language is conditional or vague)
- Acknowledge that radiologists vary up to 6.7 fold in their rates of providing recommendations.

BACKGROUND: Incidental findings of uncertain or concerning significance are frequently encountered in diagnostic imaging. Yet, whether radiologists provide explicit follow-up or biopsy recommendations remains highly variable and provider dependent. This educational exhibit reviews current literature on actionable radiology recommendations and illustrates these principles through a 2024 institutional audit of liver biopsies for incidentalomas, demonstrating how precise guidance can shorten the path from detection to definitive diagnosis.

CONCLUSION: Evidence shows that clear, specific, and time-bound recommendations improve compliance and accelerate diagnostic work-up. In an audit of all 71 outpatient liver biopsies performed in 2024 following de novo imaging findings at our centre, only 23% (n = 16) were preceded by imaging reports that included a specific recommendation for biopsy in the impression. When present, a specific recommendation reduced the average delay from imaging to biopsy requisition from 37.9 to 20.1 days (17.8-day reduction, P = .04), highlighting the tangible impact of clear radiologic guidance on care.

123150

Detecting Brain Herniation Early: A Stepwise, Compartment-Based Framework for CT and MRI

Ling He, Ryan Kara

McGill University

PRESENTER LEVEL OF TRAINING: Medical Student

LEARNING OBJECTIVES:

- Identify the major types of brain herniations on CT and MRI and recognize key imaging features for each pattern.
- Understand the underlying mechanisms of mass effect and how compartmental pressure shifts translate into characteristic radiologic findings.
- Apply a streamlined, compartment-based checklist to rapidly detect early, subtle signs of herniation and differentiate them from advanced or impending fatal complications.

BACKGROUND: Brain herniations represent life-threatening shifts in intracranial structures caused by mass effect from hemorrhage, edema, tumor, trauma, or elevated intracranial pressure. Because herniation evolves along predictable anatomical pathways, a pressure-gradient and compartment-based framework allows early subtle changes to be recognized before catastrophic neurological deterioration occurs. Early recognition is critical, as timely diagnosis directly influences outcomes and management decisions. Despite their clinical importance, identifying early imaging clues and accurately differentiating herniation patterns can be challenging. This review synthesizes the spectrum of brain herniations into a clear, pattern-based diagnostic framework grounded in compartmental anatomy, using high-yield CT and MRI examples to highlight early indicators such as sulcal effacement, cisternal distortion, ventricular asymmetry, classic features, and common pitfalls.

CONCLUSION: A structured, stepwise approach enables clinicians to rapidly recognize brain herniations, differentiate key patterns, and identify the earliest indicators of life-threatening shifts. Clear understanding of these imaging signatures improves diagnostic accuracy, facilitates prompt intervention, and enhances patient outcomes. Integrating this pattern-based framework into daily CT and MRI interpretation can increase consistency and reduce missed early herniation signs

123235

The Role of the Neuroradiologist: Imaging Findings of Methotrexate-Induced Disseminated Necrotizing Leukoencephalopathy in Children with Acute Lymphoblastic Leukemia

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PRESENTER LEVEL OF TRAINING: Medical Student

LEARNING OBJECTIVES:

- Identify key similarities in MRI findings of children with disseminated necrotizing leukoencephalopathy in acute lymphoblastic leukemia treated with methotrexate.
- Recognise persistence in MRI changes despite treatment cessation and symptom resolution
- Highlight the importance of the neuroradiologist in early detection of MRI changes for prompt diagnosis.

BACKGROUND: Methotrexate therapy is crucial for the treatment of acute lymphoblastic leukemia (ALL), one of the most common childhood cancers. It has proven clinical efficacy through induction and prophylaxis regimens. Neurotoxicity is a recognized complication, particularly in those treated intrathecally and intravenously, with some patients experiencing symptomatic encephalopathy. We highlight similarities in MRI findings from four children undergoing intrathecal treatment for ALL and the role of the neuroradiologist in detecting changes, to allow prompt dose reduction or treatment cessation.

CONCLUSION: We describe similarities in MRI findings from four children with leukoencephalopathy resulting from methotrexate-induced neurotoxicity. Leukoencephalopathy and subsequent MRI changes may occur during both relapses and maintenance therapy; therefore, prompt imaging is crucial when there is clinical suspicion. Despite symptom resolution following treatment cessation, imaging abnormalities and cerebral atrophy may persist. Identification of acute imaging appearances by the neuroradiologist is essential in recognising methotrexate-induced necrotizing leukoencephalopathy to guide prompt management.

123294

Mastering LI-RADS: Simplified Diagnostic Pathways for Accurate Liver Lesion Classification

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PRESENTER LEVEL OF TRAINING: Medical Student

LEARNING OBJECTIVES:

- Present a clear and practical overview of the LI-RADS categories and major diagnostic features used in CT and MRI
- Improve recognition of key imaging characteristics that distinguish benign, indeterminate, and malignant hepatic lesions in at-risk patients.
- Demonstrate a stepwise, pattern-based approach that enhances diagnostic confidence and communication between radiologists and clinicians.

BACKGROUND: The evaluation of hepatic lesions in patients at risk for hepatocellular carcinoma (HCC) is often challenging due to the wide spectrum of nodules encountered, overlapping imaging appearances, and historical variability in terminology. To address this, the Liver Imaging Reporting and Data System (LI-RADS) was developed as a comprehensive framework that standardizes acquisition, interpretation, and reporting of liver imaging in populations at risk of HCC, including individuals with cirrhosis, chronic hepatitis B infection, or prior HCC. Despite its widespread adoption, LI-RADS remains difficult for many trainees and non-abdominal radiologists to apply consistently. The classification requires integration of several major features, including arterial phase hyperenhancement, washout, enhancing capsule, and threshold growth, along with optional ancillary features and careful exclusion of mimics such as arterioportal shunts, perfusional variants, hemangiomas, and regenerative nodules. Misclassification can affect patient management, leading either to unnecessary interventions or delayed diagnosis. This review provides a simplified, pattern-based approach to applying LI-RADS on CT and MRI, highlighting the distinction between LR-3 and LR-4 observations, the criteria that define LR-5 (definite HCC), the imaging hallmarks of LR-M (malignancy not specific to HCC), and features indicating tumor in vein (LR-TIV). Representative cases and visual algorithms illustrate common diagnostic pitfalls, including pseudoenhancement, suboptimal arterial timing, and misinterpretation of ancillary features. By organizing LI-RADS into intuitive patterns and decision points, this approach aims to improve accuracy, reproducibility, and clarity in routine clinical practice, especially for learners developing their abdominal imaging skills.

CONCLUSION: A structured, pattern-based framework for LI-RADS interpretation enhances diagnostic confidence and consistency when assessing hepatic observations in at-risk patients. By emphasizing major features, clarifying common mimics, and providing visual examples across LI-RADS categories, this review supports clearer communication and more reliable clinical decision-making. Integrating LI-RADS into daily practice ultimately contributes to earlier detection of HCC, improved triage of indeterminate lesions, and better standardization of care across institutions.



123301

Mastering CT Artifacts: A Practical Guide to Recognition, Clinical Impact, and Mitigation for Accurate Interpretation

Ling He, Ryan Kara

McGill University

PRESENTER LEVEL OF TRAINING: Medical Student

LEARNING OBJECTIVES:

- Identify the most common CT artifacts on routine imaging and explain their underlying causes.
- Differentiate artifact-related patterns from true pathology to avoid diagnostic errors.
- Assess the clinical impact of major artifact types on interpretation and patient management.
- Apply effective mitigation strategies, including protocol adjustments and reconstruction techniques, to improve image quality

BACKGROUND: Computed tomography (CT) artifacts are image distortions that do not correspond to true patient anatomy. They are frequently encountered in daily radiology practice and represent a major source of diagnostic pitfalls. Artifacts may mimic pathology, obscure important findings, or decrease radiologist confidence, potentially leading to unnecessary investigations or missed diagnoses. For this reason, understanding how to recognize, interpret, and reduce artifacts is essential for residents and practicing radiologists. Several high-yield artifacts have clinical relevance: Motion artifacts occur when the patient or internal organs move during acquisition. They appear as blurring, ghosting, or duplicated structures. Even small degrees of motion can hide subtle lesions, while larger movements can simulate mass-like abnormalities. Beam hardening artifacts arise when dense materials (i.e. bone, contrast) selectively absorb low-energy photons. This produces dark bands, streaks, or “cupping” effects. Clinically, beam hardening may imitate hypoattenuating lesions or reduce visibility of true pathology. Metal streak artifacts are produced by hardware such as joint prostheses, surgical clips, etc. These artifacts appear as prominent bright-dark streaks radiating from the metal, often rendering adjacent regions non-diagnostic. Important findings, such as fractures, abscesses, or recurrent tumor, may be entirely masked unless artifact-reduction strategies are applied. Partial volume effects occur when a single voxel includes more than one type of tissue. This averaging can make small structures vanish and can create “blooming”, where dense things like calcifications or stents look larger than they actually are. Recognizing these artifacts is essential to preventing misinterpretation. Mitigation relies on patient coaching, optimized kVp/mAs, thin slices, dual-energy or iterative reconstruction, metal reduction tools, equipment calibration, etc. A structured approach enhances diagnostic accuracy and limits the need for repeat scans.

CONCLUSION: CT artifacts are common but manageable sources of diagnostic error. By understanding their causes, recognizing their characteristic appearances, and applying targeted mitigation strategies, radiologists can substantially improve image quality and diagnostic confidence. Strengthening artifact awareness directly enhances patient care by reducing misinterpretations, unnecessary follow-up imaging, and missed findings.

123310

Landmark of Loss: An Approach to MRI Structured Reporting for Dementia

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PRESENTER LEVEL OF TRAINING: Medical Student

LEARNING OBJECTIVES:

- Describe the essential MR sequences of a standardized dementia imaging protocol.
- Practice reporting findings using validated visual rating scales to assess brain atrophy and vascular pathology.
- Develop an approach to using structured reports for accurate diagnosis and Alzheimer’s disease-modifying therapy treatment monitoring.

BACKGROUND: MRI plays a central role in evaluating disease-specific patterns of brain atrophy. With the recent approval of Alzheimer’s disease-modifying therapies in Canada, there is an increased need for comprehensive radiological assessments. There is currently no standardized approach to dementia assessment, contributing to variability in imaging and interpretation. This paper introduces a streamlined protocol and structured report that incorporate validated rating scales to improve diagnostic consistency. It also includes a structured report for Alzheimer’s disease-modifying therapy monitoring for treatment-related complications.

CONCLUSION: Utilizing standardized MRI protocol and structured reporting templates for assessing cognitive impairment and monitoring patients receiving Alzheimer’s disease-modifying treatments will allow standardization of radiologic assessment for dementia.

123317

A Rapid Review of Posterior Fossa Tumours

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PRESENTER LEVEL OF TRAINING: Fellow

LEARNING OBJECTIVES

- Review the clinical presentation and treatment options of posterior fossa tumours.
- Review the imaging findings of posterior fossa tumours in the pediatric population.
- Review the imaging findings of posterior fossa tumours in the adult population.

BACKGROUND: This educational exhibit outlines the clinical symptoms, imaging findings, and management options of posterior fossa tumours. The posterior fossa-defined by the clivus, temporal bones, and occipital bone-encloses the cerebellum, brainstem, and fourth ventricle. Tumours arising in this compartment may be classified by age and by location as intra-axial or extra-axial based on whether they originate within the brain parenchyma or outside of it. A significant proportion of posterior fossa tumours occur at the cerebellopontine angle (CPA), a region containing cerebrospinal fluid, cranial nerves VII and VIII, the anterior inferior cerebellar artery, and arachnoid tissue. Common presenting clinical symptoms of CPA tumours include asymmetric hearing loss, tinnitus, vestibular complaints, and cranial nerve deficits. Patients with posterior fossa tumours may also present with signs of raised intracranial pressure, such as nausea, vomiting, papilledema, cognitive changes, and ataxia. A comprehensive workup of these patients often includes a thorough clinical history, detailed physical examination, imaging evaluation, audiologic testing, and potentially a referral to a skull base surgeon. MRI is the preferred imaging modality for posterior fossa tumours due to its superior soft tissue visualization, especially with contrast enhancement, and often with advanced sequences such as diffusion weighted imaging, MR perfusion and MR spectroscopy, which can help differentiate between benign and malignant tumours. CT is often used as a complementary imaging modality, especially beneficial for detailed bony assessment to aid in surgical planning. Ultrasound may also be used for fetal or neonatal diagnostic assessment. Treatment options depend on the tumour size, location, and pathology, and may involve careful observation, stereotactic radiation therapy, or surgical excision.

CONCLUSION: Although patients with posterior fossa tumours frequently present with mild or easily overlooked symptoms, a comprehensive clinical approach including diagnostic imaging studies aids in providing a timely and accurate diagnosis. Key imaging features of these tumours on ultrasound, CT and MRI, depending on the patient's age, sheds important diagnostic information in the workup of these patients.

123320

Air, Leak, or Mimic? Radiologic Pearls in Perforation and Postoperative Complications

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¹Yale New Haven Hospital, ²Chicago Medical School

PRESENTER LEVEL OF TRAINING: Resident

LEARNING OBJECTIVES

- To review the imaging features of gastrointestinal perforation and postoperative anastomotic leaks.
- To discuss common mimics and chronic sequelae that may resemble acute perforation.
- To emphasize diagnostic pearls that refine interpretation and prevent misdiagnosis.

BACKGROUND: Disruption of gastrointestinal wall integrity, whether spontaneous or iatrogenic, is a critical entity in abdominal imaging. While acute perforations demand urgent recognition, the radiologic spectrum is broader, encompassing postoperative anastomotic leaks, sterile mimics, and chronic sequelae that can masquerade as surgical complications. CT remains the cornerstone modality, allowing sensitive detection of free air, localized fluid collections, and subtle fat stranding that often provide the first clues to diagnosis. This exhibit illustrates the spectrum of perforation and its mimics in the postoperative and non-operative abdomen. Representative cases demonstrate acute peptic ulcer perforation, anastomotic dehiscence, benign fat necrosis, and chronic processes that may simulate recurrent leak. Imaging emphasis is placed on detecting subtle wall defects, recognizing patterns of free intraperitoneal air or fluid, and differentiating true surgical emergencies from entities that can be managed conservatively. A systematic interpretive framework is presented to reduce diagnostic uncertainty and improve confidence in challenging scenarios.

CONCLUSION: Perforation and postoperative complications present a wide radiologic spectrum, ranging from subtle mimics to life-threatening emergencies. Understanding the shared pathophysiology of wall disruption while recognizing key mimics enables radiologists to deliver precise, clinically actionable interpretations. By applying a structured approach, radiologists can more confidently distinguish emergent from self-limited or chronic processes, thereby directly influencing patient care.

123322

High-Stakes Obstruction: Imaging Pearls Across the Gastrointestinal Spectrum

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PRESENTER LEVEL OF TRAINING: Resident

LEARNING OBJECTIVES

- To review the spectrum of gastrointestinal obstruction from luminal to extraluminal causes.
- To illustrate characteristic imaging features that differentiate obstructive processes from their mimics.
- To emphasize critical diagnostic pearls and pitfalls that influence emergent clinical decision-making.

BACKGROUND: Gastrointestinal obstruction represents a unifying pathophysiologic process with diverse etiologies ranging from intrinsic luminal blockage to extrinsic compression and vascular complications. Despite varied etiologies, the clinical presentation often overlaps, making imaging central to accurate diagnosis and timely management. Cross-sectional imaging, particularly CT, plays a pivotal role in rapidly characterizing obstruction, identifying transition points, assessing for vascular involvement, and recognizing complications that guide management. This exhibit presents a spectrum of gastrointestinal obstruction encompassing both small and large bowel processes. Representative cases highlight common and uncommon mechanisms, including luminal blockage, extrinsic compression, and abnormal bowel configuration. Imaging emphasis is placed on identifying the transition point, characterizing the obstructing process, and recognizing features that suggest complication. Variability in presentation and overlap with non-obstructive conditions are addressed to reinforce a systematic interpretive approach.

CONCLUSION: By framing obstruction as a unifying pathophysiologic spectrum, radiologists can approach acute abdominal presentations with a structured, pattern-based framework. Recognizing key imaging signs and potential pitfalls not only expedites diagnosis but also directly impacts surgical versus conservative management decisions. This case-based review underscores the timely recognition of high-stakes abdominal emergencies.

123324

From Embryology to Emergency: Radiologic Evaluation of Meckel's Diverticulum

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PRESENTER LEVEL OF TRAINING: Resident

LEARNING OBJECTIVES:

- Review the embryologic basis and epidemiology of Meckel's diverticulum (MD).
- Identify characteristic and atypical imaging features across CT, ultrasound, MRI, and nuclear medicine.
- Recognize common complications and imaging mimics.
- Apply a symptom-based imaging algorithm to guide diagnostic workup and management.

BACKGROUND: Meckel's diverticulum is the most prevalent congenital gastrointestinal anomaly, affecting up to 2% of the population. Due to variable clinical presentation and overlapping imaging features with other abdominal pathologies, MD remains a diagnostic challenge, particularly in emergency and pediatric settings. Complications such as hemorrhage, obstruction, and diverticulitis necessitate timely recognition. A multimodality imaging approach and awareness of common pitfalls are essential to accurate diagnosis and appropriate management. This exhibit provides a structured, case-based review of MD using CT, ultrasound, MRI, and Tc-99m pertechnetate scintigraphy. We begin with embryologic development and the "rule of twos," followed by age-dependent clinical manifestations. Imaging appearance of uncomplicated and inflamed MD is demonstrated on CT with emphasis on secondary signs including mesenteric stranding, hemorrhage, and obstruction. Ultrasound highlights key pediatric features and diagnostic clues. MRI utility is addressed in specific populations. The role of nuclear medicine in detecting ectopic gastric mucosa is reviewed, including false-negative scenarios. Differential diagnoses such as appendicitis, enteric duplication cysts, and Crohn's disease are compared side-by-side. A stepwise, symptom-based diagnostic algorithm is provided.

CONCLUSION: Meckel's diverticulum poses diagnostic difficulty due to its variable presentation and imaging overlap with other conditions. Familiarity with its embryologic origin, complications, and multimodality imaging features can improve diagnostic accuracy. A structured, algorithmic approach can aid radiologists in selecting the appropriate imaging pathway based on clinical symptoms.

123328

“AI in Radiology: Friend or Foe?”: A Novel Two-Part National Virtual Panel Series on AI in Radiology

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PRESENTER LEVEL OF TRAINING: Medical Student

LEARNING OBJECTIVES:

- Describe common perceptions and misconceptions about artificial intelligence (AI) in radiology amongst medical learners.
- Illustrate a practical, panel-based format for teaching AI in radiology that integrates real-world use cases, career planning, and audience interaction.
- Demonstrate how structured, radiologist-led discussions and pre/post polling can shift trainee attitudes toward AI from uncertainty or fear, towards informed collaboration.

BACKGROUND: Medical learners increasingly encounter polarized messaging about artificial intelligence (AI) in radiology, including job-replacement narratives and fears of over-automation, deterring career interest in the field. Few curricula provide structured, radiologist-led discussions that ground AI in real-world imaging practice, workflow, and career impacts. To address this gap, our medical student network conducted a national virtual panel series, ‘AI in Radiology: Friend or Foe?’, featuring radiologists, machine learning researchers, and industry innovators, to inform trainees and shift perceptions on AI’s impact in radiology.

CONCLUSION: Our panel series reached learners from five medical schools across Canada, covering four provinces (QC, ON, AB, MB). Approximately half were first-year medical students, one quarter were students in later years of training, and one quarter were residents or practicing radiologists. Across both sessions, live polling (combined pre n=27, post n=25) demonstrated a clear shift in learner perceptions of AI in radiology. The proportion of learners selecting “mostly a friend” increased from 44% to 68%, while “not sure” responses decreased from 37% to 12%. When responses were dichotomized as “not sure” versus all other responses, the data suggest a trend towards reduced uncertainty about AI’s role in radiology (Fisher’s exact, p = 0.055). In a post-series survey (n=12), 58.3% recalled being “not sure” about AI’s impact before the panel, whereas afterwards, 83.3% perceived AI as “mostly a friend”, with only one “mostly a foe” response. Thematic analysis of free-text comments highlighted clearer understanding of AI’s realistic capabilities, the importance of radiologist involvement in AI development and implementation, and concrete strategies for career preparation. This simple, panel-based format offers radiology educators a practical, scalable model for AI education that demystifies AI for trainees and reinforces radiologists as leaders in AI-integrated practice.

123345

Micro-Ultrasound PRI-MUS Scoring in Prostate Cancer: Correlation with MRI and Histopathology

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PRESENTER LEVEL OF TRAINING: Resident

LEARNING OBJECTIVES:

- Review principles and characteristic imaging features of the PRI-MUS scoring system on micro-ultrasound.
- Compare concordant and discordant imaging findings between PRI-MUS and PI-RADS with histopathologic correlation.
- Illustrate a practical diagnostic workflow integrating micro-ultrasound and MRI for prostate cancer detection and biopsy planning.

BACKGROUND: Micro-ultrasound (microUS) using a 29 MHz transducer provides high-resolution visualization of prostate ductal architecture and subtle peripheral-zone abnormalities. The Prostate Risk Identification in Micro-Ultrasound (PRI-MUS) score provides a structured risk stratification system analogous to PI-RADS on multiparametric MRI (mpMRI). MicroUS can be used for targeted biopsy and there is emerging evidence of comparable sensitivity with mpMRI for clinically significant prostate cancer. Understanding concordance and discordance between PRI-MUS, PI-RADS, and histopathology is essential for optimizing targeted biopsy strategies.

CONCLUSION: Through representative concordant and discordant cases, this exhibit demonstrates the complementary strengths of microUS and MRI. MicroUS provides high-resolution, real-time visualization of prostate architecture and may serve as a valuable adjunct to MRI for detecting and targeting suspicious lesions. Integrating PRI-MUS features with PI-RADS interpretation and histopathology can enhance diagnostic confidence, support targeted biopsy planning, and help guide clinical decision-making, particularly in equivocal MR cases. There is potential for microUS to be used as the initial test for prostate lesions in settings where access to MRI is limited.

123352

The Role of Multimodality Imaging in the Evaluation of Juvenile Idiopathic Arthritis

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PRESENTER LEVEL OF TRAINING: Resident

LEARNING OBJECTIVES:

- JIA is diagnosed clinically, while multimodality imaging offers complementary information to aid in diagnosis and disease stability, particularly in early disease when physical exam and radiographic assessment lack sensitivity.
- Radiographs are a useful in excluding differential diagnoses and is an accessible modality to assess for complications growth disturbances, joint malalignment and ankylosis.
- Enhanced MR imaging is the most sensitive modality at detecting synovitis and effusions and is the gold standard in complex joints such as the atlantoaxial joint, TMJ, and SI joint.
- US is a versatile modality with high sensitivity for synovitis and effusions in small joints and can visualize small erosions before they appear on radiographs.

BACKGROUND: Juvenile idiopathic arthritis (JIA), initially described as Juvenile rheumatoid arthritis, is a conglomerate of chronic inflammatory conditions affecting various joints. It is the most common rheumatologic condition in the pediatric population despite being a diagnosis of exclusion without a definitive etiology. JIA has been subdivided based on the number and type of joints involved, laboratory findings, and if there are extra-articular manifestations present. Despite JIA being a clinical diagnosis, radiologic imaging has been widely utilized to exclude alternative diagnoses, assess for JIA related complications, and to monitor longitudinal treatment response. Early detection of JIA-related joint disease using multimodality imaging can expedite treatment thus minimizing potentially irreversible joint manifestations. Radiographs offer initial joint evaluation, are useful in advanced disease and for monitoring complications. Enhanced MR imaging is the most validated radiologic modality for evaluating suspected joint involvement and marrow edema, particularly in complex joints. Ultrasound is a versatile modality for assessing synovitis and effusions in peripheral and small joints, while also guiding joint injections.

CONCLUSION: JIA is a common pediatric inflammatory condition that can present in a variety of patterns. Radiologists need to be cognizant of JIA as a differential, confidently describe JIA-related radiologic findings and be aware of modality-related limitations.

123388

Virtual Therapeutics in Interventional Radiology: Virtual Reality as a Potent Non-Pharmacologic Tool for Anxiolysis and Analgesia in the Interventional Radiology Suite

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PRESENTER LEVEL OF TRAINING: Physician

LEARNING OBJECTIVES:

- Review the impact of periprocedural anxiety and pain in interventional radiology (IR) and the limitations of conventional pharmacologic sedation
- Describe the mechanism of action for virtual reality (VR) immersive therapy as a non-pharmacologic tool, focusing on attentional diversion to modulate pain and anxiety perception
- Identify practical implementation strategies for integrating VR therapeutics into the IR suite to improve patient satisfaction and procedural efficiency
- Evaluate the current clinical evidence, including recent randomized controlled trials (RCTs) supporting VR's efficacy as an analgesic and anxiolytic tool in IR

BACKGROUND: Interventional Radiology (IR) procedures, while "minimally invasive," often induce significant patient anxiety and pain. This psychological distress may cause increased procedural time and greater requirements for pharmacologic sedation. The traditional standard of care relies heavily on pharmacologic agents for sedation and analgesia. Although sometimes effective, it can, however, precipitate risks including oversedation, respiratory depression, and adverse hemodynamic effects. Virtual Reality (VR) immersive therapy proposes a non-pharmacologic anxiolytic and analgesic alternative. VR is predicated on the attentional diversion mechanism whereby VR modulates the cognitive and affective perception of pain and reduces periprocedural anxiety. Attentional diversion is dependent on patient consciousness, thus making VR particularly well-suited for IR patients, as most IR procedures require light to moderate sedation.

CONCLUSION: This novel VR patient-centered care approach is a safe, convenient, and effective non-pharmacologic clinical tool in the IR suite. Its mechanism is not simply a distraction, but a sophisticated immersive experience that utilizes the "attentional load" model, which "outcompetes" noxious stimuli for finite cortical resources. The current landscape in interventional radiology demonstrates auspicious applications of VR in procedures such as biopsies and peripheral intravenous catheter cannulations. The dissemination of VR's underlying technical components and protocols is necessary for potential widespread clinical adoption.

123392

A Non-Invasive Proactive Prehabilitation and Post-Operative Exercise Regimen to Reduce AVF Maturation Failure and Re-intervention Rates

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PRESENTER LEVEL OF TRAINING: Physician

LEARNING OBJECTIVES:

- Provide an overview of the clinical burden of arteriovenous fistula (AVF) maturation failure
- Explain the underlying physiological mechanisms involved in a regimented exercise program
- Discuss the advantages of an exercise regimen implemented in the longitudinal vascular care of AVF
- Describe the various types of exercise techniques utilized, supported by evidence-based clinical research
- Critically appraise the evidence from systematic reviews and high-quality clinical trials regarding exercise efficacy in arteriovenous maturation

BACKGROUND: The arteriovenous fistula (AVF) is the preferred access for hemodialysis. AVF offers superior long-term patency and lower complication rates compared to arteriovenous grafts or central venous catheters. Primary AVF failure affects upwards of 20-60% of new AVFs. The need for recurrent interventional salvage procedures (i.e., angioplasty) can be burdensome clinically and psychologically for the patient's well-being. Pre-operative and post-operative exercise regimens are a non-invasive, effective, and safe intervention proposed to improve AVF maturation. Through a complex physiological interplay of increased blood flow and vascular remodeling, exercise can improve both short-term and long-term AVF maturation. An exercise-centric treatment model enhances vascular health and synergistically promotes the longevity of individuals with other comorbid conditions.

CONCLUSION: The European Society for Vascular Surgery (ESVS) recommends post-operative exercise, whereas the 2019 NKF-KDOQI guidelines state there is "inadequate evidence" to make a recommendation. This exhibit concludes that, while the current landscape of evidence supports exercise, the guidelines are contradictory. This is primarily due to a lack of standardized protocols, fragmented endpoints, and unmeasured confounders, such as patient adherence. High-quality randomized controlled trials and standardized exercise regimens, in terms of types, frequency, intensity, and duration, are crucial for a more accurate assessment of the effects of exercise on longitudinal vascular care.

123451

Interpreting PSMA PET with Confidence: A Case-Based Primer on the Updated PSMA-RADS 2.0 System with PET/CT and PET/MR Correlation

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University of Toronto

PRESENTER LEVEL OF TRAINING: Resident

LEARNING OBJECTIVES:

- To review the updated PSMA-RADS 2.0 standardized scoring system for PSMA-targeted PET imaging.
- To improve diagnostic confidence in characterizing equivocal, benign, and malignant PSMA-avid lesions.
- To compare the application of PSMA-RADS 2.0 across both PET/CT and PET/MR modalities.

BACKGROUND: Prostate-Specific Membrane Antigen (PSMA) positron emission tomography (PET) with computed tomography (CT) or magnetic resonance imaging (MR) plays an essential role in evaluating prostate cancer. PSMA PET is now widely used for staging, recurrence localization, and radioligand therapy planning. However, PSMA uptake is not entirely specific and may occur in benign tissues. This variability creates interpretive challenges, emphasizing the need for a standardized framework such as the PSMA-RADS (Reporting and Data System) scoring system.

CONCLUSION: This educational exhibit will familiarize radiologists with the PSMA-RADS 2.0 system through a structured, case-based pictorial review. PSMA-RADS, first introduced in 2017 and updated in 2023, categorizes findings using a five-point likelihood scale and adds the 5T category for treated lesions. We will illustrate the full spectrum of categories, including benign mimics, indeterminate findings, high-suspicion lesions, and treated metastases. Cases from both PSMA PET/CT and PET/MR will highlight diagnostic nuances, clarify equivocal interpretations, and demonstrate the practical utility of structured reporting. As PSMA PET becomes the preferred modality for initial staging, restaging, and therapeutic decision-making, a consistent reporting language improves clarity, avoids misinterpretation, and strengthens multidisciplinary collaboration in prostate cancer care.

123452

Accuracy of Ultrasound Compared to MRI in Diagnosing Supraspinatus Rotator Cuff Tears

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University of Alberta

PRESENTER LEVEL OF TRAINING: Medical Student

LEARNING OBJECTIVES:

- Review contemporary diagnostic accuracy of ultrasound (US) versus MRI for partial- and full-thickness supraspinatus tendon tears.
- Understand key factors influencing US performance, including operator expertise and tear characteristics.
- Recognize clinical scenarios where US can reliably serve as a first-line modality and when MRI remains essential.
- Describe how emerging AI-assisted ultrasound techniques may further enhance diagnostic precision.

BACKGROUND: Supraspinatus tears are a leading cause of shoulder pain and disability. Although MRI is the reference standard, ultrasound is increasingly used due to its accessibility, low cost, and real-time assessment capability. Advances in high-frequency transducers and standardized scanning protocols over the past decade have improved US performance. This educational exhibit synthesizes evidence from 16 recent studies comparing ultrasound with MRI to clarify its diagnostic strengths, limitations, and optimal clinical use.

CONCLUSION: Across nearly 1,000 patients, ultrasound demonstrates high diagnostic accuracy for full-thickness supraspinatus tears, with median sensitivity 87.5%, specificity 98.45%, and accuracy 87.15%. These results support ultrasound as a reliable first-line modality, improving accessibility, reducing MRI wait times, and expediting clinical decision-making, particularly in community, primary care, and sports medicine environments. Diagnostic performance for partial-thickness tears remains variable, reinforcing MRI's role when subtle or intra-articular pathology is suspected. Importantly, AI-assisted ultrasound shows promise in reducing operator dependence and enhancing recognition of subtle partial-thickness tears, potentially narrowing, and ultimately surpassing, the diagnostic gap between ultrasound and MRI. With continued advancements in AI, probe technology, and standardized training, ultrasound has the capability to play a transformative role in modern shoulder imaging.

123455

Building a National Framework for Radiation Safety Education in Interventional Radiology

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University of Toronto

PRESENTER LEVEL OF TRAINING: Medical Student

LEARNING OBJECTIVES:

- Outline the current radiation safety curriculum.
- Discuss the gaps in teaching radiation safety to medical students and early-stage trainees.
- Develop education content to be presented at trainee orientation (standardized radiation safety presentation, infographics, step-by-step video tutorial for trainees to properly use PPE).
- Research and implement new teaching strategies based on feedback and safety standards.

BACKGROUND: Radiation safety is an essential part of interventional radiology training. Previous studies have identified variability in radiation safety knowledge among trainees and a lack of standardized curricula across sites. Effective radiation safety education requires addressing both knowledge-based and practical skills, including the proper use of personal protective equipment (PPE), understanding of dose-optimization principles, and the application of ALARA (As Low As Reasonably Achievable) practices. Standardized, multimodal educational resources may help address these training needs.

CONCLUSION: To raise awareness of gaps in radiation safety education and implement practice changes, the Canadian Association for Interventional Radiology (CAIR) Radiation Safety committee has developed a series of multimodal resources to improve trainee education. Key initiatives include 1) a structured onboarding presentation covering fundamental radiation safety principles, 2) visual educational materials, including infographics addressing lead fitting, radiation safety principles, and considerations for pregnancy and breast health, 3) a video-based tutorial demonstrating proper PPE donning technique. Moreover, the committee is concurrently conducting prospective research to 1) assess current radiation safety education practices nationally, and 2) evaluate the effectiveness of technology-based strategies and standardized educational initiatives in improving radiation safety outcomes (dosage, ALARA). Findings from these projects will inform future evidence-based initiatives to improve safety education for trainees across Canada.

123465

Cranial Ultrasound: A Gateway into the Neonatal Brain

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PRESENTER LEVEL OF TRAINING: Medical Student

LEARNING OBJECTIVES:

- Outline the basics of Cranial Ultrasound Imaging technique along with its advantages and limitations in neonatal brain imaging
- Identify key anatomical landmarks and relevant neonatal brain anatomy on neonatal cranial ultrasound
- Demonstrate salient sonographic findings in various neonatal brain diseases through cases from practice

BACKGROUND: Cranial ultrasound is an instrumental tool in detecting neonatal brain pathology. While intracranial hemorrhage is the main indication for cranial ultrasound in pre-term infants, we demonstrate how cranial ultrasound can be used to image other key neonatal brain abnormalities, including hypoxic-ischemic injury, infection, and screening of malformations in cortical development. Guiding our approach is knowledge of the landmarks associated with normal neuroanatomy of the developing and term neonatal brain, which is crucial in recognizing neonatal brain pathology. Through a series of teaching cases, we correlate the normal neuroanatomical appearance of the pre-term and term neonatal brain with key radiological signs in both populations. As a screening tool, cranial ultrasound findings should be correlated with the clinical history, and discussion with neonatologists is encouraged when interpreting the findings. Some advantages of this technique include bedside accessibility, absence of radiation, and the ability to perform serial imaging in a timely and minimally disruptive manner. We also show how advanced imaging techniques such as including high-frequency transducers, Doppler imaging, and multiple acoustic windows through the fontanels can enhance the sensitivity and specificity of cranial ultrasound in increasing the detection rate of cerebral abnormalities, potentially limiting the urgent need to transport infants to CT or MRI scanners for cranial imaging.

CONCLUSION: Knowledge of the optimal CUS technique, salient anatomy and key imaging findings in various neonatal brain pathologies can enable the radiologist to narrow the differential diagnoses, thereby making CUS a valuable screening tool that can facilitate timely clinical management.

123474

Burnout Intervention in Canadian Radiology Practices: A Scoping Review

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PRESENTER LEVEL OF TRAINING: Medical Student

LEARNING OBJECTIVES:

- Review the prevalence, system-level drivers, and reported contributors to burnout among Canadian radiologists and radiology trainees.
- Synthesize common themes across empirical surveys and narrative pieces, including workload, workforce shortages, financial pressures, culture, and training environment.
- Highlight mentorship, schedule redesign, and other department-level strategies and interventions that may mitigate burnout and support sustainable radiology practice.

BACKGROUND: Burnout is highly prevalent in Canadian radiology, with national surveys demonstrating substantial emotional exhaustion and depersonalization among residents and staff. Structural pressures include increasing imaging volumes, low radiologist to population ratios, financial and employment uncertainty, and limited protected academic time. These pressures have been found to intersect with individual factors such as heavy call, poor work-life balance, and inefficient support systems. Despite growing attention to wellness, Canadian literature describing and evaluating concrete burnout-prevention interventions remains limited, though mentorship and workplace redesign are recurrently proposed. This review highlights the current gap in implementing and concurrently assessing burnout interventions within Canadian radiology practices.

CONCLUSION: Burnout arises primarily from modifiable system and culture-level factors rather than individual variables. Recognizing shared themes such as workload and workforce constraints, training environment stressors, financial and job-market pressures, and gaps in mentorship and support provides a roadmap for targeted interventions. By prioritizing schedule and workload optimization, fostering psychologically safe and supportive departments, and expanding structured mentorship and protected academic time, radiology practices can enhance physician well-being, improve retention, and ultimately strengthen imaging care delivery.

123490

Demystifying Substance Abuse Related Lung Injury Patterns

Smily Sharma, Demetris Patsios, Micheal McInnis

University of Toronto

PRESENTER LEVEL OF TRAINING: Fellow

LEARNING OBJECTIVES:

- To elaborate on the mechanisms and imaging manifestations of pulmonary injuries caused by recreational substance abuse using an illustrative case-based review
- To discuss the specific lung injury patterns caused by commonly abused recreational drugs, including crack lung, marijuana associated lung changes, and electronic vaping associated lung injury (EVALI)
- To discuss the patterns of excipient related lung disease

BACKGROUND: Recreational substance abuse causes widespread damage to the lungs through thermal injury, airway inflammation, alveolar rupture, and granulomatous reaction. Cocaine causes a spectrum of lung injuries, ranging from acute crack lung to chronic fibrosis. Marijuana smoking is associated with apical paraseptal emphysema and bullae. Organizing pneumonia is the most common pattern associated with EVALI. Intravenous abuse of crushed oral medications can cause excipient-related lung disease, manifesting as diffuse micronodular, high-density perihilar fibrotic, or lower lobe panlobular emphysema (Ritalin lung) patterns.

CONCLUSION: Imaging plays an important role in the evaluation of recreational substance abuse-related pulmonary injuries, with chest CT being the most useful imaging modality. The current review aims to familiarize the radiologists with the various lung injury patterns associated with the commonly abused drugs. Recognizing these imaging manifestations is essential not only for making optimal acute clinical decisions but also for supporting long-term rehabilitation goals for these patients.

123497

The Many Faces of Diffuse Midline Glioma: A Radiologic Spectrum

Kamaljeet Singh, Rafael Glikstein

The University of Ottawa

PRESENTER LEVEL OF TRAINING: Fellow

LEARNING OBJECTIVES

- Review the classic imaging features of DMG.
- Review the atypical imaging spectrum of DMG.
- Identify distinguishing imaging features between DMG and its common mimics.

BACKGROUND: Diffuse midline glioma (DMG), characterized by its midline location and H3K27-altered molecular profile, is an aggressive tumor increasingly recognized across both pediatric and adult populations. Although classically centered in the pons, thalamus, and spinal cord, DMG can also involve the midbrain, hypothalamus, or cerebellum. Conventional MRI often reveals T2/FLAIR hyperintensity with poorly defined margins, limited diffusion restriction, and minimal or heterogeneous enhancement. However, DMG displays substantial imaging variability. Atypical appearances may include solid or ring-like enhancement, peripheral patchy diffusion restriction, cystic areas, or intratumoral susceptibility from microhemorrhage. In some cases, DMG presents only as subtle infiltrative signal alteration without significant mass effect, posing a diagnostic challenge. Advanced MRI-such as diffusion tensor imaging, spectroscopy, and perfusion-may reveal tract disruption, elevated choline, reduced NAA, and modest perfusion increases, though these findings can overlap with other infiltrative processes. An important component of evaluation is recognition of mimics, including demyelinating lesions, neurosarcoidosis, lymphoma, astrocytoma, and metastatic disease. Differentiating based on enhancement pattern, diffusion characteristics, lesion symmetry, and clinical context is essential, but when atypical features are present, biopsy may be necessary to guide treatment plans.

CONCLUSION: DMG exhibits a broad radiologic spectrum that extends beyond its classic presentation. This exhibit provides a focused pictorial review to enhance diagnostic accuracy, highlight common mimics, and support optimal integration of imaging treatment of such patients, including indications for biopsy.

123501

Decoding Acute Neurological Complications in the Peri-Partum Period: A Pictorial Insight

Kamaljeet Singh, Rafael Glikstein

The University of Ottawa

PRESENTER LEVEL OF TRAINING: Fellow

LEARNING OBJECTIVES:

- To review the spectrum of acute cerebrovascular and neurological emergencies in pregnancy and the puerperium.
- To recognize key neuroimaging findings of acute peri-partum neurological complications.
- To review optimal imaging modalities to diagnose pregnancy related and postpartum acute neurological syndromes.

BACKGROUND: The pregnancy is a high-risk time for diverse acute neurological conditions, particularly vascular complications, continuing well into the first few weeks after delivery. Eclampsia, although one of the most common pregnancy-related neurological emergencies, is often clinically indistinguishable from other causes. Overlapping symptoms like headache and seizures can mask conditions such as cerebral venous sinus thrombosis (CVST), ischemic stroke, intracerebral hemorrhage (ICH), subarachnoid hemorrhage (SAH), reversible cerebral vasoconstriction syndrome (RCVS), and posterior reversible encephalopathy syndrome (PRES). Pregnancy and the puerperium induce a hypercoagulable state, significantly elevating the risk of CVST and ischemic stroke. Given these non-specific presentations, neuroimaging (CT and MRI) is vital for accurate diagnosis, allowing differentiation of these conditions from eclampsia and guiding urgent therapy.

CONCLUSION: Prompt diagnosis in pregnant and postpartum patients with acute new or worsening neurological symptoms is crucial for timely intervention and can be life-saving. Early radiological evaluation with appropriate management greatly improves maternal outcomes. Furthermore, imaging guides urgent therapies (e.g., anticoagulation for CVST, thrombolysis for stroke, endovascular coiling for aneurysms), directly reducing maternal morbidity and mortality in this cohort. So it's pertinent for radiologists to be aware of such findings in order to contribute to patient care.

123512

Dynamic Digital Radiography in Musculoskeletal Imaging: Development of Novel Techniques, Experience in Clinical Practice and Future Development Potential

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PRESENTER LEVEL OF TRAINING: Medical Student

LEARNING OBJECTIVES:

- Recognize how DDR can provide additional clinically relevant information which may alter management, including examination of how DDR has been used in our practice and within a multidisciplinary assessment and management context.
- Identify when novel imaging protocols using multi-segment movement, stress views and weight-bearing positions can be beneficial in radiological evaluation of musculoskeletal conditions
- Appraise existing evidence about DDR, and applications of DDR in clinical and research.
- Brainstorm and discuss future applications of DDR imaging, including prototyping using radiolucent 3D printed positioning aids to develop reliable and replicable DDR protocols

BACKGROUND: Dynamic Digital Radiography (DDR) is a unique modality that allows for x-ray visualization of a joint in motion. This allows for the identification or exclusion of abnormality associated with dynamic instability, which may otherwise not be detected on static imaging modalities. Using research and clinical experience we will demonstrate how DDR can be used in clinical assessment of musculoskeletal concerns. We will also share current research and future development potential for DDR.

CONCLUSION: DDR allows for detection of diagnostic abnormalities not seen on static imaging alone. Our experience confirms that DDR improves diagnostic ability of the X-Ray by providing additional information, and directs appropriate further imaging, specialist referral, or interventions. Our current use of DDR has improved decision making related to patient care. While current imaging protocols have provided valuable information, continued research and development efforts aim to improve the consistency and quality of these DDR applications, and compare DDR to other imaging modalities to provide improved clinical assessment and outcomes for patients.

123515

Beyond Pulmonary Embolus: Positive Study, Different Culprit

Ana Stoica, Omid Ebrahimzadeh, Sarah Barrett

Vancouver General Hospital, University of British Columbia

PRESENTER LEVEL OF TRAINING: Fellow

LEARNING OBJECTIVES:

- Review differential diagnosis of clinically suspected pulmonary embolus that can be assessed in emergency radiology.
- Formulate a systematic search pattern to interpret CT pulmonary angiography examinations.
- Apply our systematic search pattern to 10 cases and determine how to reach a definitive diagnosis.

BACKGROUND: CT pulmonary angiography is a common examination in emergency radiology, yet clinically suspected pulmonary emboli occasionally reveal on imaging entirely different and unexpected diagnoses. Beyond the standard checklist, which includes aortic dissection, pneumonia, pneumothorax, empyema, upper abdominal pathology and rib fracture, some uncommon and diagnostically challenging conditions include cardiac masses and neoplastic trachea-oesophageal fistulization. I will present a robust search pattern applied to 10 example cases that facilitates the recognition of these rarer diagnoses.

CONCLUSION: Radiologist will read many CT pulmonary angiography in their practice; thus, it is important to ensure they review and maintain robust search patterns that allow them to pick up on rarer diagnosis.

123544

Understanding Filtered Backprojection in CT Reconstruction

Nasyr Malik

Detroit Medical Center/Wayne State University School of Medicine

PRESENTER LEVEL OF TRAINING: Resident

LEARNING OBJECTIVES:

- Understand how projection data is acquired by multi-detector CT scanners and organized into diagnostic images
- Understand the difference between spatial and frequency domains
- Discuss the clinical relevance of filtered backprojection in interpreting CT images

BACKGROUND: Computed tomography imaging is the cornerstone of modern medical imaging and has built upon the imaging technologies that came before it in order to achieve the high fidelity 3-dimensional scans that radiologists and other physicians interpret daily around the world. Learning how basic X-ray concepts are utilized by modern multidetector CT scanners is valuable knowledge to every radiologist as it allows for more accurate detection of imaging artifacts and provides a foundational understanding on the errors that can occur with regards to image protocolling. This presentation introduces the concept of how projection data is acquired and mathematically organized to first demonstrate the process of simple back projection. The drawbacks of the simple back projection process are highlighted and used to emphasize the necessity of a mathematical operation that transforms the collected data in a way that will ultimately lead to a clearer, more diagnostic image. The mathematical tool, Fourier transform, is explained to demonstrate the need for reinterpreting our projection data in the frequency domain (rather than the spatial one) as the crucial step needed before filtering the projection data. This filtering step acts to accentuate the high frequency data within our data set, thereby increasing the edges and fine details within our final filtered back projected image.

CONCLUSION: This presentation aims to introduce clinical radiologists to the often neglected concepts of how X-ray technology, physics and computer programming intersect to create one of, if not the, most important imaging modality used in practice today. A key purpose of developing a basic understanding of these concepts is to help radiologists understand why certain imaging artifacts arise in everyday CT scans and how imaging protocols can be developed to avoid them. These concepts also play a role in the medical imaging technology industry; thus for those who find themselves interfacing with these technology providers, having a foundational understanding of what specifications and parameters are necessary when evaluating the need for new CT scanners or repairing existing ones can be of significant benefit.

123556

Lesions of the Pediatric Anterior Visual Pathway

Vivek Pai, Elka Miller

The Hospital for Sick Children

PRESENTER LEVEL OF TRAINING: Radiologist

LEARNING OBJECTIVES

- Review the anatomy of the visual pathway
- Discuss the imaging protocols optimized for assessment of the pediatric anterior visual pathway
- Provide a pictorial review of disease processes affecting the pediatric anterior visual pathway

BACKGROUND: Anterior visual pathway lesions are broadly classified based on their location. These can be further divided into genetic, vascular, metabolic, infective, inflammatory and neoplastic causes. The following conditions will be discussed: 1. Retina: Detachment, Coats disease, Vitreoretinopathy, Endophthalmitis, Norrie Disease, Hemangioblastoma, Astrocytic Hamartoma, Retinoblastoma. Metastasis 2. Optic disc: Papilledema, Coloboma (CHARGE, Aicardi Syndrome), Morning Glory Disc Anomaly 3. Optic nerve and Chiasm: Aplasia/Hypoplasia, Septo-optic Dysplasia, Hypertrophy (Krabbe's disease), Wolfram Syndrome, Retinitis pigmentosa, mitochondrial cytopathies (Leigh syndrome, NDUFA13 mutation), Demyelination (multiple sclerosis, NMOSD, MOGAD), craniofacial metamerism syndrome, tuberculoma, gliomas, leukemia.

CONCLUSION: Given critical importance of visual pathway structures, most pathologies are not amenable to histopathological analysis. A pattern-based approach to these lesions and adequate evaluation of the rest of the neuroaxis are key in clinching a diagnosis or providing a reasonable differential.

123569

An Approach to Spontaneous Intracranial Hypotension and CSF Leaks

James Sanayei, Kyle Moulton

University of Saskatchewan

PRESENTER LEVEL OF TRAINING: Resident

LEARNING OBJECTIVES:

- Identify the imaging features of intracranial hypotension
- Define the three main types of spinal CSF leaks commonly implicated in spontaneous intracranial hypotension (SIH)
- Explain the rationale for the various imaging tests that can be used in the setting of suspected SIH and integrate them into a comprehensive diagnostic approach
- Apply this approach to a series of real-world cases
- Describe the available treatment options for spinal CSF leaks

BACKGROUND: Spontaneous intracranial hypotension (SIH) is a common yet historically underdiagnosed condition resulting from extradural leakage of CSF. It frequently presents a diagnostic challenge due to its non-specific clinical and radiological features. However, identifying the presence of SIH and the site of CSF leakage can allow for safe and effective interventions. Here we will discuss the imaging findings suggestive of SIH, present a stepwise approach to localize a CSF leak, and apply this approach to several cases.

CONCLUSION: By recognizing the imaging features of intracranial hypotension and recommending appropriate follow-up investigations, radiologists can help to facilitate a prompt diagnosis and effective treatment, with the potential to drastically improve patients' quality of life.

123585

Pelvic High-Flow Arteriovenous Malformations: Imaging and Interventional Essentials

Helena Bentley¹, Michael Teutenberg¹, Ricky Hu², Victor Lee², Kong Teng Tan¹

¹University of Toronto, ²University of British Columbia

PRESENTER LEVEL OF TRAINING: Resident

LEARNING OBJECTIVES:

- Understand the pathophysiology and classification of pelvic high-flow arteriovenous malformations (AVMs).
- Recognize the clinical presentation and diagnostic challenges of pelvic high-flow AVMs.
- Improve the use of angiography and adjunctive imaging modalities in diagnosing pelvic high-flow AVMs and treatment planning.
- Review interventional radiology techniques for the management of pelvic high-flow AVMs with an emphasis on clinical insights.

BACKGROUND: Pelvic high-flow AVMs are rare, vascular anomalies characterized by abnormal arteriovenous shunting in the pelvis leading to increased blood flow and associated complications. These lesions are usually congenital but they may remain asymptomatic for several years, with symptoms often becoming apparent only in adulthood. Pelvic high-flow AVMs may involve the iliac arteries and veins, causing hemodynamic changes that lead to various symptoms, such as pelvic pain, vaginal bleeding, and varicosities. As the clinical presentation is nonspecific, pelvic high-flow AVMs are frequently misdiagnosed.

CONCLUSION: This educational exhibit synthesizes two decades of experience from a high-volume tertiary academic institution to highlight essential principles in the evaluation and management of pelvic high-flow AVMs, emphasizing recognition of their varied clinical presentation, effective use of angiography and adjunctive imaging modalities for diagnosis and treatment planning, and technical considerations that guide optimal interventional radiology management.

123595

Pulmonary Lymphoproliferative Disorders: HRCT Patterns and Key Diagnostic Pitfalls

Shuaa Alsayyari, Paula Patino

University of Ottawa

PRESENTER LEVEL OF TRAINING: Fellow

LEARNING OBJECTIVES:

- Review the spectrum of pulmonary lymphoproliferative disorders, including benign/reactive, malignant and immune-deficiency related disorders.
- Describe characteristic CT imaging features of major PLPDs, including LIP, follicular bronchiolitis, MALT lymphoma, DLBCL, LYG, PTLD, AIDS-related lymphoma, and GLILD.
- Provide a pattern-based approach to differentiate PLPDs from key mimics such as infection, sarcoidosis, hypersensitivity pneumonitis, and interstitial lung diseases.
- Integrate lymphatic anatomy, disease behavior, and clinical context (autoimmune disease, immunodeficiency, transplant status, HIV) to improve diagnostic accuracy and narrow the differential diagnosis.

BACKGROUND: Pulmonary lymphoproliferative disorders (PLPDs) represent a spectrum of benign/reactive, autoimmune-related, and malignant lymphoid proliferations involving the lung. Although individually rare, together they pose a significant diagnostic challenge because they mimic interstitial, infectious, and neoplastic lung diseases. Radiologists play an important role in early detection, characterization, and differentiation of these conditions, often being the first to raise suspicion. A systematic evaluation of imaging patterns interpreted in conjunction with the clinical context is essential to reduce misdiagnosis and guide appropriate workup and management.

CONCLUSION: Pulmonary lymphoproliferative disorders can be difficult to recognize but become approachable through pattern analysis, awareness of key disease associations, and recognition of characteristic imaging features. Radiologists play an important role in raising early suspicion, guiding appropriate workup, and avoiding common pitfalls. Integrating clinical context with HRCT patterns and pulmonary lymphatic anatomy improves diagnostic accuracy and strengthens multidisciplinary care.

123597

In the Eye of the Beholder: An Approach to Orbital Inflammatory Pathologies

Warda Limaye, Vivian Yin, Farahna Sabiq

University of British Columbia

PRESENTER LEVEL OF TRAINING: Fellow

LEARNING OBJECTIVES:

- Understand the significance of orbital inflammatory pathologies, both clinically and socioeconomically.
- Identify important orbital anatomy with a focus on structures commonly involved in orbital inflammatory pathologies.
- Outline the main orbital inflammatory pathologies encountered by radiologists.
- Develop an evidence-based framework to aid in the diagnosis of orbital inflammatory pathologies using both clinical and radiologic features.

BACKGROUND: Orbital inflammatory pathologies are a heterogeneous group of disorders seen across all age groups, and comprise approximately 6% of all orbital pathologies. Diagnosis typically relies on clinical exam and biopsy/tissue diagnosis with approximately 1% of cases being imaged. However, inconclusive biopsy results or misdiagnosis can result in the delay of appropriate patient treatment, leading to unnecessary and sometimes costly treatment which can impact patient quality of life. Imaging can provide a relatively confident diagnosis in IgG4-related disease, thyroid eye disease, and non-specific orbital inflammation, however, there can be overlap in imaging features with these and other orbital inflammatory pathologies. Given that these pathologies are encountered at a relatively low frequency in radiologic practice, it can be challenging to identify and diagnose orbital inflammatory pathologies based on imaging alone. The purpose of this exhibit is to provide an updated overview of major inflammatory diseases based on pathophysiology, and provide an evidence-based diagnostic framework to increase diagnostic confidence in challenging orbital inflammatory pathology as seen on imaging.

CONCLUSION: Orbital inflammatory pathologies are a heterogeneous group of disorders infrequently encountered in radiologic practice, and can have overlap of clinical and imaging features. An evidence-based framework utilizing both clinical and imaging information can help increase diagnostic confidence to more accurately guide management.

123599

Curative and Palliative Cryoablation for the Management of Breast Cancer: Insights from a Single-Center Case Series

Jennifer Liu¹, Gabrielle Tremblay¹, Damien Olivié², Maude Labelle², Mona El Khoury², Iskandar Haddad², Isabelle Trop², Erica Patocskai³, Rami Younan³, Kerianne Boulva³, Ahmad Kaviani³, Saima Hassan³, Matthew Seidler²

¹Université de Montréal, ²Department of Radiology, University of Montreal, ³Department of Surgery, University of Montreal

PRESENTER LEVEL OF TRAINING: Medical Student

LEARNING OBJECTIVES:

- Review current indications of breast cryoablation (BCA) for the treatment of breast cancer.
- Discuss the emerging role of BCA for palliative management in patients with more advanced disease.
- Describe the technical approach and outcomes of BCA based on a single-institution case series.

BACKGROUND: Minimally invasive image-guided techniques have emerged as alternatives to surgery for breast cancer in high-risk surgical patients. Among these, breast cryoablation (BCA), which uses liquid nitrogen to destroy tumor cells through extreme cold, has shown promising results. The ICE3 trial demonstrated its curative potential for small, low-grade invasive ductal carcinoma (IDC), while recent studies support its palliative role in patients with more advanced disease. Here, we present a tertiary hospital's initial experience with BCA through a single-center case series.

CONCLUSION: Ten patients underwent BCA at our institution. Curative intent was pursued in seven patients with grade I/II IDC ≤ 1.8 cm, while three received palliative treatment in the context of skin involvement ($n = 2$) and multicentric disease ($n = 1$). Early adverse events were limited to transient pain ($n = 3$), with no long-term complications or local recurrences among curative cases (mean follow-up: 11 months; range: 1-18). These results support BCA as a safe and effective treatment option, offering curative potential for selected tumors and symptomatic relief in locally advanced disease. Larger studies are needed to compare long-term recurrence rates between BCA and surgical treatment, and to further define the role of BCA in low-risk patients.

123601

Post-Treatment MRI Appearance in Nasopharyngeal Cancer

Amirhossein Ghadirian¹, Arman Rahimi-Far², Sarah Hamilton³, Behnosh Mortazavi⁴, Ken Xing²

¹University of Toronto, ²University of Manitoba, ³University of British Columbia, ⁴BC Cancer Vancouver

PRESENTER LEVEL OF TRAINING: International Medical Graduate

LEARNING OBJECTIVES:

- To review the role of MRI in treatment planning and post-therapy surveillance of nasopharyngeal carcinoma (NPC).
- To outline the MRI imaging protocol and workflow used at BC Cancer Vancouver.
- To illustrate typical MRI findings in pre-treatment and post-treatment follow-up of NPC.

BACKGROUND: Nasopharyngeal carcinoma (NPC) is an endemic malignancy in Southern China and Southeast Asia, with over 70% of patients presenting at advanced stages (III-IV). Concurrent chemoradiotherapy (CCRT), with or without neoadjuvant chemotherapy, remains the standard treatment for stage II or higher disease. Accurate post-treatment evaluation is crucial for detecting residual or recurrent tumour and guiding timely salvage therapy. MRI plays a pivotal role in this process, given its superior soft-tissue contrast and multiplanar capability. **Methods and MRI Protocol:** At BC Cancer Vancouver, post-treatment MRI of the nasopharynx and neck is performed using a dedicated protocol: • Sagittal T1-weighted sequence: 4 mm slice thickness. • Axial T2 high-resolution STIR sequence: 3 mm. • Axial T1-weighted sequence: 3 mm. • Axial diffusion-weighted imaging: b = 800 s/mm², 4 mm; corresponding ADC maps (4 mm). • Post-contrast fat-suppressed T1 sequences: axial, coronal, and sagittal planes. This workflow enables consistent evaluation of the nasopharynx, skull base, and parapharyngeal spaces. **Findings and Discussion:** Untreated nasopharyngeal tumours usually demonstrate intermediate signal intensity on T2-weighted images and low signal intensity on T1-weighted images, with avid homogeneous enhancement after contrast administration. Post-treatment MRI commonly demonstrates asymmetry at the treated site secondary to fibrosis and scarring. Residual scar tissue appears T1/T2 hypointense with minimal or absent enhancement; mild heterogeneous non-masslike enhancement may persist for years. In cases with prior bone invasion, persistent T1/T2 hypointense marrow signal is best assessed on non-contrast T1 sequences and may remain stable for years. On T1 Weighted Fat Sat Post Gadolinium images mild enhancement at the treatment site may persist for years.

CONCLUSION: MRI remains the imaging cornerstone for post-treatment local surveillance of NPC. Familiarity with expected post-radiation changes, diffusion characteristics, and T2 hyposignal characteristics, and non-masslike patterns allows radiologists to distinguish fibrosis from true recurrence and to optimize patient management through early detection of local failure.

123614

Fool Me Once: Postoperative and Post-procedural Changes in Musculoskeletal Imaging Masquerading as Tumor, Metastasis, and Other Worrisome Pathologies

Narayan Sundaram, Vedur Verma, Gregory Stacy, Ibrahim Karademir

University of Chicago

PRESENTER LEVEL OF TRAINING: Radiologist

LEARNING OBJECTIVES:

- Recognize common postoperative and post-procedural changes that can mimic suspicious pathology.
- Present examples of common and rare post-surgical and post-procedural changes in the musculoskeletal system that presented diagnostic challenges at an academic medical center.
- Highlight anatomic imaging findings such as morphology, location, and temporal stability that may differentiate postoperative and post-procedural changes from more worrisome pathologies like primary neoplasm, metastatic disease, or residual/recurrent tumor.

BACKGROUND: Changes associated with prior surgery or interventional procedures can present significant diagnostic challenges. Contributing factors can include radiologist familiarity, remote procedures, inadequate history, and unavailability of prior imaging for comparison. The healing, residual material, morphology and temporal evolution of these changes can resemble active pathology such as infection, inflammation, primary malignancy, metastasis, or recurrent/residual disease. Recognizing the different appearances of previous surgical and procedural interventions can save the patient from unnecessary follow-up, invasive procedures, anxiety, and disease upstaging.

CONCLUSION: Postoperative and post-procedural changes should not be mistaken for more worrisome pathology. A comprehensive understanding of the typical timeline, appearance and variation of common surgical and procedural changes is essential for accurate diagnosis and directing patient management. By recognizing the spectrum of expected imaging findings and systematically reviewing history, timeline, stability, and helpful anatomic features, radiologists can confidently prevent misdiagnosis.

123615

Percutaneous CT Guided Chest Biopsy: A Primer

Thurl Cledera, Lara Gabrielle Lim, David Gonzalez-Hoyos, Farah Cadour

Joint Department of Medical Imaging, University Health Network

PRESENTER LEVEL OF TRAINING: Fellow

LEARNING OBJECTIVES:

- To understand the different techniques used in percutaneous CT-guided lung biopsy.
- To be able to identify advantages and disadvantages in the different procedural techniques, as well as factors that can influence diagnostic/sampling yield and complications.
- To recognize common complications and ways for prevention.

BACKGROUND: Percutaneous CT-guided biopsy of the chest is a well-known and accurate modality in diagnosing the etiology of indeterminate lung lesions. CT-guidance allows for precise localization with the ability to target small or inconspicuous nodules. Differences in institutional practices may lead to varying techniques or preparation that allow for flexibility depending on the performing physicians and patient's needs. But for trainees and the community radiologist this procedure may be daunting, however in this educational presentation we will review the different approaches, pre and post procedural considerations, and complications.

CONCLUSION: Proper preprocedural preparation and consideration of needle and biopsy technique are of utmost importance to the performing radiologist to reduce complications and increase the success of diagnostic yield.

123616

Work Smarter not Harder: Streamlining Cardiac MRI in the Community Setting

Thurl Cledera, Lara Gabrielle Lim, David Gonzalez-Hoyos, Farah Cadour

Joint Department of Medical Imaging, University Health Network

PRESENTER LEVEL OF TRAINING: Fellow

LEARNING OBJECTIVES:

- To understand which protocols are appropriate in cardiac MRI when faced with different indications or limited clinical information.
- To recognize essential sequences needed to interpret cardiac MRI.
- To understand limitations of each sequence and learn how to troubleshoot.

BACKGROUND: Cardiac Magnetic Resonance (CMR) is the central modality for non-invasive assessment of ischemic and non-ischemic cardiomyopathy, as well as congenital heart disease. Community hospitals may encounter challenges in the performance of CMR, due to limitations in resources, specialized staff, and long scan times. Although study volumes may be smaller in community settings, it is important that the serving radiologists must be able to deal with limited images and clinical information in order to help their clinicians. Knowing the value of each sequence is key to understanding which sequence could be discarded to shorten scanning time while still answering the clinical question. Live troubleshooting to help technicians who may not be familiar with this CMR is also paramount to deliver best and diagnostic image quality. Finally, it is important to know the limitations of each sequence for a reliable final diagnosis. In this educational exhibit, we will tackle the different sequences in cardiac MRI and what to look for on each of them, to understand which are essential in order to achieve a diagnosis to make the most of our limited resources and clinical information. Quality assessment and limitations of each sequence will also be described.

CONCLUSION: Approaching CMR in an efficient manner in resource-limited settings is important in providing overall cardiovascular access for the community. Understanding the essential sequences, appropriate protocols, and imaging findings aids the radiologist in providing adequate care in the community.

123617

Ultrasound in Median Nerve Neuropathy: Looking Beyond the Carpal Tunnel

Pratibha Bhatia, Lisa Billone, Hema Nalini Choudur

Hamilton General Hospital, McMaster University

PRESENTER LEVEL OF TRAINING: Fellow

LEARNING OBJECTIVES:

- Highlight the relevant anatomy of the median nerve and its potential entrapment sites, both proximal and distal to the carpal tunnel.
- Present illustrative cases demonstrating clinical manifestations and dynamic ultrasound findings in median nerve neuropathies beyond the carpal tunnel.
- Emphasize the less common but clinically significant causes of median neuropathy and their impact on patient outcomes.

BACKGROUND: Extensive literature is dedicated to Carpal Tunnel Syndrome, which is the most common peripheral entrapment neuropathy. However, median nerve symptoms may also arise from compressions at other sites, which are often underrecognized due to their infrequent presentation, overlapping clinical features, and limited description in the literature. Herein, we illustrate cases of median nerve compression at the elbow, forearm, and distal to the carpal tunnel, including pathologies of the anterior interosseous nerve, palmar cutaneous branch, recurrent motor branch, and double-crush syndrome.

CONCLUSION: This exhibit underscores the importance of assessing the median nerve beyond the carpal tunnel when evaluating patients with median nerve symptoms. Median nerve compression at other sites may occur either independently or in conjunction with carpal tunnel syndrome and may even contribute to persistent symptoms following carpal tunnel surgery. Familiarity with these entities will facilitate a more detailed search, thereby leading to appropriate and timely management.

123618

Renal Involvement in Hereditary Tumor Syndromes: Imaging Patterns, Diagnostic Clues, and Surveillance Strategies

Basil Ahmad, Vibhuti Kalia

University of Western Ontario

PRESENTER LEVEL OF TRAINING: Resident

LEARNING OBJECTIVES:

- Recognize key renal imaging features of major hereditary tumor syndromes
- Differentiate characteristic tumor enhancement patterns across CT and MRI to narrow the diagnostic differential
- Apply appropriate surveillance strategies and understand when to recommend genetic testing

BACKGROUND: Hereditary tumor syndromes account for a minority of renal neoplasms but present disproportionately with early-onset, bilateral, or multisystems disease. Syndromes such as VHL, Birt-Hogg-Dube, MITF mutations, and MET mutation papillary RCC demonstrate distinctive renal and extrarenal imaging features. Early radiologic recognition is essential to prompt genetic assessment, tailor surveillance intervals, and guide management

CONCLUSION: Radiologists play a central role in identifying hereditary renal tumor syndromes by recognizing characteristic imaging patterns and associated systemic findings. Accurate interpretation directly influences genetic referral, surveillance frequency, and timing of intervention. Early detection of syndromic renal lesions improves outcomes, reduces morbidity, and ensures patients receive personalized, guideline-based care

123619

Patient Perceptions of the Use of Artificial Intelligence in Radiology: A Scoping Review

Shreya Udupa¹, Charlotte Yong-Hing², Ojasvi Sharma¹, Sonali Sharma³

¹McGill University, ²BC Cancer Vancouver, ³University of British Columbia

PRESENTER LEVEL OF TRAINING: Medical Student

LEARNING OBJECTIVES:

- Review current evidence on patient perceptions of artificial intelligence (AI) in radiology.
- Understand key themes shaping patient trust, expectations, and comfort with AI-supported imaging.
- Recognize patient-identified priorities for the ethical and acceptable integration of AI into radiology practice.
- Highlight gaps in the existing literature and opportunities for future patient-centred research.

BACKGROUND: Artificial intelligence (AI) is increasingly integrated into radiology, yet patient perspectives remain understudied. A review of 3,060 abstracts identified only 13 empirical studies (4,571 patients, 10 countries). Despite varied settings, six consistent themes emerged: trust and confidence in AI, the need for human oversight, limited AI understanding, emotional reactions, concerns about accountability, and expectations for AI performance.

CONCLUSION: Patients are central to the integration of AI in radiology, yet literature examining patient perceptions of the use of AI in radiology is scarce. Across the existing evidence, patients value AI when it improves diagnostic accuracy, efficiency, and overall care, but their trust and confidence depend on maintaining strong human oversight. Radiologists are expected to remain central decision-makers, providing clear communication, professional accountability, and reassurance, particularly important given variable emotional responses ranging from reassurance to anxiety. Limited AI literacy shapes patient comfort, highlighting the need for transparent explanations of AI's role, limitations, and safeguards. Concerns about accountability, especially who is responsible when AI errors occur, remain a major determinant of trust. Patients also articulate clear expectations: AI should support, not replace, clinicians, enhance accuracy, and reduce wait times without diminishing the human connection in care. Despite increasing adoption of AI tools, major gaps persist in understanding patient experiences. Future research should prioritize patient-centred approaches to ensure AI systems, workflows, and educational strategies align with patient values, expectations, and comfort, ultimately fostering trust and supporting high-quality, patient-centred radiology practice.

123620

Inclusive Radiology Care for Transgender Patients

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PRESENTER LEVEL OF TRAINING: Medical Student

LEARNING OBJECTIVES:

- Identify key barriers to equitable radiology care for transgender and gender-diverse (TGD) patients.
- Recognize the importance of gender-inclusive terminology, communication, and departmental practices.
- Review post-operative anatomy and imaging considerations following gender-affirming surgeries and hormone therapy.
- Describe the application of BC Cancer breast screening guidelines to transgender patients based on anatomy, hormone use, and surgical history.

BACKGROUND: Transgender and gender-diverse (TGD) individuals experience disproportionate barriers in medical imaging, with over 70% reporting negative radiology encounters such as misgendering or inappropriate terminology. These experiences contribute to care avoidance and diagnostic delays. As gender-affirming hormone therapy and surgical interventions become increasingly common, radiologists must understand the associated imaging findings and adopt inclusive communication and anatomy-based practices. Improving radiology environments enhances safety, trust, and diagnostic outcomes for TGD patients.

CONCLUSION: Radiology plays a central role in equitable care for transgender and gender-diverse (TGD) patients. Literature consistently shows that TGD patients report more negative imaging experiences than in other healthcare settings, emphasizing the need for clear, department-wide strategies to improve inclusion. Many Canadian and U.S. training programs now use anatomy-based naming conventions (e.g., "Breast Imaging" rather than "Women's Imaging"), yet greater consistency is needed across continuing education, scheduling systems, intake processes, and patient-facing materials to reduce misgendering. Understanding gender-affirming postoperative anatomy is essential for accurate interpretation. Pelvic MRI after penile-inversion vaginoplasty typically demonstrates a neovagina between the bladder and rectum, sometimes adjacent to the prostate and residual seminal vesicles. Sigmoid vaginoplasty introduces additional features, such as a bowel conduit, staples, and susceptibility to abscess, stenosis, or fistula. The accompanying MRI and CT cases (Figure 1) highlight practical postoperative appearances and common complications that general radiologists may encounter. Hormone-related changes, including breast-density variation in transgender women and chest-wall surveillance needs in transgender men, reinforce the importance of anatomy-based screening approaches such as those used by BC Cancer. Integrating inclusive communication, culturally competent workflows, and familiarity with gender-affirming anatomy improves diagnostic accuracy, reduces harm, and creates more affirming radiology environments.

123624

Dental Trauma: What the Radiologist Needs to Know?

Muath Marghalani, Nicolas Murray

Vancouver General Hospital

PRESENTER LEVEL OF TRAINING: Fellow

LEARNING OBJECTIVES

- Outline teeth, mandible and maxillary anatomy.
- Recognize and describe the different types of dental trauma and their mechanisms.
- Describe basic search patterns and associated injuries.

BACKGROUND: The majority of trauma patients presenting with head and neck injuries have some form of dental injury; early and accurate recognition of the different types of dental trauma aids clinicians in establishing an optimal treatment plan. Despite their prevalence, dental trauma remains underreported for many radiologists, specifically for those unfamiliar with teeth anatomy, different types of injuries, and mechanisms of trauma. Furthermore, the presence of dental caries, teeth fillings, and known interventions within the oral cavity may obscure through artifacts and distract from subtle findings. Common findings such as overlying soft tissue edema, adjacent hematoma, and fractures of the maxillary sinus, mandible, and nasal bones are helpful to draw extra focus and scrutinization of the teeth. Although patient presentation and clinical examination can be helpful, some patients have many facial and bodily injuries, which limits the clinicians from completing partial, if any, oral examinations, let alone patients who present unstable or intubated.

CONCLUSION: Improving dental trauma knowledge and recognition among radiologists allows them to have confidence and be helpful in guiding patient care without delaying treatment. Additionally, the reduction of aesthetic problems and dental loss will raise the level of overall care for trauma patients.

123631

Ultrasound Assessment of Oropharyngeal Anatomy

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PRESENTER LEVEL OF TRAINING: Health Sciences Student

LEARNING OBJECTIVES:

- To demonstrate appropriate transducer selection and image optimization for high-quality oropharyngeal ultrasound.
- To guide systematic positioning and maneuvering for consistent visualization of the tongue base, floor of mouth, and tonsillar region.
- To present normal sonographic anatomy of the oropharynx, including the palatine tonsils, glossotonsillar sulci, and base of tongue, using a reproducible transcervical approach.

BACKGROUND: Transcervical ultrasound (TCUS) has emerged as a valuable, non-invasive modality for oropharyngeal evaluation. However, consistent image quality requires technical proficiency and standardized methodology. This exhibit provides a structured guide for transducer selection, parameter optimization, and scanning technique to reproducibly delineate normal oropharyngeal anatomy. Transducer Selection: A 9-2 MHz linear transducer is recommended for transcervical scanning, operated at 5-6 MHz for average-sized patients. Ideally, virtual convex mode is employed for enhanced field of view. Depth and gain adjustments are optimized for differentiating hypoechoic musculature such as the genioglossus and deeper structures including the vallecula and palatine tonsils. Transducer Orientation and Technique: For consistency, the orientation marker should correspond to the left side of the ultrasound screen and remain cephalad (longitudinal) or rightward (transverse). Controlled rotational sweeps (< 90°) maintain spatial coherence. For floor-of-mouth evaluation, the transducer is placed transversely under the chin and advanced posteriorly to visualize the genioglossus, geniohyoid, mylohyoid, and sublingual glands. Sagittal midline positioning demonstrates intrinsic tongue muscles, while lateral submandibular scanning captures the tonsillar fossa and glossotonsillar sulcus. Gentle posterior tilting allows visualization of the vallecula and lingual tonsils. These methods overcome acoustic shadowing from the mandible or hyoid and ensure consistent identification of key landmarks, which are key for both diagnostic imaging and intraoperative guidance.

CONCLUSION: Standardized TCUS enables detailed, reproducible visualization of the oropharyngeal anatomy. Mastery of transducer selection, orientation, and parameter optimization improves diagnostic accuracy and facilitates the integration of ultrasound into head and neck imaging practice.

123635

Following the Glow: Decoding the Perivascular Enhancement in CNS

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¹The University of Ottawa, ²Sahlgrenska University

PRESENTER LEVEL OF TRAINING: Fellow

LEARNING OBJECTIVES

- To recognise the perivascular enhancement patterns.
- To be able to narrow down or arrive to a diagnosis following PVE pattern.
- How to avoid pitfalls.

BACKGROUND: PVE on MRI represents pathological alterations within perivascular spaces, which are integral to the brain's glymphatic system. PVE remains under-reported in routine radiological interpretation and poses a diagnostic challenge. PVE patterns are classified into four morphological categories - linear, nodular, curvilinear, and confluent enhancement. Linear PVE predominantly indicated inflammatory and demyelinating processes. Punctate and nodular enhancement seen in neoplastic and infectious processes, respectively. Confluent enhancement pattern suggests toxic metabolic etiologies.

CONCLUSION: PVE exhibits characteristic morphological patterns that correlate with distinct diagnostic categories. Systematic recognition of these patterns can significantly improve diagnostic accuracy and guide targeted clinical workup, potentially reducing diagnostic delays and improving patient outcomes.

123636

Decoding the Brachial Plexus: From Fundamentals to advances - Anatomy, Imaging and Pathologies

Kamaljeet Singh

The University of Ottawa

PRESENTER LEVEL OF TRAINING: Fellow

LEARNING OBJECTIVES

- To learn anatomy of Brachial plexus.
- To understand the radiological landmarks to evaluate the brachial plexus.
- To review various pathologies affecting the brachial plexus.

BACKGROUND: The brachial plexus is a highly complex neural network responsible for motor and sensory innervation of the upper limb. Its deep anatomical location, overlapping fascial planes, and variable branching patterns often make radiological assessment challenging. Advances in MRI- including high-resolution 3D STIR sequences, diffusion-based imaging, and MR neurography- have significantly improved visualization of the plexus and its associated pathologies. A structured understanding of anatomy along with optimized imaging protocols is essential for accurate diagnosis across a wide spectrum of conditions, ranging from traumatic nerve root avulsions to neoplastic, inflammatory, radiation-related, and entrapment neuropathies.

CONCLUSION: A comprehensive approach combining anatomical knowledge with advanced imaging techniques enhances radiologists' ability to accurately evaluate various brachial plexus pathologies. By integrating fundamentals with case examples, this educational exhibit aims to demystify plexus imaging, improve diagnostic confidence, and support better patient outcomes.

123637

Patient Perceptions of the Use of Artificial Intelligence in Dental Radiology: A Scoping Review

Ojasvi Sharma¹, Shreya Udupa¹, Monica Taing¹, Sonali Sharma², Memoon Qureshi³, Adam Hussain³, Charlotte Yong-Hing⁴

¹McGill University, ²University of British Columbia, ³University of Saskatchewan, ⁴BC Cancer Vancouver

PRESENTER LEVEL OF TRAINING: Medical Student

LEARNING OBJECTIVES:

- Review current evidence on patient perceptions of artificial intelligence (AI) in dental radiology.
- Understand key themes shaping patient trust, expectations, and comfort with AI-supported dental imaging.
- Recognize patient-identified priorities for ethical, transparent, and clinically acceptable AI integration in dental practice.
- Identify gaps in the literature and opportunities for future patient-centred dental AI research.

BACKGROUND: Artificial intelligence (AI) is increasingly applied to dental radiographs, yet patient perspectives remain understudied. A scoping review identified six empirical studies involving 4,845 patients from several countries. Across diverse settings, patients generally expressed cautious openness to AI, particularly when described as supporting rather than replacing dentists. Reported views emphasized perceived benefits such as improved accuracy and speed, alongside concerns related to trust, privacy, clinician oversight, and uncertainty about how AI-generated findings would influence care.

CONCLUSION: Current evidence suggests that patients are conditionally receptive to the use of AI in dental radiology, particularly when it is framed as a tool that enhances clinical expertise. Across studies, patients valued the potential for AI to improve diagnostic accuracy, streamline workflows, and support earlier detection of dental disease. However, acceptance was strongly influenced by trust in the technology, comfort with its use, and confidence that dentists would maintain oversight and remain responsible for interpreting imaging results. Concerns frequently centred on data privacy, secure handling of dental images, and uncertainty about how errors would be managed. Many patients emphasized the importance of clear explanations about how AI contributes to diagnosis, the opportunity to discuss AI-generated findings with their dentist, and reassurance that human judgment would ultimately guide care. Variability in acceptance was noted, with individuals who were more technologically familiar demonstrating greater openness, while older or less tech-literate participants expressed hesitation. Overall, the evidence base remains small and methodologically heterogeneous. As AI tools become more prevalent in dental imaging, broader patient engagement will be essential. Incorporating patient expectations into workflow design, communication strategies, and regulatory frameworks will support trust, transparency, and the ethical adoption of AI in dental radiology.



122737

Nuchal Translucency Audit

Annie Brewerton, Christopher Fung

University of Alberta

PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE AND BACKGROUND: Nuchal translucency (NT) ultrasound is a prenatal screening scan for fetal aneuploidy, performed between a gestational age of 11 weeks 3 days - 13 weeks 6 days, or between a crown rump length of 45-84mm. Stringent criteria is required for diagnostic quality. Quantification of successful NT scanning is currently limited to research settings and is insufficient to apply to clinical scenarios. In this project, we examine the success rate of outpatient NT scanning.

METHODS: NT data from a clinic database from 2018-2024 was subdivided by year, patient, attempts, and outcome. Data was compared to a predetermined success rate (85% +/-10%). NT credentialed sonographers were consulted for their expertise. Analyzed data was discussed, and potential barriers to success were identified. Educational rounds were provided and sonographers were encouraged to reflect on the data and their personal performance. Follow-up data was collected and analyzed from July - September 2025 and compared to a 3-month subset from 2024.

RESULTS: 48,741 NT scans were analyzed. 36,009 scans (73.9%) were successful and 12,732 scans (26.1%) were failed. Most successful exams were obtained on the first attempt (63.4%). Follow-up data examined 1,612 NT scans with a success rate of 72.6%. Our comparison data subset from 2024 examined 1,507 NT scans with a success rate of 71.7%. Both datasets demonstrated similar patterns, with most successful exams occurring on the initial attempt. Unfortunately, our target success rate of 85% was not achieved. This is likely multifactorial and may be due to limitations of the exam or limited ability to implement corrective action in the clinical setting.

CONCLUSION: NT scanning is technically challenging with multifactorial barriers to success, impacting technologist workload, reporting volume, and healthcare expenditure. Repeat appointments lengthen wait times and are burdensome to patients. Further research is needed to fully elucidate factors contributing to failure rate and evaluate clinical utility.

122875

From Punitive to Positive: Transforming Radiology Culture Through Peer Learning

Nathan Lucchese Bellé, Ania Kielar

University of Toronto

PRESENTER LEVEL OF TRAINING: Fellow

OBJECTIVE AND BACKGROUND: Traditional radiology peer review is perceived as punitive, time-consuming, and of limited educational value. In 2023, a peer learning program was introduced at our tertiary academic imaging department to foster shared learning, recognize “good calls,” shifting the focus to meaningful discussion. The goal of this quality project is to demonstrate a positive shift in departmental culture and inspire adoption of similar peer learning approaches elsewhere.

METHODS: All abdominal peer learning cases submitted January 2023-September 2025 were included. Each was categorized by organ system, imaging modality, and whether it represented a “good call” versus learning opportunity. Data was compared to prior our peer review process and published literature.

RESULTS: 367 peer learning cases were submitted by 33 abdominal radiologists. Most frequent organ systems involved were gastrointestinal (16.6%), hepatic (8.4%), and reproductive (6.3%). “Good calls” accounted for 30.2% of entries, introducing a positive reinforcement element. 78% of cases involved CT. Our new approach emphasizes qualitative insights and shared understanding. In our prior peer review system, 78% of cases showed “minor” discrepancies and < 2% were categorized as “major”-comparable to published rates. Peer learning values radiologists’ limited time by requiring submission of one meaningful case per month rather than reviewing dozens of cases, most of which agree. This new model with anonymized cases presented at departmental rounds fosters open discussion, generating actionable outcomes such as journal club, focused teaching themes and structured-reporting improvements.

CONCLUSION: Peer learning transformed what was once a compliance-driven audit into a constructive educational process. By eliminating the need to quantify error severity, the focus shifted toward insight, discussion, and practical learning. Radiologists’ time was optimized, each contributing one meaningful case per month. While quantitative impact has not yet been formally measured and future studies should aim to quantify these outcomes and explore sustainability.

123287

Evaluation of Ultrasound-Guided Popliteal-Sciatic Nerve Blocks in Lower-Limb Endovascular Intervention: A Single-Centre Audit

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Belfast Health and Social Care Trust

PRESENTER LEVEL OF TRAINING: Resident Physician

OBJECTIVE AND BACKGROUND: Patients undergoing lower-limb endovascular intervention for peripheral arterial disease (PAD), particularly those with chronic limb-threatening ischaemia (CLTI), experience severe rest pain. Popliteal-sciatic nerve blocks (PSNBs) have been used in our department for lower limb interventions, but their effectiveness and documentation have not been formally evaluated. This audit aimed to assess current practice, efficacy, safety and areas for service improvement.

METHODS: A retrospective audit was conducted of all PSNBs performed in the Belfast Health and Social Care Trust from December 2023 to July 2025. It was registered with our local QI department under Audit ID 7349. Cases were identified using NIPACS keyword searches, scanned data collection forms, paper records and a radiographer-maintained log. Variables collected included procedural indication, block positioning, local anaesthetic agent and volume, ultrasound visualisation, injection level, pre- and post-block pain scores, symptomatic response, sedation requirements and adverse events. Analysis was performed using Microsoft Excel, with paired t-tests used for pain reduction.

RESULTS: 46 PSNBs were performed across 45 patients (mean age 71.3 years, M:F 33:12). Indications were CLTI, infection and contrast allergy. Below-the-knee interventions accounted for 57% of cases. Paired pre- and post-block pain scores (on a verbal rating scale out of 10) were available for 27 patients. Mean pain decreased from 8.96 ± 1.37 to 2.11 ± 2.17 following the block, with a mean reduction of 6.85 ± 2.39 ($p < 0.0001$). Twelve patients required additional intravenous sedation. No major block-related complications were documented. Documentation was incomplete in 24% of cases, with missing or unscanned forms. Image shows injection type and site distribution.

CONCLUSION: PSNBs were associated with statistically significant reduction in procedural pain during lower-limb endovascular intervention. Variable documentation, incomplete pain scoring and the need for additional sedation in some cases highlight opportunities for service standardization. These findings support the development of local guidelines and further prospective evaluation.

123297

Implementation of Weekly Resident-faculty Coffee Hours Improves Resident Wellbeing and Sense of Belonging

Katie Harris, Sabrina Zulys, Charles Yan

University of Toronto

PRESENTER LEVEL OF TRAINING: Radiologist

OBJECTIVE AND BACKGROUND: Since the COVID-19 pandemic and the resultant increase in remote work, informal hospital-based gatherings have decreased. This limits opportunities for radiology residents and staff to interact with each other and their peers in casual environments, impacting opportunities to find mentors and build community. A survey of our resident population performed in 2023-24 found that the majority of residents in our program felt isolated from their peers and faculty radiologists.

METHODS: We implemented a weekly coffee (half) hour before afternoon teaching in October 2024 that leveraged the existing facility booking for the resident half day. Faculty and fellows were invited to attend each week to meet the residents. The initial goals set out by the initiative were: 1. at least 50% utilization by residents - i.e. 50% of residents who attended the academic half day each week came on time for the coffee hour, 2. at least two faculty members at each coffee hour, and 3. improvement in average subjective mood, used as a proxy for community building.

RESULTS: A survey was sent to the residents and staff evaluating the impact of the coffee (half) hour after a 3-month probationary period, the results of which are shown in the table below. All three initial goals were achieved. Subjective feedback indicated that while faculty presence was valued, there were significant limitations on staff attendance such as ongoing clinical duties and lack of colocation with teaching site. However, the opportunity to bond with co-residents was highly valued.

CONCLUSION: Re-integration of casual spaces for staff-resident interaction improved the sense of community within our radiology residency program. Importantly, this space was used for residents to interact with their peers and senior colleagues, which facilitated greater in-program cohesion, sharing of resources and vertical mentorship.

123312

Nasal Bone Radiographs Don't Make "Scents"

Christina Lacombe, Christopher Fung, Candace Hagerman, Roger Yao

University of Alberta

PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE AND BACKGROUND: The objective of this QI project is to reduce the number of nasal bone radiographs ordered to decrease associated cost and unnecessary patient radiation. Choosing Wisely Canada for Pediatric Otolaryngology and Choosing Wisely Canada Otolaryngology: Rhinology recommend against routine radiographs in the evaluation of pediatric nasal fractures (Choosing Wisely Canada, Canadian Society of Otolaryngology - Head and Neck Surgery, January 2022 and July 2023). Nasal bone radiographs do not add value to the diagnosis or treatment of nasal bone fractures. Nasal bone radiographs have a low sensitivity and specificity (63% and 56% in the adult population and 72% and 73% in the pediatric population). Regardless of radiologic findings, the decision to reduce a nasal fracture depends on the presence of breathing difficulty and external deformity, two criteria poorly assessed on plain radiograph.

METHODS: A list of nasal bone radiographs obtained from Jan 1, 2023 to Dec 31, 2023 was created using a database of Nuance Reports across the Edmonton Zone Emergency Departments. Results were broken down by hospital and ordering physician. Targeted presentations to each ER physician group was performed. A repeat audit of nasal bone radiographs will be obtained six months after the final presentation. The target is to decrease the number of nasal bone radiographs ordered by 90% within six months post-intervention.

RESULTS: 284 nasal bone radiographs were ordered from Jan 1, 2023 to Dec 31, 2023 in 16 hospital of Edmonton zone. Post intervention data pending.

CONCLUSION: Nasal bone radiographs do not change the management and do not add additional clinical information. Reducing the number of nasal bone radiographs will decrease the unnecessary cost and radiation to patients. Patient's expectation to get a nasal bone radiographs could potentially influence the number of radiographs ordered. Consequences of not ordering nasal bone radiographs: could potentially lead to more facial bone CTs ordered.

123447

Cranial Computed Tomography Overuse in Pediatric Minor Head Trauma: Insights and Recommendations from a Single-Centre Experience

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE AND BACKGROUND: Acute head trauma (AHT) is a common reason for pediatric emergency department (ED) visits, though many cases are minor and do not result in traumatic brain injury (TBI). Validated clinical decision rules such as PECARN and CATCH2 help identify children at risk for TBI and guide indications for cranial computed tomography (CT); however, CT remains frequently overused, raising ongoing concerns about radiation exposure, resource utilization, and overall clinical yield. This study aims to evaluate the diagnostic yield and appropriateness of cranial CT in pediatric head trauma after-hours at a tertiary care centre.

METHODS: We conducted a retrospective review of all after-hours cranial CT scans performed for head trauma between January 2020 and February 2024. Extracted data included rates of skull fracture and intracranial injury, radiation dose, mechanism of injury, GCS score, and follow-up imaging. Patients were grouped by age: <2 years and ≥ 2 years.

RESULTS: A total of 361 children were included (median age 6 years; 58.5% male). Most CT scans were normal (71%) with no evidence of skull fracture (80%) or acute intracranial injury (84%). Isolated skull fractures were identified in 9.9%, and 10.2% had both a skull fracture and underlying intracranial bleed and/or contusion. Fifteen percent required follow-up imaging. Children under 2 years old (n=97) had higher rates of positive findings: 34% had skull fractures, 20% had isolated intracranial bleeds, 1% had isolated contusions, and 5.2% had both a bleed and contusion.

CONCLUSION: In children ≥ 2 years old, cranial CT infrequently demonstrated acute findings, suggesting opportunities to optimize imaging practices and reinforce evidence-based use of decision rules such as PECARN. In contrast, infants <2 years old showed higher rates of positive findings, underscoring the need for continued age-specific risk stratification and potential refinement of decision-making approaches for this subgroup to optimize patient safety and resource stewardship.

123454

Individualized CT for Pulmonary Embolism: Targeted Areas for Protocol Optimization

Wolim Lee, Jessie Kang, Daria Manos, Kathleen Macmillan

Dalhousie University

PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE AND BACKGROUND: To identify factors associated with indeterminate CT pulmonary embolism (CT PE) studies and highlight potential areas for protocol optimization by radiologists, residents and technologists.

METHODS: We reviewed all consecutive inpatient, emergency, outpatient CT PE studies performed at [institution redacted] over a 3-month period. We assessed requisition history for tachycardia or suspected poor cardiac output (CO). Main pulmonary artery enhancement (MPA), signal-to-noise ratio (SNR) and contrast-to-noise ratio (CNR) were measured. We calculated patient cross sectional area using the scout radiograph. Original reports were used to classify studies as indeterminate, negative, or positive for PE. REB approval was obtained.

RESULTS: Of 798 CT PE studies, 14% were indeterminate, 14% positive, and 72% negative. Indeterminate studies: 35% tachycardia, 14% poor CO, 46% MPA enhancement <250 HU. Negative studies: 23% tachycardia, 8% poor CO, and 7% MPA HU <250. Positive studies: 14% tachycardia, 5% poor CO, and 7% MPA HU <250. Mean patient cross-sectional area was greatest in the indeterminate group ($968.41 \pm \text{SD } 294.71$), compared with negative (779.43 ± 405.15) and positive (835.58 ± 223.07) studies. SNR and CNR were lowest in indeterminate exams (mean SNR 13.20; mean CNR 9.4) compared with negative (18.4; 13.7) or positive (18.3; 13.4) studies.

CONCLUSION: Indeterminate CT PE studies appear to be associated with tachycardia, decreased CO, lower MPA enhancement, larger patient cross-sectional area, and lower SNR/CNR. To reduce indeterminate exams and optimize care, radiologists and technologists may be able to adjust PE protocols based on thoracic circumference and acute (tachycardia) or chronic cardiac output abnormalities. Thoracic circumference may serve as a practical surrogate for patient weight to guide contrast dosing and may better assess thoracic-specific distribution of weight.

123462

Environmental Impact of Portable MRI in a Remote Canadian Community

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE AND BACKGROUND: Diagnostic imaging contributes substantially to healthcare's environmental footprint through energy use, waste generation, and transportation-related carbon emissions. Portable MRI (pMRI) systems offer a potential solution by reducing resource demands and enabling local imaging access in remote communities. However, their environmental impact compared with fixed MRI remains unexplored. The objective of this study was to provide a comprehensive environmental analysis of pMRI implementation in a remote Canadian community.

METHODS: We conducted a mixed-methods analysis of the Hyperfine™ 64 mT pMRI scanner, focusing on three domains: (i) energy consumption, (ii) transportation-related greenhouse gas (GHG) emissions, and (iii) waste generation. Published data on energy use and emissions from 1.5 T and 3 T scanners were compared with modelled estimates for pMRI. Transportation emissions were calculated for patient travel between two hospitals in remote Canadian communities via commercial, charter, and emergent flights. Waste-related emissions were assessed from shielding materials, helium consumption, and gadolinium-based contrast agent use.

RESULTS: pMRI consumed 11.8-17.4 times less energy per scan than fixed 1.5 Tesla (T) and 3 T systems, corresponding to ~0.065 tons (t) CO₂ annually. Avoiding inter-facility travel for 56% of patients yielded an estimated reduction of 14.34 t CO₂ per year, equivalent to emissions from ~1.9 single-family homes. Waste analyses demonstrated that pMRI eliminated helium use, reduced shielding requirements, and minimized contrast-related waste, together preventing an additional ~5.4-10 t CO₂ per scanner over its lifecycle which was equivalent to emissions produced by ~1.9-2.2 homes annually. This conservatively equates to a total carbon emissions saving of 3.8-4.1 home equivalents per year with pMRI implementation.

CONCLUSION: In a remote Canadian setting, pMRI markedly reduced the carbon footprint of neuroimaging by lowering energy demands, eliminating high-carbon patient travel, and reducing waste streams. These findings highlight pMRI as both a sustainability intervention and a strategy to improve equitable imaging access in underserved regions.

123483

Evaluating the Effectiveness of Pre-MRI Periorbital Radiographic Screening Protocols

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PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE AND BACKGROUND: Intraorbital foreign bodies (IOFBs) are a risk for patients who undergo MRI, with potential complications including retinal detachment and even blindness. This study aimed to evaluate the effectiveness of the radiographic screening protocol for IOFBs prior to MRI and to compare our diagnostic yield to the literature.

METHODS: A retrospective review of 100 patients who underwent orbital radiographs prior to MRI between January 2021 and August 2023. The data covered tertiary and community settings. Patients, demographic data, MRI indications, screening questionnaires and radiographic outcomes were collected and analyzed.

RESULTS: The study population had a mean age of 54 years (range 12-92). Of the 100 radiographs, 3% (n=3) had positive findings for IOFBs. Two of the three positive cases answered "Yes" on the questionnaire and did not undergo MRI. In the third positive case, the patient answered "No" on the questionnaire but IOFB was incidentally detected on brain MRI which promoted orbital radiographs. In 33% of the cases (n=33), patients received orbital radiographs despite a "No" response. Orbital radiographs were obtained in 23 patients due to occupational risks (n=4), previously removed IOFB (n=9) or not sure about IOFB exposure (n=10). In 44 patients, a "Yes" response to IOFB exposure was provided.

CONCLUSION: Our findings highlight opportunities to improve IOFB screening protocols by enhancing adherence to pre-MRI questionnaires. This could reduce unnecessary radiation exposure and optimize utilization of scarce resources, while maintaining patient safety. Standardization of screening practices across institutions would further enhance the effectiveness of pre-MRI IOFB detection.

123504

Improving Breast Cancer Care: Design and Implementation of a CT Scanning Protocol for DIEP Flap Surgeries

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PRESENTER LEVEL OF TRAINING: Radiologist

OBJECTIVE AND BACKGROUND: Autologous breast reconstruction utilizing a deep inferior epigastric perforator (DIEP) artery free flap is performed on patients after a mastectomy. Preoperative CT angiography (CTA) of these patients facilitates the identification of the DIEP arteries which perfuse the autologous flap. The purpose of this initiative was to improve the spatial resolution of the CTA and improve identification of DIEP arteries.

METHODS: A new CTA scan protocol was developed for scanning DIEP flap patients. The new protocol includes the following: Use auto prescription kV mode. Trigger the scan via real-time monitoring of concentration of contrast in the descending aorta. Lower patient movement through CT scan. Thin slice (0.625mm) reconstruction and image reconstruction of just the anterior abdominal wall. GE TrueFidelity CT Images Deep Learning Image Reconstruction (DLIR) algorithm. Using only the newest CT scanner in the hospital (2016 CT Revolution GE Scanner) As part of routine clinical care, three DIEP flap patients were scanned using the new protocol and 10 DIEP flap patients were scanned with the old protocol.

RESULTS: New vs old DIEP patient CTA protocols: More DIEP perforator arteries visualized; Old protocol : 5 ± 1.25 (n = 10 patients scanned); New protocol: 8.5 ± 3.5 (n = 3 patients scanned); Between these groups, the two-tailed P value = 0.02. Less noise - Standard deviation of attenuation (in HU) within the abdominal fat; Old protocol: 14 HU; New protocol: 9 HU. Better subjective assessment; Radiologist: "Spectacularly good scans"; DIEP-flap surgeon: "New CT scans are spectacular!"

CONCLUSION: The new protocol for imaging pre-op CTA scans for DIEP flap surgery patients resulted in significant improvement in image quality and has been adopted as the standard of care at our hospital.

123530

Bones Uncovered: A Resident-Led National Educational Initiative to Enhance Musculoskeletal Imaging Training Through Virtual Trainee Day

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PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE AND BACKGROUND: Virtual Trainee Day (VTD) is an annual national educational initiative hosted by the Canadian Association of Radiologists (CAR) to support Canadian radiology trainees. In 2025, for the first time, VTD was fully de-coupled from the CAR Annual Scientific Meeting, allowing residents to take a leadership role on designing and leading the program. The theme, "Bones Uncovered: Essential Approaches for MSK Radiology," was selected by trainees. The purpose was to describe the design, implementation, and evaluation of a national resident-led Virtual Trainee Day focused on musculoskeletal imaging, and to identify strategies that improve national participation, engagement, and educational equity.

METHODS: Trainees curated a national MSK-focused program including expert lectures, interactive polling, junior and senior case round sessions, and career development content. Accessibility was supported through an event webpage, structured program, pre-event speaker dry run, and standardized moderator notes to ensure consistent flow. Participants completed pre- and post-VTD surveys to compare changes in knowledge. Challenges and improvement opportunities were identified through a resident-led debrief and consultation with program directors.

RESULTS: A total of 183 trainees attended the event, representing all 16 Canadian residency programs and one American program. Participants spanned all levels of training. Case round sessions were highly rated for interactivity and relevance. Participants valued the program's structure, high-yield MSK content, and accessible virtual format. Challenges included variability in institutional support for protected time and occasional confusion transitioning between the main webinar and breakout rooms. Planned improvements include adopting a fixed annual date-the second Wednesday of February-to ensure equitable access. Additional improvements include confirming speakers earlier, increasing communication with program leadership, and fewer but longer presentations to support deeper learning.

CONCLUSION: The resident-led VTD was an effective model for delivering high-quality MSK education nationally. Standardized scheduling and iterative refinement will further strengthen VTD's impact as an equitable, accessible educational initiative for Canadian radiology trainees.

123633

Is Sonographic Examination Useful for Annual Follow-Up in Patients Who Have Undergone Total Mastectomy and Breast Reconstruction with Implant?

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE AND BACKGROUND: Total mastectomy significantly decreases the risk of cancer development in high-risk patients. Despite low recurrence rates, surgeons often request sonographic follow-up after total mastectomy and breast reconstruction with implants, potentially increasing the burden on patients. This study aims to evaluate the diagnostic effectiveness of yearly sonography follow-ups in this patient population. Our main objective is to compare the cancer detection rate with the false-positive rate to assess whether this practice offers significant benefit or imposes unnecessary burden on patients and the healthcare system.

METHODS: A retrospective review of sonographic results from 405 patients between January 2024 and September 2025 was performed. Women who had been treated with total mastectomy and reconstruction using implants and who had been followed up with sonography were included. Patients who underwent other types of reconstruction were excluded. We recorded the sonography results and whether further testing was performed.

RESULTS: In total, 292 patients were included. Of these, seven underwent lymph node biopsy, eight had a breast mass biopsy, and six underwent a fine needle aspiration cytology (FNAC) test following their sonography examination. Our results show that 271 patients did not require further examination. Additionally, out of the patients who underwent further testing after sonography, only one breast mass biopsy and two lymph node biopsies revealed a malignancy, while all FNACs were negative, indicating a false-positive rate of 85.7% for sonography. The breast mass, proven malignant, was palpable, and one of the axillary malignant results presented as excruciating axillary pain leading to a diagnosis of lymphoma, whereas the second was diagnosed during routine follow-up as progressively enlarging lymph nodes.

CONCLUSION: Routine annual sonography in asymptomatic post-mastectomy patients yields a low detection rate of cancer recurrence while causing a high rate of false positives. This practice increases patient anxiety and leads to unnecessary biopsies.

123644

Streamlining Lung Cancer Care: An Audit of Radiology-Initiated Referrals to a Canadian Clinic

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University of British Columbia

PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE AND BACKGROUND: Early detection and timely intervention are critical for improving lung cancer survival rates; however, system inefficiencies often delay care. A Canadian Clinic was launched in February 2025 to expedite the evaluation of patients with imaging findings suspicious for thoracic malignancy. To facilitate this, a radiology dictation “macro” was created that when appended to a report automatically triggers referral to the clinic. We aimed to evaluate engagement with this referral pathway before and after targeted efforts to raise awareness amongst radiology staff and trainees.

METHODS: Radiologist-initiated referrals to the Canadian clinic were reviewed between February and July 2025 (pre-intervention). Data collected included time from radiology report issuance to referral receipt and to consultation, along with the outcome of each consultation to date. Through September, a multi-pronged awareness campaign was implemented (the intervention). This included presentations and the dissemination of information to radiology trainees and staff, as well as the display of posters in reading rooms. October served as the post-intervention period. A 30% increase in radiologist-initiated referrals was set as the improvement target.

RESULTS: Between February and July 2025, 20 cases were referred via the pathway. Eight (40%) cases were identified incidentally. Median interval from scan dictation to referral receipt was 6.5 days, and to clinic appointment was 25 days. Five of fifteen cases followed by the clinic underwent bronchoscopy/EBUS, resulting in 2 pathology-confirmed malignancies. Ten cases were referred via the pathway through October, the post-intervention period. This represents a 233% increase over the monthly pre-intervention average.

CONCLUSION: Preliminary findings indicate that this pathway is functioning effectively. Targeted efforts to raise awareness led to a marked increase in referrals, highlighting the impact of simple, low-cost, educational interventions. Radiologist-initiated referrals have the potential to substantially reduce the time between an initial scan suggestive of lung malignancy and specialist evaluation.



122501

Work-related Injuries in Radiology

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PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE: Poor workstation ergonomics increases the risk of repetitive stress injuries (RSIs) and contribute to adverse outcomes. This study aimed to (1) determine the prevalence and types of RSIs among PACS workstation users in our department, (2) identify specific ergonomic deficiencies, and (3) explore the association between workstation ergonomics and physician burnout. We hypothesise that a higher burden of RSIs would correlate with increased burnout symptoms.

METHODS: Data was collected through an anonymous REB-approved electronic survey distributed to faculty, residents, and fellows in our radiology department. This survey collected data on RSI prevalence, ergonomic shortcomings, and perceived effects on work performance and burnout. Validated instruments used included the Cornell Musculoskeletal Discomfort Questionnaire (CMDQ) and the abbreviated Maslach Burnout Inventory (aMBI).

RESULTS / DISCUSSION: There was a 61% response rate from the department (M:F % 62:38). RSIs were reported by 74% of participants, with neck and upper back pain being the most common (Figure 1). Of those affected, 85% believed their workstation worsened their condition. Additionally, 79% noted a component of their hospital workstation had been broken in the past year, while 87% had never received formal ergonomic training. Notably, 28% felt that their RSI contributed to burnout and a trend ($p < 0.1$) linking RSI with increased emotional exhaustion was identified.

CONCLUSION: High RSIs prevalence and poor workstation ergonomics among our radiology department highlights an occupational health issue. The association between RSIs and emotional exhaustion underscores the need for ergonomic interventions and training to reduce injury risk and mitigate physician burnout.

122688

Characterizing the Incidence of Bleomycin-Induced Hyperpigmentation in Patients Receiving Sclerotherapy for Low-flow Vascular Malformations

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: To determine the incidence of bleomycin-induced hyperpigmentation in patients undergoing sclerotherapy for low-flow vascular malformations (LFVM).

METHODS: A retrospective cohort of patients with a radiologically classified LFVM who underwent ≥ 1 bleomycin sclerotherapy sessions at a Canadian Hospital (January 2010 - September 2024). Incidence was calculated per-patient and per-session using exact binomial 95% confidence intervals (CIs). Patient and treatment characteristics were summarized descriptively.

RESULTS / DISCUSSION: Among 333 patients receiving 701 sclerotherapy sessions, hyperpigmentation occurred in 8 patients (2.4%; 95% CI, 1.0-4.7) during 8 sessions (1.1%; 95% CI, 0.5-2.2). Events followed the first, second, or third session - 0.9% (3/333), 1.2% (2/164), and 3.4% (3/87), respectively - with no cases thereafter. Foamed administration was used in 50.0% of sessions preceding hyperpigmentation versus 52.6% overall, showing no signal of increased risk. Rates were markedly lower than the 8-20% incidence reported in oncologic bleomycin use, suggesting context-specific differences in dosing, delivery, and patient factors.

CONCLUSION: Bleomycin-induced hyperpigmentation after LFVM sclerotherapy was uncommon on both per-patient and per-session bases, with no apparent increase in risk from foamed administration. Findings support bleomycin's overall safety profile for LFVM and provide quantitative risk estimates to inform patient consent and counselling.

122734

Diagnostic Accuracy of Image-Guided Sampling for Periprosthetic Joint Infection: A Systematic Review and Meta-Analysis

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PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE: Conduct a systematic review and meta-analysis of the diagnostic performance of image-guided [fluoroscopy, sonography (US), computed tomography (CT)] synovial sampling using intra-operative culture, histology, or Musculoskeletal Infection Society (MSIS) criteria as reference-standard.

METHODS: MEDLINE, Embase, and Cochrane Central were searched from inception to May 23, 2025. Eligible studies evaluated fluoroscopic-, US-, or CT-guided synovial sampling in prosthetic joints. Two reviewers independently performed study selection and data extraction. True-positives, false-positives, true-negatives, and false-negatives were extracted, and pooled accuracy estimates were derived using a random-effects model.

RESULTS / DISCUSSION: 576 records were initially identified and 21 studies (1983-2021) were included in the final analysis. Fluoroscopic-guided hip aspiration showed sensitivity 62.0% (95%CI 46.3-75.6) and specificity 93.1% (95%CI 89.2-95.7) while lavage and re-aspiration showed sensitivity 70.6% (95%CI 61.7-78.2) and specificity 92.0% (95%CI 89.2-94.2). US-guided hip aspiration showed sensitivity 60.7% (95%CI 20.0-90.5) and specificity 93.1% (95%CI 84.8-97.0), while US-guided synovial biopsy yielded sensitivity 75.1% (95%CI 8.5-99.0) and specificity 75.4% (95%CI 54.7-88.6). Considerable heterogeneity was present in lavage use, needle gauge, sample volumes, and reference-standard definitions. Data pertaining to other imaging modalities (e.g., CT) and joints (e.g., shoulder) were derived from a smaller sample size, rendering the outcomes less robust.

CONCLUSION: Image-guided synovial sampling demonstrated moderate sensitivity and specificity in the diagnosis of PJI. No statistically significant difference in outcomes was found between aspiration alone and lavage and re-aspiration for fluoroscopic-guided hip aspiration. US-guided hip aspiration showed comparable sensitivity and superior specificity relative to synovial biopsy. Standardized prospective comparative studies may help improve preoperative diagnostic accuracy and guide modality selection.

122740

Association Between MRI Case Volume and Confidence in Interpretation Among Current and Recently Graduated Canadian Diagnostic Radiology Residents

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PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE: To evaluate the relationship between magnetic resonance imaging (MRI) case volume and confidence in MRI interpretation among diagnostic radiology residents, and to identify factors affecting both case volumes and confidence.

METHODS: MRI volumes for postgraduate year (PGY) 2-5 residents (n = 53) from July 2018 to June 2023 were extracted from PowerScribe. REDCap surveys consisting of multiple-choice, free-text, and 7-point Likert scale questions were distributed to current and graduate residents to collect data on MRI volume, confidence in MRI interpretation, and factors affecting MRI exposure and confidence. Quantitative data were analyzed using descriptive statistics, Spearman's correlation and Mann-Whitney U tests. Open-ended survey responses were analyzed to determine main recurring themes.

RESULTS / DISCUSSION: Response rates were 87.5% (21/24) for current residents and 77.4% (24/31) for graduates. There was a significant strong positive association between current residents' MRI case volume and confidence in MRI interpretation ($r = 0.9$, $p < 0.001$, 95% CI 0.7-1.0), and a trend toward a moderate positive correlation among recent graduates ($r = 0.4$, $p = 0.09$, 95% CI -0.08-0.7). Participants cited structured MRI rotations, resident proactivity, and staff interest and availability for teaching as key factors influencing resident MRI case volume and confidence in MRI interpretation.

CONCLUSION: Increased MRI case volumes are associated with greater confidence in MRI interpretation among diagnostic radiology residents. Additional factors, such as dedicated subspecialty MRI rotations, resident initiative, and staff engagement, also play a crucial role.

122910

Exploring Access, Utilization, and Outcomes of Diagnostic Imaging within Indigenous Communities in Canada: A Scoping Review

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: Indigenous peoples in Canada face systemic barriers in accessing healthcare services, which includes diagnostic imaging. Despite the recognition of these barriers, a consolidation of available literature in this subject remains limited. This study aimed to synthesize all available literature on access, utilization and outcomes of diagnostic imaging among Indigenous peoples in Canada.

METHODS: A scoping review was conducted following PRISMA-ScR guidelines. Five databases were searched (MEDLINE, EMBASE, SCOPUS, Web of Science and CINAHL) for all literature pertaining to diagnostic imaging among Indigenous peoples in Canada. Eligible studies included qualitative, quantitative and mixed methods research published in English. Data were charted and thematically synthesized.

RESULTS / DISCUSSION: Twenty-six studies published between 2002 and 2025 were included, with the largest representation from Saskatchewan (n=7). Themes highlighted include geographical isolation, logistical barriers and decreased utilization of mammography, angiography and prenatal ultrasound services among Indigenous peoples. Innovations proposed include robotic and remote ultrasound technologies and mobile mammography units. Community and policy-led interventions for better outcomes consist of improving access to primary care for more imaging referrals and training rural physicians in point-of-care ultrasound (POCUS) to strengthen local capacity. Few studies evaluated other imaging modalities like CT and MRI or outcomes from proposed interventions.

CONCLUSION: This review reveals gaps in literature and persistent inequities regarding Indigenous peoples' access to imaging. Future research is recommended to highlight underrepresented imaging modalities, outcomes of interventions and should prioritize Indigenous-led research.

123006

Impact of Radiology Teaching in Undergraduate Medical Education on Radiology Residency Match Outcomes

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PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE: To examine the association between radiology teaching models in Canadian undergraduate medical education (UGME) and diagnostic radiology residency match outcomes and medical student interest in radiology.

METHODS: A retrospective cohort study was conducted across the 17 Canadian medical faculties. A literature review of 78 selected peer-reviewed articles was performed. Teaching models were grouped into three categories reflecting their inclusion of interactive strategies and importance given to radiology in the undergraduate curriculum. These categories informed the creation of a 12-item questionnaire gathering the data necessary for an evidence-based scoring system assessing UGME radiology teaching. Based on responses from 16 schools, institutions were scored and ranked into three teaching model ranks. Canadian Resident Matching Service data (2018-2024) describing radiology interest and match outcomes was analyzed for associations with teaching rank using chi-square and logistic regression.

RESULTS / DISCUSSION: Institutions in the highest tier (Rank 1) had 23% lower odds of students ranking radiology on their CaRMS application compared to Rank 3 institutions, but nearly twice the odds of matching into diagnostic radiology. No significant differences were observed in ranking radiology as first choice, though using Rank 2 as reference, Rank 1 was associated with higher odds of matching to radiology as first choice.

CONCLUSION: Although optimized radiology teaching in UGME may reduce the proportion of applicants, it may help medical students better understand the specialty, thus leading to more informed decisions and stronger alignment with the specialty, given ultimately improved match success. These findings support the importance of structured and evidence-based radiology teaching in shaping career outcomes.

123035

Schmorl's Node Communication with Posterior Disc Herniations is Associated with Neural Impinging Disc Herniation: A Retrospective Analysis of 180 MRIs

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: To determine the prevalence of Schmorl's Nodes [SN] and their communication with disc herniations across cervical, thoracic, and lumbar spine regions. We hypothesized that these communications are associated with larger and neural impinging disc herniations.

METHODS: This retrospective study included 180 patients who underwent spinal MRIs in a tertiary healthcare centre between January 2019 and November 2021. MRI studies dedicated to one of the three spinal regions - cervical [n=40], thoracic [n=100], and lumbar [n=40] were assessed by two fellowship-trained musculoskeletal radiologists with 16 and 10 years of MRI experience. Patients with spine surgeries, spine infections, spondylodiscitis, tumors, or imaging studies not of diagnostic quality were excluded.

RESULTS / DISCUSSION: SN prevalence was highest in the thoracic spine, particularly at mid to lower thoracic levels [T6-T12]. Posterior disc herniations and SNs at the same spine levels exhibited a previously undescribed phenomenon of intercommunication through varying-sized tracts [SN-disc herniation communication], appearing in 36-37% of the patients with SNs in their thoracic spine. Disc herniations causing neural impingement were significantly associated with SN-disc herniation communication in the thoracic spine [p<0.05].

CONCLUSION: The phenomenon of SN to posterior disc herniation communication is associated with neural impingement. This supports the notion that SN and posterior disc herniations are statistically associated. This could potentially encourage the development of interventions to prevent SNs, such as avoiding heavy axial loads in susceptible individuals.

123296

Performance-based Competency Standard Setting: Balancing Performance Expectations with Patient Safety and Learner Experience

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PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE: Competency-based medical education emphasizes resident ability to meet defined performance standards in clinical skills. However, there is limited evidence on how to establish these standards in ways that are both grounded in patient safety and feasible for trainees to achieve. We examined how clinically important diagnostic errors and learner feasibility differed when participants were assigned to three different performance standards.

METHODS: This was a multicenter randomized controlled trial conducted across academic radiology programs in Canada and the United States. We developed an education intervention that permitted for deliberate practice of 365 adult chest radiographs (129 [35.3%] cases without and 236 [64.7%] with actionable pathology); each case was classified as low, medium or high risk. Participating radiology residents were randomly assigned to achieve a 75% (Group 1), 85% (Group 2), or 95% (Group 3) performance standard. Outcomes included the proportion of medium/high risk errors in each group, proportion of residents who achieved their assigned competency standard and reported barriers to achievement.

RESULTS / DISCUSSION: We enrolled 105 radiology residents; of these, 47 (44.8%) achieved the standard [29/35 (82.9%) in Group 1, 17/35 (48.6%) in Group 2, and 1/35 (2.9%) in Group 3 (p < 0.001)]. The most frequently reported (% agree/strongly agree) barriers to achieving their assigned standard were time (65.7%) and difficulty of the task (43.8%). Analysis of errors pending.

CONCLUSION: Overly stringent competency thresholds may reduce learner feasibility, highlighting the need for evidence-informed standard setting in CBME. Future analyses will examine differences in patient safety across standards.

123313

Prospective Clinical Validation of Artificial Intelligence-Augmented Point-of-Care Ultrasound for Diagnosis of Pediatric Wrist Fractures

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: Emergency department (ED) wait times for pediatric injuries, especially suspected wrist fractures, can become multi-hour visits. Although generally safe, multiple radiographic imaging can contribute to cumulative radiation exposure in children. This study investigates the diagnostic accuracy of an artificial intelligence (AI)-assisted point-of-care ultrasound (POCUS) tool for diagnosing wrist fractures.

METHODS: This observational study included 96 patients presenting with suspected wrist injuries at a Canadian Children's Hospital. TeleMed MicroUS Pro-L40S probes were used for scanning and the 469 training set scans were collated to train a convolutional neural network (CNN), ResNet34, using cross entropy, dice loss, and optimized by stochastic gradient descent. The model produces a segmentation mask and a diagnostic prediction of fracture video and patient level. Predictions were compared with diagnostic X-ray reports.

RESULTS / DISCUSSION: The AI tool integrates well into the clinical environment and delivers rapid results (within 15 minutes). Diagnosis at the patient level reports a sensitivity, specificity, and accuracy of 0.946, 0.381, and 0.578, respectively. The model has difficulty differentiating epiphyseal plates as normal anatomy and, due to its training set being favoured towards fractured cases, may have increased false positives.

CONCLUSION: AI-assisted POCUS can support rapid diagnosis of wrist fractures. This tool has the potential to alleviate ED congestion by helping identify low-risk patients who can be splinted, sent home, and return for radiographs in an out-patient setting. The AI is being trained on an adaptive threshold for the number of sweeps required to classify a fracture, which may improve both specificity and accuracy.

123314

iKIMRISS: A Mixed-Methods Validation of the Automated Knee Inflammation MRI Scoring System

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: Knee osteoarthritis (KOA) affects 23% of adults over 40. Despite this burden, few medical treatments exist for KOA, a shortcoming that can be attributed to a lack of suitable methods for quantifying its extent. Methods like the Knee Inflammation MRI Scoring System (KIMRISS) have been proposed for quantifying bone marrow lesions (BML), but these systems are tedious and subject to inter-reader variability. This study aims to validate iKIMRISS—an artificial intelligence-automated iteration of KIMRISS—for quantifying BML burden on MRI.

METHODS: iKIMRISS applies a deep learning model to segment bone structures and BML in the knee joint on sagittal fluid-sensitive MRI images. To validate this tool, 11 radiologists and rheumatologists used both manual KIMRISS and iKIMRISS to evaluate 40 two-timepoint KOA cases. Scores were compared between methods using intraclass correlation coefficients (ICC). Semi-structured interviews were conducted to assess the participants' perspectives on iKIMRISS' usability and value.

RESULTS / DISCUSSION: See Fig. 1 for a sample of iKIMRISS annotation. iKIMRISS demonstrated moderate agreement with manual scoring (mean ICC for baseline and change = 0.76). Opportunities for improvement include reducing confusion between cysts and BML and optimizing bone recognition in the patella. iKIMRISS completes scoring in ~15 seconds. Thematic analysis of interviews revealed that participants felt that iKIMRISS is efficient, feasible, and reliable enough for use in research, but not yet clinical settings.

CONCLUSION: iKIMRISS improves the speed and accessibility of BML scoring while maintaining acceptable reliability. Therefore, iKIMRISS could be used as a suitable approximation of expert scoring for quantification of BML burden in clinical trials.

123315

Evaluating the Evaluations: Using GPT-4 to Analyze Narrative Feedback Quality for Radiology Residents

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: Competency-based medical education has increased the volume of narrative feedback for radiology residents. While manual review is time-consuming, large language models (LLMs) show potential for automating quality control. This study investigates LLM performance in evaluating narrative feedback quality using the Quality of Assessment for Learning (QuAL) instrument, which has three dimensions: Evidence, Suggestion, and Connection.

METHODS: A total of 2,718 de-identified comments for 20 diagnostic radiology residents at a Canadian university (2019-2024) were analyzed. Two human raters applied the QuAL instrument, reaching consensus on 1,381 comments, which were then split 80/20 into training and test sets. GPT-4o and GPT-4.1 were evaluated using zero-shot prompting and subsequently fine-tuned on the training set. Model performance was compared with human ratings and assessed using F1 scores for each QuAL dimension.

RESULTS / DISCUSSION: Fine-tuned GPT-4o and GPT-4.1 models showed consistent improvements in performance. Improvements were most substantial in the Evidence dimension: GPT-4o increased its F1 score from 0.51 to 0.76 (+50%), and GPT-4.1 from 0.29 to 0.80 (+171%). Both baseline models performed well on the Suggestion (≥ 0.93) and Connection (≈ 0.88) dimensions, with modest gains after fine-tuning (up to 0.97 and 0.95, respectively), indicating strong reliability for binary classification tasks. Overall, GPT-4.1 showed the greatest benefit from fine-tuning, particularly on more complex multi-class tasks.

CONCLUSION: Fine-tuned LLMs, especially GPT-4.1, demonstrate strong capability in evaluating the quality of narrative feedback for radiology residents. Eventual integration of these models into assessment workflows is expected to support faculty development and enhance clinical training in radiology.

123323

Efficacy of D-Lead Wipes, Hydrogen Peroxide, and Soap in Reducing Surface Lead Contamination on Radiation Protection Apparel: A Zone-Randomized Study

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: Lead radiation protection apparel (RPA) is routinely used in interventional radiology. Prior studies show persistent surface lead contamination, a heavy metal hazard without a safe exposure threshold. We evaluated the effectiveness of three cleaning modalities in reducing surface lead on RPAs using a randomized zone-based design.

METHODS: We conducted a zone-randomized study of 35 lead aprons in a tertiary-care angiography suite. Three 8 × 8 cm zones per apron, right upper chest (A), left upper chest (B), and mid-abdomen (C), were randomized 1:1:1 to D-Lead wipes, 3% hydrogen peroxide, or soap with gauze. Apron surfaces were tested before and after cleaning using an EPA-recognized qualitative lead detection swab. The primary outcome was clearance of detectable lead post-cleaning.

RESULTS / DISCUSSION: 105 zones were tested and 72/105 zones (68.6%) were lead-positive at baseline. A single cleaning cleared 24/72 lead-positive zones (exact binomial, $p < 0.0001$). Clearance success by method was 45.8% for D-Lead, 30.4% for hydrogen peroxide, and 24.0% for soap and gauze, with no significant overall difference (Wald $\chi^2 = 3.7$, $df = 2$, $p = 0.16$). Zone-specific clearance was significantly higher in Zone B at 71.4% compared to 25.9% in Zone A and 22.6% in Zone C (Fisher's exact, $p = 0.001$).

CONCLUSION: Lead contamination of RPAs is common and significantly reduced by cleaning. D-Lead wipes showed the highest clearance, although differences between methods were not statistically significant. Findings highlight lead contamination as a modifiable occupational hazard and support a critical review of institutional cleaning protocols to reduce lead exposure for interventional radiology staff.

123336

Streamlining Endometriosis MRI Reporting: Automated #ENZIAN Classification in Pelvic MRI Using Local and Online LLMs

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PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE: The #Enzian classification standardizes endometriosis reporting but requires specialized training. This study evaluated whether large language models (LLMs) can accurately extract #Enzian scores from MRI reports to support novice radiologists and clinicians.

METHODS: This retrospective study included 186 pelvic MRI reports (2022-2025). Reference #Enzian scores were established by two urologists via consensus. A 50-case subset was scored by 12 residents without #Enzian experience for benchmarks. Twelve LLMs-six online (Gemini 2.5 Pro, Claude Sonnet 4.0, GPT-5, o3, Grok 4, Claude Opus 4.1) and six local (Llama 3.1 8B, Aya Expanse 8B, MedGemma 27B, DeepSeek R1 32B, Llama 3.3 70B, GPT-OSS 120B)-were tested with one-shot prompting. Accuracy was exact #Enzian score matching vs. reference. Comparisons used logistic regression with bootstrap resampling. Cohen's κ assessed agreement.

RESULTS / DISCUSSION: In the full 186-report cohort, online LLMs achieved accuracies of 96.0-97.0%, local models 76.5-94.3%. In the 50-case subset, inter-expert $\kappa=0.96$; residents 87.4% accuracy (mean $\kappa=0.54$ vs. experts). Online LLMs reached 88.9-92.4% (mean $\kappa=0.62-0.78$), with four significantly outperforming trainees: Gemini 2.5 Pro (OR 1.61, $p<0.001$), Grok 4 (OR 1.42, $p<0.001$), o3 (OR 1.40, $p<0.001$), Claude Opus 4.1 (OR 1.17, $p<0.05$). Local models 61.7-87.1% (mean $\kappa=0.30-0.70$), all significantly inferior ($p<0.001$) except GPT-OSS 120B (OR 0.87, $p=ns$). Online API costs for 186 reports: \$3.82 (Gemini 2.5 Pro)-\$42.26 (Claude Opus 4.1).

CONCLUSION: Online LLMs accurately extract #Enzian scores exceeding novices, offering potential as training aids and for standardized reports in surgical planning. Out-of-the-box local models demonstrate limited performance for this application.

123350

From GPT-4o to GPT-5: Accuracy Gains on the American College of Radiology In-training Exam

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: To compare the performance of GPT-5 on extended reasoning mode (Thinking) with GPT-4o on the American College of Radiology In-Training exam.

METHODS: American College of Radiology Diagnostic Radiology In-Training exam questions from 2021 and 2022 were inputted into GPT-4o and GPT-5 Thinking with a basic prompt. Outcomes including accuracy, confidence level, and rationale were collected and compared across models. Effect modification by question type (Image vs Text-based), subspecialty, and confidence level was examined.

RESULTS / DISCUSSION: Across 216 pooled exam questions, 53% percent were image-based and 47% were text-based. Overall accuracy for both models was 76%, with median confidence score of 95. Accuracy differed significantly between image-based (63%) and text-based (92%) items ($p < 0.01$), with no differences in subspecialties. GPT-5 outperformed GPT-4o (81% vs 72%, $p < 0.05$). Model type significantly modified the relationship between confidence and accuracy. Median confidence for correct answers was 95 (GPT-4o) and 90 (GPT-5), and for incorrect answers 95 and 83, respectively.

CONCLUSION: Within a one-year development interval, GPT-5 surpassed GPT-4o on a Radiology board-style examination with a high proportion of image-based questions, achieving higher accuracy and more reliable self-confidence calibration.

123365

Radiological and Clinical Effectiveness of PVA Particles and Embospheres in the Treatment of Uterine Fibroids by Embolization

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PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE: The objective of this research project was to compare the radiologic and clinical effectiveness of Embospheres and PVA particles in the treatment of symptomatic uterine fibroids by uterine artery embolization.

METHODS: This was a retrospective cohort study. The study population consisted of patients who underwent uterine artery embolization for the management of fibroids. The first group underwent embolization with polyvinyl alcohol (PVA) particles. The second group underwent embolization with Embospheres. We conducted a retrospective review of post-procedure MRIs for these patients. For each case, we recorded if the uterine arteries were recanalized, if the ovarian arteries were hypertrophied, and the degree of fibroid infarction. Degree of fibroid infarction was divided into four categories: <50%, 50-89%, 90-99%, and 100%. We also retrospectively reviewed post-procedure quality of life surveys for the same cohort of patients and recorded the quality of life and symptom severity score, using the widely adopted UFS-QOL survey.

RESULTS / DISCUSSION: The average age of the population was 46.5 years. The average time to radiologic and clinical follow-up was 6.0 months and 6.9 months, respectively. The Embosphere cohort and the PVA cohort consisted of 32 and 160 patients, respectively, although not all patients had complete radiologic and clinical data. Embospheres were associated with a lower rate of uterine artery recanalization (89% versus 96%, $p=0.04$) than PVA. There were no significant differences in the clinical results.

CONCLUSION: Embolization with Embospheres was associated with a lower rate of uterine artery recanalization than with PVA particles, although this was not associated with any difference in clinical outcomes.

123402

Identifying Predictors of the Need for Percutaneous Abscess Drainage in Patients Presenting to the Emergency Department with Breast Infection

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: Patients in the emergency department (ED) with suspected breast abscesses are referred through the Breast Abscess Pathway (BAP) for imaging and drainage within 24-48 hours. Despite this structured process, most visits do not result in percutaneous abscess drainage, placing strain on limited resources. This study aims to identify clinical indicators predictive of the need for percutaneous intervention in this population.

METHODS: A retrospective chart review was performed for all patients referred for fine-needle aspiration from the ED (09/2019-08/2024) through the BAP. Data collected included age, lactational status, presenting symptoms, physical exam findings, and imaging results. Chi-square testing for means and multivariate logistic regression were used to identify predictors of drainage.

RESULTS / DISCUSSION: Of 586 referrals, 95 patients (16.2%) had a drainable abscess at presentation, while 119 (20.3%) had signs of mastitis but no drainable collection. 42 (7.2%) referrals resulted in a diagnosis of breast cancer, and 240 (41.0%) had normal or benign findings. Patients who were lactating were significantly more likely to require drainage compared to those with non-lactational mastitis (60.4% vs. 41.5%, $p=0.027$). Patients requiring drainage were also significantly more likely to present with a fluctuant mass (81.1% vs 66.4%, $p=0.016$) and breast warmth (33.7% vs. 18.5%, $p=0.011$). Fever, breast tenderness, or swelling were not significantly associated with drainage.

CONCLUSION: Most BAP referrals resulted in diagnoses other than infection. Lactational status, breast warmth, and a fluctuant mass were significantly associated with the need for drainage. Optimizing triage criteria may reduce resource strain and expedite care for patients likely to benefit from the BAP.

123438

Investigating Evidence of Area Under the Curve (AUC) Hacking in Imaging Research

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PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE: Use of AUC as a performance measure is increasingly common with the proliferation of radiomics and machine learning research in imaging. The purpose of our study is to determine if “AUC hacking” exists in medical imaging research.

METHODS: We conducted a retrospective cross-sectional meta-research study analyzing abstracts from 129 medical imaging journals. A validated text-extraction algorithm harvested 78,946 AUC values from over 250,000 abstracts. We analyzed the distribution of AUC values using histograms with narrow bins (0.01) and spline-smoothed density estimates. We calculated residuals (observed minus expected counts) to detect non-random clustering around thresholds of 0.7 (acceptable), 0.8 (good), and 0.9 (excellent). Subgroup analyses examined the “best model” per abstract and sensitivity to values <0.5. Study protocol, code, and source data were posted on Open Science Framework.

RESULTS / DISCUSSION: The distribution of AUC values was non-smooth, revealing distinct clustering. We observed excess counts immediately above 0.7, 0.8, and 0.9, with corresponding deficits immediately below. Residual analyses confirmed statistically positive deviations at these cut-points. Additionally, a specific “validity hacking” signal was detected, an excess of values at 0.56-0.57 and avoidance of 0.54-0.55, suggesting researchers manipulate results to distinctively avoid “random chance” (0.5). These discontinuities suggest that arbitrary benchmarks have become targets, motivating researchers to fine-tune analyses or selectively report findings that clear these thresholds.

CONCLUSION: Evidence of AUC hacking exists in medical imaging research. This systemic over-optimism undermines the credibility of diagnostic models. Addressing this requires a shift from arbitrary thresholds to clinical relevance, supported by open science practices such as pre-registration and data sharing.

123450

HCC within LR-M: Analysis of Washout Timing & Intensity on CEUS

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: Identify CEUS LR-M imaging features that are predictive of hepatocellular carcinoma, resulting in refinement of diagnostic confidence and improved clinical decision-making.

METHODS: Retrospectively reviewed 100 CEUS examinations of LR-M nodules in at-risk livers, performed between March 2019 and January 2025. CEUS arterial phase enhancement and washout characteristics were documented and classified according to the CEUS LI-RADS v2017 algorithm. Reference standards for HCC diagnosis included biopsy, surgical pathology, or concordant findings on CT/MR. Sensitivity, specificity, and positive predictive value (PPV) were calculated for each CEUS feature.

RESULTS / DISCUSSION: Rapid onset of weak washout persisting to 5 minutes showed the greatest diagnostic performance for identifying HCC within LR-M. This feature was present in 38/49 (78%) of HCCs, with 78% sensitivity, 65% specificity, and 68% PPV. When combined with non-rim arterial phase hyperenhancement (APHE), rapid onset of weak washout increased specificity to 80% but reduced sensitivity to 61%, with a 75% PPV. Rim APHE with late weak washout was observed in only 4/49 (8%) of HCCs and did not reach statistical significance. Other washout patterns, including rapid marked and late weak washout, were infrequent and demonstrated limited diagnostic value for HCC.

CONCLUSION: Rapid onset of weak washout sustained to 5 minutes, in combination with non-rim APHE, represents the most reliable combination of CEUS features for predicting HCC within LR-M. This imaging pattern may provide clinicians with greater diagnostic confidence while preserving the specificity of the LR-5 category. Incorporating this anticipated result into routine interpretation and multidisciplinary discussion can streamline clinical decision-making and optimize management of liver malignancy.

123461

Navigating Social Media for Radiology Residency Recruitment: Mapping the Evidence

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: This study aimed to synthesize existing evidence on how radiology residency programs use social media for applicant recruitment and engagement, especially within the context of a post-COVID virtual transition.

METHODS: A scoping review was conducted following PRISMA-ScR guidelines. MEDLINE, EMBASE, SCOPUS and Web of Science were searched for studies pertaining to social media use by radiology residency programs. Studies on interventional and nuclear medicine programs as well as website only studies were excluded. Data were charted on excel and thematically analyzed.

RESULTS / DISCUSSION: Eighteen studies met the inclusion criteria, most published after 2020. Fourteen articles used cross-sectional designs. Across literature, several themes emerged. Social media was widely described as an tool that allowed radiology programs to adapt to reduced in-person interaction in the COVID era. Programs used social media for promotion and to engage with applicants in an accessible manner. Twitter emerged as the dominant platform, identified by six studies as the most used and effective platform. Two studies highlighted YouTube as a successful platform for information dissemination. One study demonstrated successful use of a virtual-reality based social media platform for their open house, which was well-received by applicants. Four studies emphasized social media's role in highlighting equity, diversity and inclusion (EDI), noting that promoting EDI initiatives can attract more diverse applicants.

CONCLUSION: Social media has become an essential tool for radiology residency recruitment and engagement. Twitter remains the dominant platform, while emerging channels like YouTube and Instagram have growing influence. Promoting DEI initiatives on social media can engage more diverse applicants to radiology.

123463

Retrospective Case Series Assessing Pain Relief Following Genicular Artery Embolization in Patients with Knee Osteoarthritis at a Canadian Health Centre

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PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE: This study aimed to retrospectively evaluate knee pain relief following genicular artery embolization (GAE) in patients with knee osteoarthritis (KOA), resistant to conservative treatments including infiltrations, treated at a Canadian Health Centre between July 2024 and April 2025.

METHODS: After ethics approval, all eligible patients who had undergone GAE during the study period were contacted by phone. Consenting individuals completed a survey assessing their retrospective pre- and post-procedure symptoms, including pain, stiffness, and functional limitation. Outcome measures included the WOMAC questionnaire and a 1-10 Visual Analog Scale (VAS) for pain. Osteoarthritis severity was documented using the Kellgren-Lawrence grade obtained from each patient's most recent knee radiograph. Comparative analysis of pre-and post-GAE scores was performed using ANOVA.

RESULTS / DISCUSSION: By April 2025, seven patients had received GAE, six agreed to participate. Prior to embolization, participants exhibited an average WOMAC score of 57 ± 18 , which decreased to 33 ± 17 following the procedure ($p=0.06$). Pain intensity measured by VAS also improved, declining from 9 ± 1 pre-procedure to 5 ± 2 post-procedure ($p=0.02$). Qualitative observations suggested reduced response among patients with prior knee arthroplasty ($n=2$), while individuals with more advanced radiographic osteoarthritis appeared to experience greater benefit.

CONCLUSION: Although the improvement in WOMAC scores did not reach statistical significance, the significant reduction in VAS pain scores indicates that GAE may provide meaningful pain relief for patients with KOA. Given the limitations of current treatments-either invasive and costly (total knee arthroplasty) or insufficiently effective (conservative therapies)-GAE represents a promising additional therapeutic option for managing knee osteoarthritis-related pain.

123466

Lung Magnetic Resonance Imaging in Pediatric Airway Diseases: A Systematic Review

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: Pediatric airway disorders like bronchopulmonary dysplasia, asthma and cystic fibrosis use imaging for diagnosis and monitoring. Commonly used techniques like X-ray and CT, expose children to ionizing radiation whereas MRI offers a radiation-free alternative with potential for improved spatial and temporal resolution. However, its diagnostic utility across pediatric airway diseases is unclear.

METHODS: A systematic review was conducted on lung MRI studies in children (0-18 years), comparing MRI to gold standard diagnostic tests for airway disorders. The primary outcomes assessed were diagnostic accuracy, image quality, feasibility, and reproducibility. A PubMed search identified 1,027 studies, of which 38 met the inclusion criteria. Risk of bias was evaluated using the QUADAS-2 tool.

RESULTS / DISCUSSION: Most studies focused on BPD, asthma, and CF and were prospective observational designs in NICUs or pediatric hospitals (range: 23 weeks - 21 years). Protocols primarily used 1.5T/3T scanners, ultrashort echo time, radial 3D sequences for structural imaging and hyperpolarized MRI gas under free-breathing. Comparators included spirometry, MBW, and CT. Diagnostic performance varied, few reported AUC and strong correlations reported with PFTs. Reported reproducibility was high. Limitations included small samples, single-center designs, no longitudinal data and technical variability. Moderate risk of bias was due to patient selection issues (~65%) and reference standard bias (40%). Index test bias was low in >80% studies. Flow and timing were often unclear, potentially inflating sensitivity and specificity estimates.

CONCLUSION: Lung MRI is a promising radiation-free tool for pediatric airway disease, but larger multicenter validation and standardized protocols are needed to establish diagnostic accuracy and clinical utility.

123472

Artificial Intelligence and Extended Reality Technologies to Improve Radiation Safety in Interventional Radiology: A Scoping Review

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: To identify and assess how artificial intelligence (AI) and extended-reality (XR) technologies improve operator-centred radiation safety in interventional radiology (IR), addressing a rapidly evolving field with limited synthesized evidence.

METHODS: A structured scoping review (PRISMA-ScR) was conducted across five databases. Eligible studies evaluated AI or XR interventions related to radiation safety for IR clinicians or trainees. Outcomes included operator dose, scatter-reduction metrics, ALARA-related behavioural changes, and knowledge or skill acquisition. Phantom, simulation, and clinical studies were included if they reported operator-relevant radiation outcomes. Studies limited to patient-dose metrics or procedural efficiency without dose data were excluded.

RESULTS / DISCUSSION: Of 198 studies screened, 25 met criteria for full-text review and were classified as AI (n = 7) or XR (n = 18) interventions. Preliminary results indicate that AI studies predominantly used reconstruction or dose-optimization algorithms, achieving 20-30% reductions in radiation required for image acquisition. XR interventions, encompassing virtual and augmented reality, focused on enhancing radiation-safety education and workflow by visualizing scatter fields, improving C-arm positioning, and providing Monte Carlo procedural guidance, thereby reducing fluoroscopy time by 41%. However, evidence for real-world operator-dose reduction, workflow integration, and sustained behavioural change remains limited. Heterogeneity in study design, clinical setting, intervention type, and outcome reporting with inconsistent metrics further restricts comparison.

CONCLUSION: AI and XR show promising potential as adjuncts to traditional radiation-safety strategies in IR. Early evidence supports dose-optimization benefits and improved trainee understanding. However, real-world operator dose validation, demonstration of sustained behavioural changes, and structured integration into training curricula remain critical areas for future research.

123473

Reducing Greenhouse Gas Emissions through Remote Radiology Reading: A Canadian Perspective from a Mixed Urban and Rural Practice

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: To quantify reductions in greenhouse gas (GHG) emissions achieved through remote radiology reading in a mixed urban-rural Canadian practice.

METHODS: A mid-sized Canadian radiology group providing urban tertiary care and rural hospital coverage was evaluated. Schedules included obligate in-person seats, obligate remote seats, and optional remote seats. A survey captured home location, commute method, and preferred remote work frequency for optional seats. Commuting distance and emissions were calculated for June 1-30, 2024 across three scenarios: (1) all work in person, (2) all potentially remote seats worked remotely, and (3) actual practice based on stated preferences. Emissions were converted to MRI-equivalent energy usage.

RESULTS / DISCUSSION: Twenty-four of 26 radiologists responded (92%); one response was excluded due to incorrect formatting. Medians (interquartile ranges) for commute distances were 9.4 (7.6-16.6) km to clinic, 14.8 (3.6-18) km to urban hospital, and 282.8 (278.4-290.4) km to rural site; 83% used gasoline vehicles and 17% electric. If all work were in person, monthly commuting would total 17,009 km (3,556 kgCO₂e; 809 MRI equivalents). Under actual practice, distance decreased by 63% to 6,220 km (1,300 kgCO₂e; 296 MRIs). If all optional seats were fully remote, emissions would fall an additional 9% to 1,191 kgCO₂e (271 MRIs). Annual emissions under current practice were 15,605 kgCO₂e across 74,640 km, with rural travel accounting for 37% of emissions despite only 16% of shifts (Table 1).

CONCLUSION: Remote radiology reading substantially reduces commute-related emissions, with further decreases possible through expanded remote work adoption.

123476

Automatic Volumetric Segmentation of Skeletal Muscle on Dual-Energy CT at a Level 1 Trauma Center

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PRESENTER LEVEL OF TRAINING: Radiologist

OBJECTIVE: Skeletal muscle volume is increasingly recognized as a possible indicator of adverse outcomes in hospitalized patients. Literature suggests the L3 vertebral level for measurement however factors such as patient positioning and contrast uptake variability may affect accuracy. This study aimed to assess the reliability of deep learning-based volumetric segmentation of the iliopsoas muscle across different contrast phases as an alternative to single-slice CT measurements in the emergency setting.

METHODS: Our institutional trauma scan protocol included arterial (ART) phase of the chest, abdomen and pelvis; abdominal and pelvic portal venous (PV) phase; and a derived virtual non-contrast (VNC) series using dual-energy CT. A commercially available deep learning software automatically segmented skeletal muscle volumes. For each patient, iliopsoas muscle volume was quantified from the T12 to femoral head levels. Intraclass correlation coefficients (ICC) with 95% confidence intervals (CI) were calculated to assess agreement between contrast phases.

RESULTS / DISCUSSION: Thirty patients (mean age 51 ± 19 years; 16 females [53%]) were included. Mean iliopsoas volumes were 614 ± 176 cm³ for VNC, 624 ± 179 cm³ for ART, and 620 ± 177 cm³ for PV images. Excellent agreement was observed between contrast phases: ICC = 0.999 (95% CI, 0.997-1.000) for ART vs PV, 0.996 (0.982-0.998) for ART vs VNC, and 0.997 (0.993-0.999) for PV vs VNC.

CONCLUSION: Automatic volumetric segmentation of the iliopsoas muscle using deep learning demonstrates excellent reproducibility across contrast phases. Further work may evaluate the prognostic value of volumetric muscle metrics for clinical outcomes and establish clinically relevant thresholds.

123480

Cinemeducation in Radiology: A Mixed-Methods Evaluation of a Narrative Film Intervention on Specialty Identity in Undergraduate Medical Education

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: To enhance learner understanding of radiology's diagnostic, cognitive, and emotional dimensions through cinemeducation.

METHODS: Mixed-methods pre- and post-intervention surveys included medical students and RAD-301 undergraduates at a Canadian University. Instruments adapted Jefferson-Scale-of-Empathy, Interpersonal-Reactivity-Index and Reflective-Thinking-Questionnaire. Quantitative data analyzed with paired or nonparametric-tests, qualitative reflections examined through reflexive thematic analysis. Exposure level, specialty perceptions, and career interest also surveyed. Principal component analysis identified latent dimensions of diagnostic understanding, hidden-labor awareness, and emotional workload, used to cluster learners and evaluate how film intervention supported specialty identity growth.

RESULTS / DISCUSSION: Pre-intervention data showed strong understanding of radiology's diagnostic role, 90% agreeing radiologists played a central part in identifying pathology. About one-third of students reported unawareness of hidden-labor and emotional workload. Higher exposure correlated with higher interest; RADS301 students reported greater interest and understanding than medical students across domains. Positive predictors of interest included understanding hidden-labor, diagnostic authority, and consultation responsibilities, while perceiving radiology as emotionally taxing was a negative predictor. Cluster analysis revealed three learner groups ranging from high understanding and high interest to low understanding and low interest.

CONCLUSION: This study is the first structured evaluation of cinemeducation in radiology education. Preliminary findings showed learners readily recognized the specialty's diagnostic role, but many overlooked cognitive and emotional dimensions. By making these elements visible and relatable, "Radiology: The Drama" strengthens radiology visibility in medical curricula and offers a transferable model for advancing specialty education internationally.

123495

Canadian Diagnostic Radiology Residency Application Trends (2020-2025)

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: To characterise Canadian Diagnostic Radiology (DR) residency application trends from 2020-2025 through speciality interest and preferences, application volume and interview activity, match dynamics, competitiveness, and gender representation.

METHODS: Canadian Residency Matching Service data for Canadian Medical Graduates (CMGs) from 2020-2025 were extracted. Variables included applicant counts, first-choice and exclusive selections, quotas, interview activity, unmatched rates, and gender representation. Descriptive statistics, year-over-year percent change, and simple linear regression assessed temporal trends. Analyses were performed using SPSS.

RESULTS / DISCUSSION: Application volume to DR increased significantly by 41.1% ($p = 0.02$), driving increases in programme interview activity. Interviews offered and not offered increased by 10.4% ($p = 0.04$) and 99.2% ($p = 0.03$) respectively, between 2020-2025. In contrast, applicant interest remained stable: the total number of CMG applicants, those applying exclusively to DR, and those ranking DR as their first-choice discipline showed no significant change. Match dynamics showed no significant trends, as measured by quotas offered, the number of CMGs ranking DR first but matching to alternate specialties, and unmatched CMGs. Competitiveness, as measured by the positions per applicant ratio, also remained stable. Gender representation among applicants and matched trainees remained unchanged.

CONCLUSION: Despite a 41.1% increase in Canadian DR application volume and a 10.4% and 99.2% increase in respective interview offers and rejections from 2020-2025, applicant interest, competitiveness, match outcomes, and gender representation remained stable. This pattern suggests evolving application behaviours and consequent program interview activity among CMGs.

123510

Evaluation of the Central Vein Sign in White Matter T2 Hyperintense Lesions in Patients with Multiple Sclerosis using 3D T2* Echo-Planar Imaging

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PRESENTER LEVEL OF TRAINING: Fellow

OBJECTIVE: To determine if the high resolution T2* brain MRI sequence improves the diagnostic information for MS patients.

METHODS: Central vein sign is a new inclusion in the latest 2024 revision of McDonald's criteria for MS. This was a prospective study with 46 participants to evaluate the utility of new modified 3D T2* EPI sequence for CVS. Patients were divided into two groups, further categorised based on the number of lesions with positive CVS sign and percentage of T2 lesions showing CVS. For statistical analysis, diagnostic performance of the high-resolution T2*-weighted sequence to detect CVS was compared in different patient groups using Wilcoxon rank sum test. Percentage of lesions showing CVS and its correlation with MS was analyzed using Spearman test.

RESULTS / DISCUSSION: Demographically, out of the 46 patients, 35% were male and 65% were females. Mean age of patients was 42.3 years. Analysis of number of T2 lesions revealed statistically significant difference between patients of Group 1 and Group 2. Similar, differences were seen in number of CVS lesions and percentage of T2 lesions showing CVS. No correlation between the number of T2 lesions and number of years of disease activity in MS patients. ROC curve analysis revealed high sensitivity and specificity of number of lesions with central vein sign in patients with MS with area under curve being 0.896.

CONCLUSION: CVS represents a significant advance in the imaging-based diagnosis of MS, offering high specificity and the potential to reduce misdiagnosis. 3D EPI with its improved visualization of CVS is an important breakthrough.

123516

Characterizing CT Head Scan Usage in Emergency Departments for Minor Head Trauma

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: To describe how CT head scans are utilized in two Canadian emergency departments (EDs) in the setting of minor head trauma.

METHODS: Reports of all non-contrast CT head examinations ordered at one Canadian tertiary and one Canadian community ED in January, April, July, and November 2024 were pulled. Chart reviews were performed to assess if the CT study was ordered due to head trauma and if the patient met criteria for imaging based on the Canadian CT Head Rule (CCHR) or the Choosing Wisely Canada (CWC) recommendation.

RESULTS / DISCUSSION: 313 out of 1206 (26%) charts reviewed in January and April 2024 were included in this retrospective study. The most common mechanism of injury was ground level fall (n=196, 63%). Based on chart review, 19% (n=59) met criteria to use the CCHR to evaluate need for CT head scan; majority (n=32, 54%) were assessed as low risk and did not require a CT head scan. 67% (n=211) of all charts reviewed had ≥ 1 red flag criteria for imaging per CWC recommendation. 2% (n=7) of CT head scans performed were positive for acute intracranial injuries and all cases were managed conservatively following neurosurgery consultation.

CONCLUSION: CT head scans are overutilized to assess for acute intracranial injury for minor head trauma. The CCHR is a validated tool but its use may be too restrictive to assess need for imaging. Next steps will include consultation with ED physicians to identify areas to intervene for quality improvement.

123535

Diagnostic and Prognostic Value of Hypoxia PET in Glioma: A Systematic Review and Meta-Analysis

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: While conventional magnetic resonance imaging (MRI) is effective for glioma diagnosis, it has distinct limitations in grading, treatment planning, and prognostication. Since hypoxia is associated with higher-grade gliomas and poorer outcomes, hypoxia positron emission tomography (PET) imaging has been suggested to improve glioma assessment. This systematic review and meta-analysis aimed to evaluate the performance of hypoxia PET imaging in glioma diagnosis and prognostication.

METHODS: Systematic searches were conducted across the PubMed, Web of Science, and Scopus databases through January 31, 2025. Studies assessing the diagnostic or prognostic value of PET with [18F]-labelled nitroimidazole or [62Cu]-labelled ATSM hypoxia tracers in patients with gliomas were included. A hierarchical model was used to evaluate pooled performance on differentiating glioblastoma from lower-grade gliomas.

RESULTS / DISCUSSION: Thirty-eight articles (n=1156 patients) met inclusion criteria, and eight articles (n=201 patients) were suitable for meta-analytical calculations. Across studies, the extent of hypoxia on PET imaging generally correlated with isocitrate dehydrogenase (IDH) mutation status and histological markers of angiogenesis, although correlations with immunohistochemical hypoxia markers were variable. Hypoxia PET was effective at differentiating glioblastoma from lower-grade gliomas and at predicting overall and progression-free survival. In pooled analyses, [18F]-FMISO PET displayed high sensitivity (98%; 95%CI:92%,99%) and specificity (91%; 95%CI:69%,98%) for differentiating glioblastoma from lower-grade gliomas.

CONCLUSION: Hypoxia PET has potential to predict histological hypoxia and displays clinical utility in diagnosing glioblastoma and prognostication. Thus, it may be a reliable modality to assess glioma patients, particularly in combination with MRI. It may be especially useful for ruling out glioblastoma in patients with otherwise equivocal imaging.

123573

Association of Emphysema with Infectious and Inflammatory Findings at Baseline Lung Cancer Screening

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University of Toronto

PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: To determine if visual or quantitative emphysema scoring is associated with infectious or inflammatory findings.

METHODS: This retrospective cohort study identified all individuals who presented for a baseline lung cancer screening low-dose CT in a high-risk cohort between January 1st, 2020, and December 31, 2024. Standardized scoring of emphysema (RAD emphysema [none, trace, mild, moderate, severe]), infectious or inflammatory findings, and actionable incidental findings were extracted from the CT reports. CT scans were also analyzed by densitometry and low attenuation area (LAA-950 HU) was extracted (CAD emphysema [% of lung volume]). Logistic regression was utilized to evaluate the association of visual and quantitative emphysema with incidental findings.

RESULTS / DISCUSSION: There were 2351 baseline screening exams (63.0% male, mean age of 64.0±5.1 years). Reports with at least one infectious/inflammatory finding were frequent (n=309, 13.1%) and most commonly inflammatory appearing ground-glass opacities (n=94, 4%) or respiratory bronchiolitis (n=93, 4%). While actionable incidental findings at baseline were also common (n=291, 12.4%), they were rarely related to pulmonary infection or inflammation (n=34, 1.4%). In a model adjusted for age, sex, BMI, smoking status and pack-years, moderate to severe RAD emphysema was the only factor associated with non-respiratory bronchiolitis infectious/inflammatory findings (adjusted OR 1.71 [1.10-2.66] p=0.018). Mild emphysema was associated with respiratory bronchiolitis (adjusted OR 1.68 [1.01-2.84], p=0.047) in addition to younger age and current smoking status.

CONCLUSION: Infectious/inflammatory findings are common in lung cancer screening but rarely actionable. Radiologist assessed emphysema was the only finding independently associated with non-respiratory bronchiolitis infectious/inflammatory findings.

123578

Apple Vision Pro-Enabled Augmented Reality Portable Ultrasound for Needle Guidance: Phantom Feasibility Study

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: To compare the feasibility and accuracy of an Apple Vision Pro (AVP)-based augmented reality (AR) portable ultrasound system with conventional ultrasound for needle guidance in a phantom model.

METHODS: In this prospective crossover feasibility study, three radiologists experienced in ultrasound-guided procedures used two systems to place a 22-gauge spinal needle into eight clay targets (0.5-2.0 cm) embedded in a gelatin phantom. The AR system combined a Clarius L15 HD linear probe streamed to an AVP headset; the conventional system was a Canon Aplio i900. The primary outcome, accuracy (first-pass hits/attempts), was compared between AR and conventional ultrasound using an exact McNemar test for paired binary outcomes, with $p < 0.05$ considered statistically significant. Feasibility was assessed with an eight-item 5-point Likert survey and summarized descriptively (mean $\pm$ SD).

RESULTS / DISCUSSION: Operator performance was comparable between AR guidance (23/24, 96% first-pass hits) and conventional ultrasound (24/24, 100%), with no significant difference. With the AR system, participants reported excellent hand-eye coordination (5.0 ± 0.0), image stability (4.7 ± 0.6), and overall satisfaction (4.7 ± 0.6), and rated it slightly easier to use than conventional ultrasound (3.3 ± 0.6). Key limitations were ease of visualization (2.0 ± 1.7), headset comfort (2.3 ± 1.5), and technical reliability (2.7 ± 0.6).

CONCLUSION: Streaming portable ultrasound to an AVP headset enabled accurate AR-guided needle placement with performance comparable to conventional ultrasound among experienced radiologists. With further refinement and clinical validation, this approach may benefit point-of-care settings, high-throughput biopsy workflows, and select surgical applications.

123579

Diagnostic Accuracy of Supraspinatus Tendon Tears by Standardized Cine Clips on Ultrasonography

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: To determine the accuracy of isolated standardized cine clips in diagnosing supraspinatus tendon pathologies, using the routine shoulder ultrasound protocol (static images/non-standardized cine clips) as the reference standard.

METHODS: This prospective IRB-approved study included 140 participants undergoing shoulder ultrasound. Standardized supraspinatus tendon cine clips were acquired in longitudinal and transverse axes and independently reviewed by two musculoskeletal radiologists. Non-diagnostic studies were excluded. Sonograms were analyzed for partial-thickness, full-thickness, and complete tears, and calcific and non-calcific tendinopathy, then compared with final reports. Sensitivity (ss), specificity (sp), predictive values, accuracy, and inter-/intra-observer agreement (Kappa) were calculated.

RESULTS / DISCUSSION: After exclusion, 114/140 patients (mean age 57; 56F/58M) were analyzed. Standardized cine clips showed high performance for full-thickness tears (ss 87%, sp 98%, acc 95%) and complete tears (ss 73%, sp 97%, acc 95%). Calcific tendinopathy yielded ss/sp/acc of 79%/85%/84%. Partial-thickness tears showed lower sensitivity (57%) and accuracy (82%) with moderate specificity (87%); non-calcific tendinopathy had high sensitivity (92%) but poor specificity (28%) and accuracy (62%). Intra-observer agreement was substantial to excellent for all categories ($\kappa = 0.79-0.96$). Inter-observer agreement was fair for non-calcific tendinopathy, calcific tendinopathy, and partial tears ($\kappa = 0.42, 0.47, 0.21$), excellent for full-thickness tears ($\kappa = 0.95$) and moderate for complete tears ($\kappa = 0.56$).

CONCLUSION: Standardized cine clips demonstrate high accuracy and inter-observer agreement for full-thickness and complete supraspinatus tear detection, supporting their use as an isolated screening tool in patients with high pre-test probability. However, due to low sensitivity and agreement, the technique is insufficient for partial-thickness tears and tendinopathy.

123582

Magnetic Doxorubicin-Loaded Microbeads for MRI-Guided Transarterial Chemoembolization

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: Hepatocellular carcinoma represents the third leading cause of cancer-related death. Current treatments, such as fluoroscopically-guided transarterial chemoembolization (TACE), remain technically demanding and suboptimal for tumor targeting. Magnetic resonance navigation (MRN) offers an alternative by guiding doxorubicin-loaded magnetic microparticles (DOX-MDEBs) using imaging gradients, whose design and characterization were conducted to enhance tumor targeting without supraselective catheterizations.

METHODS: DOX-MDEBs were prepared by microfluidic co-encapsulation of doxorubicin and Fe₃O₄ nanoparticles within poly(lactic-co-glycolic acid). Properties were evaluated by microscopy and micro-compression tests. Drug loading and release were quantified by spectrofluorimetry and chromatography to benchmark against clinical standards (DC Bead™). In vitro MRN was validated in a hepatic model under experimental flow conditions. Aggregates were injected through a 5-French catheter and directed toward each branch using gradients of a clinical 3T MRI. Navigation efficiency to the target branch was measured and compared to baseline.

RESULTS / DISCUSSION: Mean particle size after 3 h of saline immersion was $222.6 \pm 23.4 \mu\text{m}$, and micro-compression tests yielded an elastic modulus of $17.0 \pm 0.53 \text{ MPa}$, which is suitable for tumor penetration. DOX-MDEBs reached 80% of the clinical drug loading for DC Bead™ and demonstrated a continuous 24h release profile when tested in multiple blood analogue media. Navigation efficiency was 100%, and Fisher's exact test showed a significant difference in MRN steering ratios versus baseline ($p < 0.001$).

CONCLUSION: DOX-MDEBs exhibited good in vitro navigation performance and drug release profile, supporting the feasibility of combining sustained drug release with MRN guidance. Future preclinical studies in large animals will further evaluate their therapeutic potential.

123591

Yttrium-90 Transarterial Radioembolization for Hepatocellular Carcinoma: Outcomes and Insights from a New Program

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OBJECTIVE: Yttrium-90 Transarterial Radioembolization (Y90-TARE) is an established locoregional treatment option for hepatocellular carcinoma (HCC) with expanding implementation in Canada. This singlecenter retrospective case series validates a community hospital's Y90-TARE program, hypothesizing that Y90 patients would achieve high objective response rates at 6- and 12-months post-treatment.

METHODS: Patients receiving Y90 between May 2022-December 2023 who met selection criteria (discussion at multidisciplinary rounds, >18 years old, no extrahepatic disease, Child-Pugh A5-B7, ECOG PS 0-1, then either: solitary tumour <10cm; multifocal HCC within UT7 and unsuitable for ablation/SABR; patients exceeding UT7 but failing to respond to systemic therapy) underwent mapping angiography, MAA scintigraphy, and dosimetry planning using MIRD or partition models. Objective response rates were characterized by Modified RECIST (mRECIST) evaluations as primary outcomes and secondary measures (baseline characteristics and treatment parameters) were abstracted from chart data. Descriptive statistics evaluated response rates and progression.

RESULTS / DISCUSSION: Following mapping, 15/25 patients proceeded to treatment (40% exclusion due to liver function, tumour vasculature, and lung shunting). Baseline characteristics were homogeneous (all Child-Pugh A; ECOG 0-1; 80% solitary lesions). At 6 months, 50% of lesions achieved CR with no PD. By 12 months, CR rates increased to 65%, with 3 lesions transitioning from PR/SD to CR, suggesting delayed radiation-induced tumour necrosis. No lesion progressed at any interval, demonstrating high tumour control. Loss to follow-up (10% at 6- and 20% at 12-months) limited longitudinal evaluation.

CONCLUSION: This initiative demonstrated strong and sustained tumour control for this HCC cohort, with imaging responses comparable to published outcomes from larger centres.

123593

CT Attenuation-Based Hepatosteatosi s Measurement in Donor Evaluation: Comparing Radiologists and Surgeons in a Distributed Donor Transplant System

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OBJECTIVE: To compare surgeon vs. radiologist CT hepatosteatosi s assessment and identify reliable acquisition practices.

METHODS: Donors from January 1, 2018 to June 30, 2024 within a distributed procurement program were reviewed. Donors with adequate non-contrast CT within one month of liver donation were included. One abdominal radiologist and one transplant surgeon recorded Hounsfield Unit measurements from six hepatic segments (II, III, V, VI, VII, VIII) and two splenic regions. Indices calculated were the liver-spleen attenuation difference and the liver-to-spleen attenuation ratio. Paired t-tests compared surgeon and radiologist measurements.

RESULTS / DISCUSSION: A total of 210 donors met inclusion criteria; all but one liver was recovered for transplantation. Donors were 58 percent male with mean age 42 years, and 82.4 percent were donation after neurologic death. Liver HU, liver-spleen attenuation difference, and liver-to-spleen attenuation ratio showed no significant surgeon-radiologist differences (mean differences X, Y, Z; 95 percent CIs A-B, C-D, E-F; p=0.80, p=0.11, p=0.09). Splenic HU differed significantly (mean difference M; 95 percent CI N-P; p=0.01), likely reflecting artifact related to arm positioning or cardiac leads. This difference did not alter hepatosteatosi s classification.

CONCLUSION: Surgeon liver HU measurements aligned closely with radiologists', supporting the use of non-contrast CT in donor evaluation within distributed procurement networks. Consistent non-contrast acquisition, arms-up positioning, and removal of chest and abdominal leads reduce artifact around the liver and spleen and may improve measurement reliability.

123600

Diagnostic Accuracy of the Deep Learning Models in Computed Tomography Pulmonary Angiography for Subsegmental Pulmonary Embolism Detection: Meta-Analysis

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: Subsegmental pulmonary embolisms (PE) are frequently missed by radiologists due to their small size and peripheral location, yet their detection can influence clinical management, especially for patients at risk for recurrent thromboembolism. Deep learning models have demonstrated high sensitivity for PE detection; however, their sensitivity for subsegmental emboli is notably low, highlighting a critical area for improvement and validation. Therefore, this study analyzes the accuracy of deep learning models for subsegmental PE detection to ensure implementation improves diagnostic accuracy, reduces missed cases, and enhances patient outcomes.

METHODS: A systematic search of databases Ovid Embase, MEDLINE, and Web of Science was conducted to capture studies evaluating the diagnostic accuracy of deep-learning models for detecting subsegmental PE. Article screening and data extraction was performed by blinded reviewers. Extracted data included study characteristics, deep-learning model details, and diagnostic accuracy metrics (sensitivity, specificity, predictive values, AUC). Sensitivity and specificity were derived from reconstructed 2x2 contingency tables and meta-analysed using the Freeman-Tukey method.

RESULTS / DISCUSSION: A total of 215 articles were selected for abstract screening, 26 underwent full-text review, and 8 articles were included. 4,141 patients were included in the analysis, of which 848 had a PE, yielding a prevalence of 20.5%. Pooled sensitivity and specificity of deep learning models were 0.64 (95% CI: 0.51-0.77) and 0.54 (95% CI: 0.22-0.85), respectively, with high heterogeneity ($I^2 = 92-97\%$).

CONCLUSION: These findings reinforce that automated detection of subsegmental PE should not be relied upon as a sole diagnostic tool and must be interpreted cautiously, ideally in conjunction with expert radiologist review.

123603

Evaluating the Google CT Foundation Model to Improve Diagnostic Efficiency for Central Pulmonary Embolism

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PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE: Delayed diagnosis of Central Pulmonary Embolism (PE) leads to high mortality. Development of current AI tools requires extensive and costly annotation. The purpose of this study is to evaluate whether a “generalist” Google CT Foundation Model can be trained to detect PEs without the resource-intensive training required by traditional models.

METHODS: We utilized the RSNA CTPE dataset and measured the Area Under the Curve (AUC) to assess diagnostic quality. We implemented the foundation model as a feature extractor across balanced and imbalanced (N=838) cohorts. We further introduced a step using 3D vessel segmentation (VesselFM) to test if isolating pulmonary vasculature improved detection quality.

RESULTS / DISCUSSION: The target performance was set against established benchmarks (AUC ~0.90) for specialized models. The intervention demonstrated moderate success. The Random Forest classifier applied to the foundation model embeddings achieved a peak AUC of 0.80. Interestingly, the process modification of segmenting vessels paradoxically reduced quality (AUC dropped from 0.77 to 0.61), indicating the model's reliance on global anatomical context rather than local vascular features. While the workflow was efficient (requiring no task-specific training), the diagnostic quality did not yet meet the target standard for standalone clinical use.

CONCLUSION: This initiative highlights the trade-off between efficiency and quality in emerging AI tools. While the foundation model offers a sustainable, low-resource alternative to custom models, it currently serves best as a triage adjunct rather than a definitive diagnostic tool. Next steps involve exploring fine-tuning strategies to bridge the gap between this efficient generalist approach and the high precision required for patient safety.

123607

Deep-Learning Segmentation of Neurovascular Structures as First Step for Automatic Stenosis Detection and Grading

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PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE: Carotid artery stenosis is a major determinant of stroke risk and a critical factor guiding clinical management. Manual stenosis grading on CT angiography (CTA) is time consuming and remains limited by inter-observer variability and personal preferences in reporting stenosis grades. Additionally, mild (<50%) stenoses, rarely considered clinically significant, are not usually reported. This study aims to develop a fully automated deep-learning tool capable of segmenting cervico-encephalic arteries to be later used as the input for an automatic stenosis detection and grading algorithm, in order to automatically and reproducibly quantifying stenosis severity, including mild stenoses.

METHODS: A convolutional neural network based on the nnU-Net architecture was trained on CTA datasets manually annotated in 3D Slicer. 31 arteries were segmented, each with their own label, from the aortic arch to proximal intracranial vessels. An iterative pipeline was used, alternating between model training, prediction, manual correction, and retraining across progressively larger datasets. Segmentation performance was evaluated using Dice similarity coefficients and compared with inter-observer agreement.

RESULTS / DISCUSSION: Preliminary models demonstrated segmentation performance with Dice scores of more than 0.9. A second-generation model is currently in training.

CONCLUSION: This approach shows strong potential to provide fully automated neurovascular multiclass segmentation. The segmentations produced with this method could then serve as the foundation for the use of automatic stenosis detection and grading algorithms. This pipeline could then allow automatic and precise grading of vascular stenoses, improve reproducibility, accelerate interpretation time, and potentially enable refined vascular risk assessment.

123623

Quantification of Aortic and Mitral Valve Calcifications in People Living with HIV - A Pilot Study Nested Within the Prospective Canadian HIV and Aging Cohort Study (CHACS)

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: This project aims to develop and validate a standardized protocol for the qualitative and quantitative assessment of aortic (AV) and mitral valve (MV) calcifications using cardiac CT, with evaluation of inter- and intra-observer reproducibility, within people living with HIV (PLHIV) and healthy participants.

METHODS: Two trained observers, blinded to participants' clinical information, independently analyzed 100 cardiac CT examinations using an advanced postprocessing software (Aquarius iNtuition). Quantitative measurements included Agatston score, calcium volume, calcium mass, and ascending aorta (AA) diameter. Ordinal visual scoring was also performed with the categories None, Mild, Moderate, Severe. Inter- and intra-observer agreement was assessed using intraclass correlation coefficient (ICC) for quantitative measures and weighted Kappa coefficient (WKC) for ordinal scores.

RESULTS / DISCUSSION: Quantitative assessment of reproducibility for AV calcification and AA diameter was excellent, with inter- and intra-observer ICCs >0.90 (p<0.05). For MV calcifications, inter-observer agreement was low and non-significant (ICC<0.50, p>0.05), while intra-observer agreement remained excellent (ICC>0.90, p<0.05). Using the ordinal visual score, AV calcification scored almost perfect inter- and intra-observer agreement (WKC>0.81, p<0.05). MV inter-observer agreement was slight to moderate, whereas intra-observer agreement was perfect (WKC=1.000, p<0.001). These findings support the robustness of the protocol for AV and AA measurements but indicate the need for improved methods for MV assessment.

CONCLUSION: This study demonstrates that AV calcification can be quantified with excellent reproducibility using a standardized protocol. Lower agreement for MV calcifications suggests additional optimization is required. Analyses on a larger sample will further validate protocol performance and support subsequent investigations within the CHACS cohort.

123628

Can CT Imaging Features Predict Endocrine Functionality of Adrenal Incidentalomas?

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PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE: Adrenal incidentalomas (AIs) are increasingly detected with widespread CT imaging. While most are benign, a subset demonstrates autonomous cortisol secretion, contributing to cardiometabolic risk. CT is routinely used to evaluate AIs for malignancy, but its ability to predict endocrine functionality remains unclear. This study examined whether CT features correlate with functional status, determined by post-dexamethasone suppression test (DST) cortisol levels, to support risk stratification and guide clinical decision-making.

METHODS: A retrospective review was conducted of 292 adult patients. Patients who underwent DST and had an incidental adrenal nodule on CT were included. CT features, including lesion size, Hounsfield units, homogeneity, contrast enhancement, and presence of calcifications, were extracted from radiology images. Functional status was classified based on post-DST serum cortisol: <28 nmol/L (normal suppression), 28-50 nmol/L (subclinical cortisol secretion), and >50 nmol/L (functional adenoma).

RESULTS / DISCUSSION: Of 106 patients meeting inclusion criteria, 13 had cortisol levels consistent with functional adenomas and 66 demonstrated subclinical cortisol secretion. No specific CT feature was found to be reliably predictive of functional status. Functional and non-functional nodules showed overlapping features across size, HU, and enhancement patterns. Additionally, some non-functional lesions were larger or more heterogeneously enhancing, features traditionally associated with higher risk.

CONCLUSION: Conventional CT features showed significant overlap across functional categories of AIs. These findings underscore the limitations of relying solely on CT morphology to assess functionality and reinforce the necessity of biochemical testing. Future work includes expanding the sample size and evaluating additional imaging features using quantitative and radiomics-based methods.

123630

Global Review of Breast Cancer Screening Guidelines Addressing Dense Breast Tissue

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: Breast tissue density, classified by BI-RADS, influences breast cancer risk and mammographic sensitivity. Women with dense breasts (categories C and D) have higher cancer risk and experience reduced mammographic accuracy due to masking. Although the U.S. and several Canadian provinces mandate density notification, many women, particularly those with lower education or from racialized groups, remain unaware of its implications. Because mammography is less effective in dense breasts, understanding density-related risk and detection limitations supports informed screening choices. We review global breast cancer screening guidelines, with emphasis on whether and how they address women with dense breast tissue.

METHODS: We conducted a cross-sectional review of national and regional screening guidelines. Government and health authority websites were systematically searched, supplemented by PubMed, Google Scholar, and WHO repositories. When official documents were unavailable, peer-reviewed publications or reputable medical society statements were used. Extracted data included screening program type, start/stop ages, imaging modality, density-specific recommendations, and quality assurance elements. Two reviewers independently validated all data.

RESULTS / DISCUSSION: Screening guidelines or equivalent policies were identified for 194 countries: 88 with organized programs, 29 relying on opportunistic screening, and 77 with no documented policy. Mammography was the primary modality, while clinical breast examination predominated in settings with limited imaging access. Density-specific recommendations or adjunct ultrasound guidance were most common in Asia and Gulf states. Africa showed the largest gaps, with many countries lacking formal screening guidance.

CONCLUSION: Global screening policies vary widely, and density-inclusive recommendations remain inconsistent. Harmonized guidance addressing breast density is needed to support equitable early detection.

123640

Ultrasound versus MRI for Rotator Cuff Pathology: A Scoping Review of Practice Patterns, Implementation Barriers, and Economic Considerations

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: Ultrasound (US) and magnetic resonance imaging (MRI) are widely used to detect rotator cuff pathology, with studies showing similar diagnostic accuracies, yet imaging use varies in healthcare systems. This study analyzed the existing literature on practice patterns, implementation barriers, and economic factors between US and MRI.

METHODS: A scoping review was conducted using 6 databases: MEDLINE, Cochrane, EMBASE, Web of Science, CINAHL, and SCOPUS following PRISMA-ScR guidelines. Studies comparing US and MRI for rotator cuff assessment discussing utilization, access, cost, or implementation were searched and thematically analyzed. Eligible studies included economic evaluations, clinical practice guidelines, surveys, and implementation studies.

RESULTS / DISCUSSION: 35 publications from 2009 to 2025 met the inclusion criteria, most from North America and Europe. Themes which emerged from the studies showed that US can be more cost-effective in certain diagnostic pathways, the need for structured training for both US and MRI operators, increasing use of point-of-care US by primary care providers, orthopedic surgeons, and physiotherapists, and inconsistent imaging recommendations across professional guidelines. Factors at the system level, such as funding models, wait times, and local expertise also influenced the choice of modality used. Strategies to optimize US use included formal training, standardized scanning protocols, and greater integration of point-of-care US into workflows.

CONCLUSION: Despite comparable diagnostic accuracy of US and MRI, the reasons behind different imaging practices for rotator cuff evaluation are not well understood. Future work should focus on comparative implementation studies, context-specific health economic analyses, and rigorous evaluation of point-of-care US integration within rotator cuff care pathways.

123642

Assessing the Quality of Large Language Model-generated Literature Reviews: A Clinician-based Evaluation Study

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: This study aimed to evaluate the performance of large language models (LLMs) in producing a literature review on imaging biomarkers for predicting outcomes after cervical spine surgery.

METHODS: A review of commonly used LLMs in medicine and research was completed, with seven LLMs selected. A standardized prompt and follow-up questions were developed for implementation across LLMs. The LLM outputs were analyzed with the Coh-Metrix and Online-Utility.org tools, and assessed for inclusion of citations and factual hallucination. A qualitative analysis of the LLMs was completed through a blinded survey by radiologists familiar with the subject area. The survey analyzed overall opinions, usability of the LLM reviews across various applications, readability, factual correctness, and the intended academic level of the outputs. The clinicians were also asked about their familiarity with LLM tools and the extent of LLM implementation in their workflow.

RESULTS / DISCUSSION: Three radiologists analyzed the LLM outputs. OpenAI ChatGPT was ranked the best by the clinicians, with a mean ranking (in descending quality from 1 to 7) of 1.67 +/- 0.58, while OpenEvidence was ranked the lowest (7 +/- 0). All LLMs except DeepSeek provided hyperlinked in-text citations. Excluding OpenEvidence, all the LLMs provided literature reviews at the requested content level.

CONCLUSION: Seven LLM literature reviews on imaging predictors for cervical spine surgery outcomes were outputted and analyzed with Coh-Metrix, Online-Utility.org, and by three radiologists. OpenAI's ChatGPT received the best ranking, while OpenEvidence was ranked worst. These findings guide healthcare professionals seeking the most effective current LLM for searching and analyzing the current literature.

123643

Treatment of High Dome HCC Lesions Using Thermoablation

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PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE: Primary objective is to look at the rate of successful treatment of high HCC lesions while identifying risk factors for unsuccessful treatment. Our secondary objective is to compare the success rate of high dome lesions versus treatment to the rest of the liver.

METHODS: This is a retrospective cohort study conducted at a Canadian Health Centre in Calgary between January 1st, 2019 to January 31st, 2025. Electronic medical record system was queried to identify HCC patients treated with RFA or MWA. High dome lesions were defined as being within 2cm of the hepatic dome as measured on MRI. Data on any recurrent or residual disease specific to the treatment sites were collected from serial follow-up MR or CEUS reports. Results are presented in descriptive statistics.

RESULTS / DISCUSSION: There were 760 patients. The mean age of patients was 69 (SD:±11). The median HCC size for liver lesions overall was 1.8 cm. The overall rate of complete ablation for RFA and MWA was 91.0% and 93.2%, respectively. The rate of complete ablation for RFA and MWA of high dome lesions was 77.5% and 87.5%, respectively. The difference between rate of complete ablation for high lesions and that of liver lesions overall was statistically significant ($\chi^2=5.97$, df=1, p=0.01).

CONCLUSION: Rate of complete ablation of high HCC lesions are significantly lower than ablation of HCC lesions located in the rest of the liver related to technical factors. MWA is preferred over RFA in cases of high liver lesions, due to relatively lower rate of recurrence.

123645

Diagnostic Accuracy of Imaging Modalities versus Liver Biopsy in Detecting Early-Stage Cirrhosis: A Meta-Analysis

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: Early detection of significant fibrosis ($\geq F3$) is essential, yet the comparative accuracy of magnetic resonance elastography (MRE), transient elastography (TE), shear-wave elastography (SWE), and acoustic radiation force impulse (ARFI) remains unclear. This meta-analysis aims to evaluate and compare these modalities against biopsy for $\geq F3$ detection. This preliminary analysis reports findings for TE only.

METHODS: Eligible studies included adults with biopsy-confirmed fibrosis staging and at least one elastography modality (TE, MRE, ARFI, SWE), with extractable diagnostic accuracy for $\geq F3$. At this stage, four TE studies had complete 2×2 data and were pooled. Sensitivity, specificity, and diagnostic odds ratio (DOR) were computed using proportional aggregation. Extraction and hierarchical modeling for additional modalities are in progress.

RESULTS / DISCUSSION: From the 1267 studies identified through the search strategy, four transient elastography studies ($n = 2555$) met criteria for this preliminary analysis. The stiffness cutoffs used to classify $\geq F3$ fibrosis in these studies ranged from 7.9 to 10.3 kPa. Pooled diagnostic accuracy for detecting $\geq F3$ showed a sensitivity of 82.6%, a specificity of 83.8%, and a DOR of 24.6. Reported AUROC values across these studies ranged from 0.83 to 0.94. Preliminary review indicated moderate heterogeneity, consistent with variability in underlying etiologies and the stiffness cutoffs applied.

CONCLUSION: Early findings indicate that TE provides good accuracy for detecting $\geq F3$ fibrosis, with similar sensitivity and specificity and a strong diagnostic odds ratio. Completion of extraction and full bivariate random-effects modeling will incorporate substantially more TE data and enable direct comparison with MRE, ARFI, and SWE in the final analysis.



120584

Association of Fractal Dimensions of Brain Computed Tomography Images in Brain Tumor Malignancy: A 5-year Single Center Retrospective Study

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OBJECTIVE: To determine the association of fractal dimension of Computer Tomography (CT) scan of brain tumors in relation to their biopsy result and radiographic features for patients enrolled in a Filipino Health Centre from January 1, 2018, to December 31, 2022.

METHODS: This will be a retrospective chart and CT imaging review which will determine the association of fractal dimensions of computer tomography images of brain tumors in relation to their biopsy result. This was a retrospective chart review enumerating all records of adult patients, who underwent CT scan in a Filipino Health Centre from 2018 to 2022 of which CT scans had complete images and biopsy result.

RESULTS / DISCUSSION: After the review of records, most lesions for females are located in the left frontal lobe (20%) and right frontal lobe (16%) while for males are in the left frontal lobe (21.4%) and right occipital lobe (21.4%). It was observed that the average fractal dimension of 1.7 (+/- 0.050), $p < .001$, with a Cohen's d value of 2.22 indicating a very large effect size, implying a notable difference in the fractal dimension between individuals with brain lesions and those with normal brains. However, for the biopsy result in relation to the fractal dimension needs further study as indicated in the recommendations

CONCLUSION: There is a significant difference in patients fractal dimension on their tumor vs normal parenchyma suggesting that assessing fractal dimensions can be valuable in understanding brain health and pathology. However, the fractal dimension and specific relation to biopsy findings was not established.

122520

Canadian Authors' Contribution in American Journals: Opportunity for Intellectual Retention

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OBJECTIVE: Canada contributes substantially to global radiology research but relies heavily on U.S.-based journals for publication. This pattern risks the outflow of intellectual property and reduces domestic academic visibility. Understanding Canada's authorship and funding representation within major American radiology journals is essential to guide national strategies for intellectual retention and strengthen Canadian-led innovation. The objective of this research is to: 1- Quantify the contribution of Canadian authors to leading American radiology journals 2- Evaluate associated funding trends 3- Identify opportunities to enhance domestic research retention and visibility.

METHODS: A cross-sectional analysis was conducted of articles published between January 2023 and January 2024 in five American radiology journals: Radiographics, Radiology, Radiology: Artificial Intelligence, Radiology: Imaging Cancer, and Radiology: Cardiothoracic Imaging. Canadian authorship, funding status, and subspecialty distributions were extracted from published manuscripts. The proportions of Canadian-affiliated articles and funded studies were calculated and compared across journals.

RESULTS / DISCUSSION: Of 608 articles reviewed, 56 (9.2%) included Canadian-affiliated authors, of which 39.3% reported funding. Canadian strengths were notable in artificial intelligence (100% of Canadian AI studies were funded) and cardiothoracic imaging (14.1% of total articles). Despite these contributions, Canadian authors represented only 4.95% of total listed authors, suggesting limited lead authorship roles.

CONCLUSION: Canadian researchers play a significant role in American radiology literature; however, limited number of Canadian research outlets and reliance on foreign journals may impede domestic publications and innovation. Strengthening Canadian journals, incentivizing national lead authorship, and aligning funding mechanisms with domestic publication goals could improve intellectual retention and sustain radiology innovation leadership in Canada.

122909

Results of Mammography-guided Biopsy for Lesions with no Sonographic Correlate

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PRESENTER LEVEL OF TRAINING: Radiologist

OBJECTIVE: Biopsy using mammographic guidance has been used for many years, traditionally performed using stereotactic guidance and typically reserved for microcalcifications as the dominant finding. In more recent years, biopsy under tomosynthesis guidance and vacuum-assisted devices allow for other findings, including asymmetries or masses under mammographic guidance. Contrast-enhanced biopsy under mammographic guidance has also recently become available. Ultrasound is considered the workhorse for breast imaging procedures and mammographic findings with no sonographic correlate may be placed under surveillance (BIRADS 3) or be considered benign (BIRADS 2). However, a suspicious finding on mammography should be biopsied regardless of the presence of a sonographic correlate.

METHODS: Retrospective review of mammographic guided biopsies where microcalcifications were absent. All biopsies were performed using a vacuum-assisted device and 10G needle. Data collected included: Patient age, breast density, laterality, BIRADS risk classification, laterality, type of finding, size, presence of enhancement if known, and pathology results.

RESULTS / DISCUSSION: A total of 78 findings without microcalcifications were biopsied under mammographic guidance. Sixty-seven biopsies were performed under tomosynthesis guidance and 11 under CEM guidance. Type of lesions was distributed fairly evenly: 10 asymmetry; 16 focal asymmetry; 14 non mass enhancement; 10 architectural distortion; and 28 mass. Size ranged from 3-120 mm with median 10 mm. Twenty-eight biopsies (36%) had malignant pathology, 20 (26%) had high risk pathology, and 30 (38%) were benign.

CONCLUSION: Suspicious mammographic findings and enhancement should be biopsied even if there is no sonographic correlate as a significant portion of these findings may represent high risk or malignant pathology (combined 62%).

123025

Percutaneous Screw Fixation Combined with Cryoablation in Bone Metastases: Safety, Feasibility, and Long-Term Clinical Outcomes in 17 Patients

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PRESENTER LEVEL OF TRAINING: Radiologist

OBJECTIVE: To evaluate the technical feasibility, safety profile, and long-term clinical outcomes of percutaneous screw fixation combined with image-guided cryoablation for the management of painful or unstable bone metastases.

METHODS: This retrospective study included 17 consecutive patients treated for mechanically unstable bone metastases involving weight-bearing structures. All procedures were performed under CT guidance in a sterile interventional radiology suite. Cryoablation was systematically performed prior to screw fixation, with PMMA augmentation. Technical success, procedural complications, pain scores, opioid consumption, and quality of life were collected at baseline, 1 month, 3 months, 6 months, 12 months and then every year.

RESULTS / DISCUSSION: Technical success was achieved in all 17 patients (100%). No major complications were observed. Minor complications occurred. Mean VAS score significantly decreased, with sustained improvement at 6 months. Opioid use dropped. Weight-bearing was restored within 48 hours in most of the cases. Imaging follow-up confirmed stable fixation without secondary displacement or hardware failure in all patients. This combined approach addresses both oncologic burden (via cryoablation) and mechanical instability (via percutaneous fixation), offering advantages over cementoplasty alone-especially in lytic or weight-bearing lesions where rotational stresses exceed PMMA resistance.

CONCLUSION: Percutaneous screw fixation combined with cryoablation is a safe, feasible, and clinically effective technique for unstable bone metastases, providing durable pain relief, rapid functional recovery, and sustained mechanical stability. These results support its growing role in minimally invasive, image-guided musculoskeletal oncology.

123027

Percutaneous Cryoablation of Osteoid Osteoma in Children: Safety, Feasibility, and Clinical Outcomes

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PRESENTER LEVEL OF TRAINING: Radiologist

OBJECTIVE: To evaluate the safety, technical feasibility, and clinical outcomes of percutaneous cryoablation for the treatment of osteoid osteoma (OO) in a pediatric population.

METHODS: This retrospective study included pediatric treated between for symptomatic osteoid osteomas confirmed clinically and by imaging. All procedures were performed under CT guidance using a single protocol depending on nidus diameter. General anesthesia was systematically used. Technical success, complications, pain evolution, return to normal activity, and recurrence rates were evaluated at 1 month. All patients were followed up by the interventional radiologist.

RESULTS / DISCUSSION: Cryoablation was technically successful in 100% of cases, with complete nidus coverage achieved at the first session in all patients. No major complications occurred. Minor complications were observed. Pain relief was rapid and sustained. All patients resumed full physical activity within few weeks. No local recurrence was observed during the follow-up. Cryoablation offers advantages over radiofrequency ablation in selected cases, including improved visualization of the ablation zone, reduced risk to adjacent cartilage, and the possibility of real-time thermal monitoring-particularly relevant in epiphyseal or juxta-articular lesions.

CONCLUSION: CT-guided percutaneous cryoablation is a safe, minimally invasive, and highly effective treatment for osteoid osteoma in children, with excellent pain relief, minimal morbidity, and rapid return to normal function. These findings support cryoablation as a first-line alternative to radiofrequency ablation or surgical excision in the pediatric population.

123028

Percutaneous Osteosynthesis in Interventional Radiology: A Scoping Review on Feasibility, Safety, and Clinical Outcomes

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PRESENTER LEVEL OF TRAINING: Radiologist

OBJECTIVE: To map and synthesize available evidence on percutaneous osteosynthesis (POS) performed under imaging guidance by interventional radiologists, focusing on feasibility, safety, pain control, analgesic reduction, and impact on quality of life, while assessing trends in scientific production and implications for interventional radiology practice.

METHODS: A scoping review was conducted following PRISMA-ScR methodology. Databases were searched from inception to 2025, yielding 9,900 publications screened for relevance. Studies were included if they reported clinical outcomes after POS performed by interventional radiologists using CT, CBCT, or fluoroscopic guidance, with or without cementoplasty or ablation. Extracted data included technical success, complication rate, pain evolution (VAS), analgesic intake, mobility recovery, and quality-of-life metrics.

RESULTS / DISCUSSION: Most published data originate from France, where cementoplasty, vertebroplasty, and later percutaneous osteosynthesis were developed and rapidly adopted. Publications have sharply increased over the past decade, confirming the growing validation of this technique. POS shows near-universal feasibility, very low complication rates-almost always managed percutaneously-rapid pain relief, reduced or stopped analgesic use, early weight-bearing within 48 hours, and clear improvement in function and quality of life. It is cost-effective and widely used in both oncologic lesions and fragile trauma patients.

CONCLUSION: Percutaneous osteosynthesis is a safe, feasible, minimally invasive, and clinically effective technique with clear benefits in pain relief, mobility, and quality of life. Despite solid evidence and strong academic leadership-particularly in France-its adoption remains uneven. Given its low complication rate, cost-effectiveness, and high therapeutic value, broader deployment in the radiological community is warranted, especially in centers already performing cementoplasty or musculoskeletal interventions.

123086

Impact of AI-Assisted NerveTrack™ Ultrasound Guidance on Peripheral Nerve Identification by Radiology Residents: A Comparative Educational Study

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PRESENTER LEVEL OF TRAINING: Radiologist

OBJECTIVE: To evaluate whether the NerveTrack™ AI software integrated into ultrasound systems improves the ability of radiology residents to identify major upper-limb nerves (median, ulnar, and radial), and to assess its perceived value as a pedagogical tool.

METHODS: This prospective educational study included radiology residents with no prior specialized training in peripheral nerve ultrasound. Each participant was asked to identify three nerves of the upper limb (median, ulnar, radial) in a standardized scanning protocol. Two conditions were tested in randomized order: 1. Conventional ultrasound alone 2. Ultrasound with NerveTrack™ active (Samsung Medison) Primary outcomes were: 1) Successful nerve identification (binary), 2) Time to correct identification (in seconds) Secondary outcomes included resident feedback collected via a post-session questionnaire using Likert scales (1-5) evaluating confidence, perceived usefulness, and educational impact.

RESULTS / DISCUSSION: Residents identified significantly more nerves when using NerveTrack™ compared to standard ultrasound alone. Mean identification time was also significantly reduced in the NerveTrack™ condition across all three nerves. The questionnaire results showed strong acceptance: residents considered NerveTrack™ a valuable learning tool, reported greater confidence in identifying nerves, and expressed interest in integrating AI assistance into their regular training. This study confirms that AI-assisted ultrasound can enhance nerve detection performance among novice operators.

CONCLUSION: NerveTrack™ significantly improves both the success rate and speed of upper-limb nerve identification by radiology residents with limited prior training. Its strong acceptance as an educational tool suggests clear value for teaching peripheral nerve ultrasound and supporting early procedural autonomy.

123149

Prediction of Scapula and Humerus Morphology from the Ipsilateral Counterpart

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: To validate a statistical shape model (SSM)-based algorithm to predict the shape of a missing scapula or humerus from the ipsilateral counterpart bone using point clouds generated from clinical CT imaging data.

METHODS: Preoperative scapula and humerus CT scans from N=114 Japanese patients without major deformity were segmented and converted into correspondence point clouds (5,376 and 4,096 particles, respectively). Patients averaged 76.4±5.9 years, 154.4±10.7 cm, and 58.2±10.6 kg; the cohort was 50% female and 63.2% right-sided. Two-bone glenohumeral statistical shape models (SSMs) were generated using principal component analysis. Through leave-one-out cross-validation, one subject was excluded from training, an SSM was built, and the withheld scapula was predicted from the humerus and vice versa using random-forest regression. Prediction accuracy was quantified by mean surface-point distance. Errors were compared against those from training-set mean shapes, with the difference representing the additional subject-specific morphology captured through ipsilateral shape correlation.

RESULTS / DISCUSSION: SSM-based mean scapular shape accuracy was 2.63±0.80 mm versus 4.17±1.67 mm for the training-set average, a mean reduction of 1.53±1.44 mm. For the humerus, SSM-based accuracy was 3.20±1.70 mm versus 5.09±2.89 mm, a mean reduction of 1.90±2.76 mm. Incorporating SSM predictions improved performance in 80.7% of cases.

CONCLUSION: Glenohumeral counterparts share mutual shape information with possible applications in dataset augmentation, automated pathology detection, and reconstructive surgical planning.

123227

Usefulness of Quantitative Analysis Using Relative Electron Density (RED) Based Imaging for Subsolid Nodules in Chest HRCT

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PRESENTER LEVEL OF TRAINING: Radiologic Technologist

OBJECTIVE: This study evaluates the usefulness of RED (%EDW) based imaging for the quantitative analysis of subsolid nodules in Chest HRCT, along with CT number (HU) based imaging. Additionally, this study aims to determine whether the combined use of both imaging techniques improves diagnostic accuracy and contributes to early detection and treatment planning for subsolid nodules

METHODS: We retrospectively analyzed 172 patients (age range 36-81 years, 52 male, 120 female) with subsolid nodules. The patients were divided into mixed GGN and pure GGN groups. Volume and diameter were measured using both CT number (HU) and RED (%EDW) based images. Scatter plots were used to assess the correlation between CT number (HU) and RED (%EDW).

RESULTS / DISCUSSION: In the mGGN group, the volume change rate was 12.50% for GGN and 7.14% for Solid, while the diameter change rate was 4.33% for GGN and 4.59% for Solid. In the pGGN group, the volume change rate for GGN was 12.16%, and the diameter change rate was 5.36% for GGN. RED-based imaging demonstrated significantly greater volume and diameter compared to CT number-based imaging ($P < 0.05$). A strong positive correlation was observed between CT number (HU) and RED (%EDW) ($P < 0.05$), indicating the complementary role of both imaging techniques. The integration of both techniques enhances diagnostic accuracy and aids in identifying subtle areas of subsolid nodules that may be missed by CT number (HU) alone.

CONCLUSION: Using both CT number (HU) and RED (%EDW) imaging enables accurate quantitative analysis of subsolid nodules, aiding early diagnosis, treatment planning, and treatment decision-making.

123278

Lesion-Symptom Mapping of Acute Diffusion MRI in Pediatric Stroke-Induced Dystonia

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: Dystonia, affecting ~20% of children after arterial ischemic stroke (AIS), is marked by involuntary contractions and abnormal postures. Symptoms emerge 6-12 months post-stroke, suggesting delayed pathological reorganization. However, mechanisms underlying its emergence remain unclear, and it is unknown why only some children develop dystonia. Early prognostication is key for counseling and identifying high-risk patients.

METHODS: Seventy pediatric AIS patients (29 with dystonia, 41 without) imaged within 48 hours were included. Exclusion criteria were imaging >48 hours, presumed perinatal stroke, remote stroke history, or absent MRI. To assess timing effects, a comparison analysis included these 70 acute patients plus 20 additional patients (6 with dystonia, 14 without) imaged beyond 48 hours (total n=90). Lesions were segmented on DWI/ADC maps, preprocessed, and registered to an MNI-space T1 template. Multivariate lesion-symptom mapping (LESYMAP) tested voxel-wise associations with dystonia.

RESULTS / DISCUSSION: In patients with acute imaging (<48 hours), LESYMAP identified significant associations between dystonia and lesions involving the right middle frontal gyrus, right caudate, right occipital lobe, and the left putamen and globus pallidus internus ($p=0.007$, cross-validated $r=0.322$). When the analysis was expanded to include all 90 patients, the voxel-dystonia correlation decreased to $r=0.267$ with reduced significance ($p=0.01$), suggesting that acute imaging provides better predictive accuracy.

CONCLUSION: Acute MRI lesion patterns in cortico-basal ganglia motor areas strongly predict dystonia in post-AIS children. Reduced accuracy with delayed imaging suggests that acute diffusion changes offer better biomarkers for dystonia risk stratification, underscoring the importance of early neuroimaging to identify high-risk patients.

123285

Assessment of Aortic Annulus Dimensions for Patients with Hypertrophic Cardiomyopathy in Pre-TAVI Planning CT

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PRESENTER LEVEL OF TRAINING: Radiologic Technologist

OBJECTIVE: This study aims to minimize the risk of under sizing the aortic annulus size and reduce complications by analyzing the size change of the aortic annulus during the cardiac cycle in patients with hypertrophic cardiomyopathy (HCM)

METHODS: A retrospective study was conducted on 41 normal patients (78.92 ± 12.6 years; 44% male) and 31 patients with HCM (74.92 ± 10.8 years; 61% male) who underwent ECG-gated TAVI planning CT. The aortic annulus was identified at 10% intervals of the cardiac cycle. Semi-automatically measured aortic annulus parameters, including maximum and minimum diameter, area, perimeter, area-derived diameter, and perimeter-derived diameter, were recorded.

RESULTS / DISCUSSION: Significant changes were observed in the area, perimeter, effective diameter, area-derived diameter, and perimeter-derived diameter during the cardiac cycle, with relative changes of 27.3%, 10.4%, 11.9%, 12.6%, and 11.1% respectively ($P < 0.05$). In the normal group, the aortic annulus was larger during the systolic phase compared to the diastolic phase. In the HCM group, the aortic annulus showed larger and more variable dimensions throughout the cardiac cycle. Significant differences were observed in the maximum value distribution plot between the groups ($P < 0.05$).

CONCLUSION: Reconstructing the entire cardiac cycle and selecting the largest aortic annulus in HCM patients for TAVI planning contributes to the accurate selection of prosthetic valve size and minimizing the risk of TAVI-related complications.

123295

Survey of the Current Trends of Management of Breast Density, Breast Cancer Risk Assessment, and Supplemental Screening across 34 Facilities in Canada

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PRESENTER LEVEL OF TRAINING: Radiologist

OBJECTIVE: This survey study aims to explore the impact of breast density notification legislation on breast cancer risk assessment, management of individuals with dense breasts, supplemental screening practices, and the utilization of artificial intelligence in breast imaging practices across Canada.

METHODS: A voluntary, anonymous 23-question prospective survey was distributed to radiologists across Canada via email through various professional associations between January 8, 2025 and March 8, 2025.

RESULTS / DISCUSSION: Thirty-four complete responses were received. Few (9%) of surveyed Canadian breast imaging facilities perform breast cancer risk assessment. There is variability in the method of breast density assessment across Canadian breast imaging facilities, with 65% solely using visual breast density assessment. The availability and use of supplemental screening modalities vary widely across the country, with the most common modalities currently utilized including digital breast tomosynthesis (62%), handheld ultrasound (44%), and MRI (44%).

CONCLUSION: Breast imaging facilities across Canada face variable resource availability and operational challenges related to breast cancer risk assessment, breast density assessment, and supplemental screening, despite requirements for breast density reporting and notification. Screening programs and radiology departments must be dynamic in the evolving realm of breast density assessment and reporting, supplemental screening, risk assessment, and the ways in which artificial intelligence can make a meaningful impact in patient care.

123355

Comparative Effectiveness of Saline and Autologous Blood Patches in Reducing Pneumothorax and Chest Tube Insertion after CT-Guided Lung Biopsies

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PRESENTER LEVEL OF TRAINING: Radiologist

OBJECTIVE: To compare the effectiveness of saline and autologous blood patches in reducing the incidence of pneumothorax and the need for chest tube insertion following CT-guided percutaneous needle lung biopsies (CT-PNLB).

METHODS: Retrospective study including 572 patients who underwent CT-PNLB between January 2022 and June 2024, with at least 1 mm distance between the target lesion and the pleural surface. Patients' demographics, lesion depth from pleural surface, presence of emphysema or fibrosis, and the use of patching techniques (none, saline, and blood) were collected. Chi-square and logistic regression models were used for group comparison.

RESULTS / DISCUSSION: Pneumothorax occurred in 30.9% of patients without patch, 23.8% with saline patch and 14.7% with blood patch, confirming lower rates of pneumothorax with patching techniques ($\chi^2 = 10.81$, $p = 0.004$). Chest tube insertion occurred in 9.8% of patients without patch, 4.9% with saline patch and 2.9% with blood patch, with statistical significance ($\chi^2 = 7.38$, $p = 0.025$). Pairwise comparisons showed that blood patch decreased the risk of pneumothorax (OR 0.37) and chest tube insertion (OR 0.28) compared to no patch, with statistical significance (< 0.05). Saline patch also demonstrated lower risk of pneumothorax and chest tube insertion compared with no patch, although not reaching statistical significance (OR 0.70, $p = 0.14$, and OR 0.47, $p = 0.076$, respectively). Despite lower rates of both complications in blood patch compared to saline, this did not reach statistical significance.

CONCLUSION: Overall, blood patching demonstrated the greatest reduction in pneumothorax and chest tube insertion following CT-PNLB.

123360

Young Breast Cancer Patients Under 40 Outside of Screening Program: Does Integrated Care Speed Diagnosis?

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: To compare time-to-diagnosis and surgery, for patients under 40 diagnosed with primary breast cancer outside the provincial screening program, between a surgeon-led, multidisciplinary integrated model (City A) and a general practitioner-coordinated model (City B). We hypothesized that the integrated model will have shorter diagnostic and treatment intervals.

METHODS: We conducted a retrospective review of patients diagnosed under age 40 at the City A and City B Breast Health Clinics between 2015 and 2024. The time-to-diagnosis was defined as the time from first diagnostic imaging to histopathologic diagnosis, subdivided into imaging-to-biopsy and biopsy-to-diagnosis phases. Time from imaging-to-surgery was also compared. Intervals were analyzed with non-parametric tests, and associations with the clinic model and key covariates were assessed using multiple linear regression.

RESULTS / DISCUSSION: Among 228 patients (131 City A, 97 City B; median age 36.6), the City A model demonstrated a significantly shorter median time-to-diagnosis (13 vs. 20 days, $p=0.0045$). This difference was primarily driven by a shorter imaging-to-biopsy interval (8 vs. 14 days, $p=0.002$). Time-to-surgery was not significantly different (25 vs. 33 days, $p=0.151$). Multivariable analysis identified higher BI-RADS scores and the use of internal breast clinic imaging as factors independently associated with shorter time-to-biopsy and diagnosis.

CONCLUSION: The surgeon-led, multidisciplinary integrated model was associated with significantly shorter time-to-biopsy and thus to diagnosis. These findings support implementing an integrated care model in breast health clinics to improve diagnostic efficiency for patients outside of screening programs.

123419

Implementation, Clinical and Radiographic Outcomes of MMAE in a Canadian Tertiary Care Centre

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OBJECTIVE: To evaluate the uptake, implementation, technical success, safety, and clinical radiographic outcomes of middle meningeal artery embolization (MMAE) for subdural hematoma (SDH) at a Canadian tertiary centre shortly after efficacy of MMAE was proven efficacious in randomized trials.

METHODS: We conducted a retrospective case series of adults undergoing MMAE for SDH at a Canadian Health Centre between February 2024 and August 2025. Clinical records, procedural reports, and imaging were reviewed to obtain demographics, comorbidities, anticoagulation status, hematoma characteristics, embolic technique/material, and follow-up outcomes. Primary outcomes were technical success and change in hematoma volume/thickness. Secondary outcomes included clinical improvement, recurrence requiring re-intervention, and complications.

RESULTS / DISCUSSION: During the study period, 17 patients underwent MMAE during the study period (median age 78 years, IQR 67-85; 5 female). Technical success was achieved in 14/17 cases. Among the 15 cases in which embolic agents were deployed, 11 used Onyx, 3 used coils, and 1 used a combined coils-plus-Onyx approach. Many patients underwent burr-hole drainage or craniotomy before or after MMAE. Hematoma thickness will be plotted across all imaging time points to assess the relative contributions of surgery and MMAE to hematoma involution. Early qualitative review suggests a trend toward radiographic improvement following MMAE, with two cases of recurrence requiring re-intervention. No major periprocedural complications have been identified to date.

CONCLUSION: Our preliminary data enforce MMAE as a feasible, safe, and promising therapeutic option for SDH. Completion of the full dataset will allow for a more robust assessment of patient outcomes and the role of MMAE in SDH management pathways.

123427

Lessons Learned from 3-year Program of Diagnostic Radiology Remote Online Teaching in Developing French Speaking Countries

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PRESENTER LEVEL OF TRAINING: Radiologist

OBJECTIVE: We aimed to assess the impact of a 3-year remote radiology teaching program on trainees and attending radiologists in French-speaking African countries & identify their ongoing educational needs

METHODS: Participants in the remote online diagnostic radiology teaching program were based in several African countries including Algeria, Morocco, Senegal and the Democratic Republic of Congo. An anonymous online self-assessment survey, using a 0-10 Likert scale, was administered to evaluate participants' radiology knowledge and educational needs before and after the 3-year program.

RESULTS / DISCUSSION: Over a 3-year period, 121 teaching sessions were delivered with 105 (86.8%) lecturers practicing or trained in Europe, Canada or the United States. This self-assessment survey achieved a 93% response rate (65% male). Half of the participants had over 3 years of radiology experience, and 87% practice radiology in academic centers. Statistically significant improvement in knowledge were reported across all radiology subspecialties ($P < 0.001$), with the greatest gains observed in women's imaging [from initially 4.62 (95%CI: 4.20-5.04) to 7.04 (6.69-7.39) after 3 years of attendance, showing an increase of 2.42 (2.06-2.78)] and pediatric imaging [4.02 (3.61-4.43) to 6.15 (5.76-6.55), increase 2.13 (1.79-2.47)]. Participants also expressed a strong need for in-person training, particularly in neuroradiology (50%), emergency (38%) and interventional radiology (30%).

CONCLUSION: The online outreach educational program showed significant self-reported improvements in radiology knowledge highlighting its value for radiology trainees and practicing radiologists in French-speaking developing countries. Data show substantial needs for educational support from western radiologists to African colleagues to strengthen radiology capacity and shape the future of radiology in underserved regions.

123434

Prostate MRI Learning Curves: Establishing Training Benchmarks for Radiology and Urology Trainees

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PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE: Evidence-based training benchmarks for prostate multiparametric MRI (mpMRI) interpretation remain undefined amid growing educational demands. We compared learning curves between radiology and urology trainees and quantified the impact of prior radiological experience.

METHODS: Fourteen trainees (10 radiology, median 2.7 years experience; 4 urology, no imaging experience), all naïve to prostate mpMRI, prospectively interpreted 200 cases using a feedback-based platform. Performance metrics included agreement with expert consensus reference for PI-RADSv2.1 (≥ 3), PI-QUALv2 image quality, extraprostatic extension (EPE) grading, and readout time. Learning curves were modeled using generalized estimating equations; segmented regression identified inflection points; bootstrapping generated 95% CIs.

RESULTS / DISCUSSION: Prior radiological experience showed no significant impact on PI-RADSv2.1 (OR per year 1.06 [95% CI: 0.96, 1.16]) or PI-QUALv2 (1.05 [0.99, 1.23]), with minor effect on EPE grading (1.11 [1.03, 1.24]). Final PI-RADSv2.1 agreement with reference was similar (urology 80.9%, radiology 77.4%; OR 1.24 [0.55, 3.10]), with sensitivity/specificity 0.84/0.80 and 0.83/0.79, and Cohen's κ values (0.64 and 0.61) matching inter-expert $\kappa=0.63$. Learning plateaued after 69-75 cases. Urology trainees demonstrated higher baseline PI QUALv2/EPE agreement (OR 2.01 [1.35, 3.02] and 1.90 [1.11, 2.93]), but radiology trainees achieved similar final performance (PI-QUALv2: 88.0% vs 89.9%, OR 0.82 [0.35, 1.72]; EPE: 84.6% vs 90.0%, OR 0.61 [0.31, 1.42]). Readout times decreased markedly in both groups (final difference 53.3s [-9.4, 95.9]).

CONCLUSION: Feedback-based training enabled similar prostate mpMRI interpretation performance across specialties with most learning within 75 cases. Prior radiological experience had limited impact. These empirical benchmarks inform certification standards and early- residency curricula in radiology and urology.

123471

CT Predictors of Complicated Appendicitis: Diagnostic Performance and Key Imaging Features

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PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE: Distinguishing acute uncomplicated from complicated appendicitis is an essential component of CT-based diagnosis which will shape the course of subsequent management. This study aims to identify CT features that differentiate uncomplicated from complicated appendicitis and to evaluate whether imaging can reliably distinguish between types of complicated appendicitis.

METHODS: A retrospective review of 230 patients with suspected appendicitis on CT and subsequent pathologic confirmation was conducted at a tertiary care center. Three reviewers independently assessed 14 CT imaging features of appendicitis and classified each case as acute uncomplicated, perforated, or gangrenous. Descriptive statistics were generated for all variables. Reviewer classifications were compared with pathology using both three-level and two-level schemes, with agreement assessed using Cohen's kappa and percent agreement. Continuous variables were evaluated using independent t-tests and categorical variables using chi-square tests.

RESULTS / DISCUSSION: Agreement among reviewers was substantial ($\kappa = 0.72-0.74$), whereas agreement with pathology was only fair ($\kappa = 0.27-0.44$). Several CT features were consistently associated with complicated appendicitis across all reviewers, including larger appendix diameter (13.1-13.7 mm vs. 11.6-12.0 mm), focal wall defect (21-54% vs. 5-13%), and more pronounced periappendiceal stranding or fluid (moderate-severe stranding 38-58% vs. 13-31%). Extraluminal gas (12-20% vs. 1-3%), intraluminal appendicolith (52-56% vs. 28-32%), and cecal wall thickening (33-40% vs. 14-23%) were also significantly more common in complicated cases.

CONCLUSION: Radiologists demonstrated only fair agreement with pathology in identifying complicated appendicitis, emphasizing the diagnostic challenge on CT. However, multiple CT features were consistently associated with perforation or gangrenous change, supporting their utility as key indicators of complicated appendicitis.

123478

Accelerating MSK MRI with AI Technology

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: Magnetic resonance imaging (MRI) is essential for musculoskeletal (MSK) assessment but is limited by long acquisition times that contribute to patient discomfort and growing waitlists. Artificial intelligence (AI)-accelerated reconstruction has emerged as a strategy to improve MRI efficiency while maintaining diagnostic quality. This study evaluated the impact of Siemens Deep Resolve, a deep-learning-based reconstruction method, on scan duration, image quality, and patient experience.

METHODS: A retrospective review was conducted from January-December 2024. MSK MRI examinations of the shoulder, elbow, wrist, lumbar spine, knee, and ankle performed on a 3-T Siemens system were included. Standard imaging was compared with Deep Resolve-accelerated protocols. Acquisition times were extracted from system analytics. Image quality was assessed by a fellowship-trained radiologist using a standardized scoring system. Patient-reported MRI experiences submitted to the Patient Care Quality Office during the study period were reviewed for qualitative trends.

RESULTS / DISCUSSION: AI-accelerated MRI demonstrated substantial reductions in scan duration across all MSK sites. Mean acquisition times decreased from 17.86 to 16.00 minutes for ankles, 10.63 to 5.75 minutes for knees, 11.41 to 5.37 minutes for shoulders, and 10.21 to 9.00 minutes for lumbar spines. Radiologist scoring indicated preserved or improved image quality with Deep Resolve. Patient feedback suggested improved comfort, largely attributed to shorter time in the scanner.

CONCLUSION: Deep Resolve significantly reduced MSK MRI acquisition times while enhancing or maintaining image quality. These findings highlight the potential of AI-accelerated MRI to improve diagnostic performance, patient experience, and system efficiency.

123481

Challenging the Stigma: 4D-Flow MRI Demonstrates Lower Left Atrial Stasis in Higher BMI Patients with Atrial Fibrillation

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: There exists a highly prevalent and damaging stigma in healthcare that high body mass index (BMI) necessitates poorer cardiovascular outcomes. Contrary to this stigma, in atrial fibrillation (AF), higher BMI correlates with a lower risk of stroke and mortality, but the mechanism by which this occurs is currently unknown. To provide mechanistic insight for this relationship, we leveraged advanced imaging in patients with AF.

METHODS: This retrospective study used data from the Cardiovascular Imaging Registry of Calgary to assess left atrial flow dynamics in paroxysmal AF patients from 2017 to 2020. Four-dimensional (4D) flow cardiac MRI, based on time-resolved, three-dimensional phase-contrast imaging, was performed to visualize blood flow patterns throughout the cardiac cycle. Blood flow stasis was quantified as the percentage of blood velocities <0.1 m/s after manual segmentation of the left atrium.

RESULTS / DISCUSSION: Thirty patients (age = 62.3 ± 9.9 years; BMI = 19.5 to 41.9 kg/m³; 50% female) with paroxysmal AF who were scheduled for cardiac ablation underwent 4D flow MRI. Pearson correlation revealed a significant inverse association between BMI and left atrial stasis ($r = -0.50$, $p < 0.01$), indicating that stasis increased as BMI decreased. This finding suggests a potential mechanism for the more favorable outcomes observed in individuals with higher BMI in AF, as reduced stasis directly translates to lower thrombogenic risk.

CONCLUSION: Higher BMI is associated with reduced blood flow stasis in the left atrium, directly challenging the stigma that elevated BMI necessitates poorer cardiovascular outcomes. These findings underscore the need for more individualized risk assessment in AF.

123494

Evaluating AI Effectiveness in Detecting Misinformation for Breast Imaging Modality, Biopsy, and Screening Guidelines Information

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: To compare the effectiveness of prominent large language models (LLMs) in accurately detecting misinformation within breast imaging-related statements.

METHODS: A dataset of 200 breast imaging statements (100 true, 100 false) was developed, covering key topics such as mammography risks and benefits, radiation exposure, and breast cancer screening guidelines. A breast radiologist reviewed all statements for accuracy. Six LLMs were evaluated: ChatGPT-5, Claude on Perplexity, DeepSeek, Grok, Gemini, and Mistral. Prompts were entered into each model with default parameters and zero-shot learning technique: "Is this True or False?" Performance metrics included accuracy, sensitivity, specificity, response confidence by providing a definitive True or False evaluation, citation practices, and hallucinations.

RESULTS / DISCUSSION: LLMs demonstrated high misinformation detection accuracy ranging from 98.5%-100%. Claude, DeepSeek, and Grok achieved perfect 100% accuracy (200/200 correctly classified), followed by Gemini at 99.5% (199/200), ChatGPT-5 at 99.0% (198/200), and Mistral at 98.5% (197/200). ChatGPT-5, Claude, DeepSeek, Grok, and Gemini achieved perfect 100% sensitivity, while Mistral demonstrated 98.0% sensitivity. DeepSeek, Claude, and Grok showed perfect 100% specificity, Gemini and Mistral each achieved 99.0% specificity, and ChatGPT-5 demonstrated 98.0% specificity. All LLMs provided definitive "True" or "False" classifications for all 200 statements. Only Claude cited sources for all 200 responses, and these were from professional societies, the National Institutes of Health, and commercial websites. No hallucinations were identified.

CONCLUSION: Leading LLMs are comparable in misinformation detection accuracy, but only Claude cited sources. As patients increasingly use AI tools to seek and verify breast imaging information, understanding LLM accuracy enables contextually informed patient counselling.

123518

Amorphous Breast Calcifications on Abnormal Screen: Cancer Risk on First vs Subsequent Screen

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PRESENTER LEVEL OF TRAINING: Radiologist

OBJECTIVE: The objective of the study was to quantify the malignancy risk associated with amorphous calcifications detected on screening mammography on first versus subsequent screens and to determine if a subset could undergo surveillance rather than tissue biopsy.

METHODS: Following REB approval, the study participants were identified through the provincial screening program database as those presenting with calcifications identified on screening mammography without associated mass, asymmetry or distortion and without prior history of breast cancer over the period of 2009-2020. Cases were further restricted to those with amorphous morphology. Malignancy (defined as DCIS or invasive disease) rates and associated 95% confidence intervals (CI) were compared between first- and subsequent-screens using a chi-square test.

RESULTS / DISCUSSION: A total of 2993 screen-abnormal patients were identified with solely a calcification abnormality. Of these, 502 (16.8%) had amorphous calcifications, 95 (18.9%) of which resulted in a malignancy. Among amorphous calcification cases, the malignancy rate was 12/93 (12.9%, 6.8-21.5%) for first screens and 83/409 (20.3%, 16.5-24.5%) for subsequent screens (p=0.10).

CONCLUSION: The malignancy rate did increase from first screen detection (12.9%) to subsequent screen detection (20.3%) however this was not found to be statistically significant. Even among first screen detection the malignancy rate exceeded the BI-RADs 3 threshold (less than 2%) for surveillance reaffirming the requirement for biopsy.

123531

The Impact of Using Transitional-Phase and Hepatobiliary-Phase Hypointensity to Expand the Definition of the Major Feature 'Non-Peripheral Washout' on Gadoxetate-Enhanced MRI: An Individual Participant Data Meta-Analysis

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: To determine whether expanding the definition of nonperipheral washout (npWO) on gadoxetate disodium-enhanced magnetic resonance imaging (Gd-EOB-MRI) to include transitional (TP) and/or hepatobiliary phase (HBP) hypointensity affects diagnostic performance of the Liver Imaging Reporting and Data System (LI-RADS) for hepatocellular carcinoma (HCC).

METHODS: We conducted an individual participant data meta-analysis of 43 studies including 5,006 patients and 5,896 observations. We compared npWO against three expanded major feature definitions: (eMF-1) npWO and/or TP hypointensity, (eMF-2) npWO and/or HBP hypointensity, and (eMF-3) npWO and/or TP and/or HBP hypointensity. Bivariate generalized linear mixed effects models were used to obtain sensitivity, specificity, and positive predictive value (PPV). The area under the receiver operating characteristic curve (AUC) was obtained using a multilevel random-effects model with multiple cut-offs for each LI-RADS category 1 to 5. Nonparametric clustered bootstrap resampling with 1,000 iterations was used to compare the results across diagnostic performance measures.

RESULTS / DISCUSSION: Relative to npWO, the area under the receiver operating characteristic (AUC) curve increased by 2.64%, 3.29%, and 3.28% for the eMF-1, eMF-2, eMF-3, respectively. For LR-5 diagnostic performance, sensitivity increased by 24.00%, 25.66%, and 26.10%, respectively, while decreasing specificity by 2.22%, 7.14%, and 6.75%, respectively. PPV showed no significant change for eMF-1; however, PPV decreased by 0.28% and 0.24% for eMF-2 and eMF-3 respectively.

CONCLUSION: Overall, eMF-3 increases AUC by 3.28%. For LR-5 diagnostic performance, eMF-3 showed increased sensitivity by 26.10% while decreased specificity by 6.75% and PPV by 0.24%; adoption should be guided by clinical context and tolerance for false positives.

123566

Optimizing Patient Outcomes Using Internal Reference Controls in ASL MRI Brain Perfusion

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PRESENTER LEVEL OF TRAINING: Fellow

OBJECTIVE: (1) Assess age-related variability in ASL-derived CBF across defined paediatric age groups; (2) Evaluate candidate internal reference regions of interest (ROIs) for their potential as standardization tools; and

METHODS: We performed a retrospective analysis of paediatric patients undergoing an MRI brain scan with ASL perfusion. Inclusion criteria: (1) Patients between the ages of 1 day and 20 years scheduled for routine MRI brain scan; (2) Seizure-free at the time of imaging; and (3) Normal EEG. Exclusion criteria: (1) Patients with abnormal brain MRI (2) Recent seizure activity; and (3) Abnormal EEG. Patients were stratified into three groups: < 1 year; 1-10 years; and 10-20 years. ASL imaging was performed on a 3T MRI scanner using age-adjusted protocols. ASL perfusion maps were generated, and candidate internal reference ROIs (uniform size 2.5447 cm²) were placed in the frontal lobe at the level of the centrum semi-ovale, basal ganglia, and thalamus bilaterally. The cerebellum served as a comparative baseline. Figure 1 illustrates ASL acquisition at 3T MRI (TR 4600ms, TE 16.18ms). Mean values from each ROI were extracted as proxies for voxel-level CBF.

RESULTS / DISCUSSION: Findings support the feasibility of internal reference modelling in ASL perfusion. Internal reference normalization reduced inter- and intra-reader variability and improved consistency of perfusion quantification across a heterogeneous age cohort. Internal reference controls may mitigate age-related perfusion differences and enhance diagnostic confidence.

CONCLUSION: ASL Internal reference modelling represents a promising strategy to improve reproducibility and standardization. By providing objective reference metrics, it enhances diagnostic confidence and aids development of standardized protocols.

123577

Operations Research Methods in Radiology Service Delivery: A Scoping Review

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: Given increasing imaging demand and operational strain, this review synthesizes recent applications of operations research in radiology service delivery.

METHODS: We performed a comprehensive literature search in Scopus, Web of Science, Embase, Medline, IEEEExplore, and Google Scholar with three concepts: radiology, operations research (OR), and service delivery. Studies from January 2019 onwards with quantitative OR methods (e.g. discrete-event simulation, mathematical optimization) reporting on radiology service delivery were included. Studies were screened and extracted by 2 independent reviewers. The OR method, service delivery phase, optimization objective, operational outcomes, clinical outcomes, and impact on throughput, resource utilization, and economics are among the primary metrics extracted.

RESULTS / DISCUSSION: 43 studies were extracted. Most studies were simulated (n=32), with the most common OR method being discrete-event simulation (n=17). Models simulated variable components of radiology service, the most common being scheduling (n=17). All models reported operational outcomes, and 3 reported clinical outcomes. Optimization objectives were common (n=32), with the most prevalent being minimizing patient wait time or length of stay (n=13). Approaches were successful in demonstrating saved time or improved throughput in 29/29 studies that reported relevant outcomes. Formal economic consideration was provided quantitatively in 9 studies and qualitatively in 3 studies.

CONCLUSION: Operations research methods have successfully been applied to improve radiology service delivery and can be effective in reducing wait times, length of stay, and economic burden. Future work should focus on prospective validation and integration of these tools into real-time clinical systems to support sustainable, department-wide operational improvement.

123581

Deep Learning-Based EGFR Mutation Prediction in Lung Adenocarcinoma using Computed Tomography Scan Images, Pathology Slide Images and Demographic Data

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: To develop an artificial intelligence model for predicting EGFR mutation in lung adenocarcinoma. We hypothesized that improvements in accuracy over existing models would be attainable through integration of radiology, histopathology, and demographic data.

METHODS: We compiled (i) images from chest CT scans with IV contrast conducted prior to biopsy, (ii) histopathology slides of resection or biopsy specimens, and (iii) smoking history, sex, ethnicity (if available) and EGFR mutation data from clinical charts. Tumor containing regions in CT scan images were segmented and features were extracted. Images patches were extracted from scanned slide images. Initial performance was assessed in five-fold cross validation, and final performance will be assessed in an external validation set of 25 cases (half mutation positive) with radiology, pathology and clinical data.

RESULTS / DISCUSSION: CT scans, pathology slides and clinical data were obtained for 216 patients (122 with EGFR mutation), and pathology and clinical data were available for an additional 138 patients. Preliminary models showed an average area under the receiver operating curve (AUROC) of 0.76 when using pathology slides alone, and an average AUROC of 0.70 when using CT scan images alone. Combinatorial models are in progress.

CONCLUSION: Curation of a substantial multi-modality dataset is complete, and training of an algorithm that integrates these datatypes is in progress. We successfully achieved moderate performance with single data type models as anticipated from the literature. These models are foundational for the development of combined data type models, which could potentially elevate model accuracy into a clinically useful range.

123583

Peri-lesional Corticosteroid Injection for Treatment of Chronic Idiopathic Granulomatous Mastitis: Implementation and Early Clinical Outcomes

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PRESENTER LEVEL OF TRAINING: Radiologist

OBJECTIVE: Idiopathic granulomatous mastitis (GM) is a non-infectious inflammatory breast disease, often with protracted and debilitating disease course characterized by chronic draining wounds. Systemic corticosteroids are commonly used for disease control; however, their adverse systemic effects can be significant. Local corticosteroid injection has demonstrated favourable outcomes while minimizing first-pass systemic effects. We describe the implementation process and early clinical outcomes from 6 months of offering local steroid injection for GM at our institution.

METHODS: This project was exempt from REB as a QI project. 7 patients with refractory biopsy-proven GM underwent treatment with local injection of triamcinolone acetonide (40 mg/mL) since 03/2025. Dosing (40-200 mg per session) were individualized according to disease extent and patients evaluated with breast ultrasound every 4-6 weeks. Clinical response (ie. complete, partial or no response) and patient-reported quality of life (QOL) on a 10-point scale was recorded at each visit.

RESULTS / DISCUSSION: 3 of 7 patients (43%) had complete response after 2-4 treatments while 4 patients remain in active treatment (have completed 1-2 treatments to date). Mean QOL improved from 4.86 at baseline (n=7) to 6.86 after the first treatment (n=6), 8.5 after the third treatment (n=4), and 9.0 after the fourth treatment (n=2). Patients discharged from care reported a mean final QOL of 10 (n=3). Adverse effects were limited to transient gastrointestinal discomfort (2/7) and irregular menses (2/7).

CONCLUSION: Local corticosteroid injection appears to be a safe and effective therapeutic option for women with refractory GM, with early evidence of meaningful clinical improvement and enhanced patient-reported quality of life.

123587

Internal Gallbladder Drainage in Non-Operative Patients: A Scoping Review of Outcomes and SIR-Graded Adverse Events

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PRESENTER LEVEL OF TRAINING: Resident

OBJECTIVE: To evaluate clinical outcomes and Society of Interventional Radiology (SIR)-graded adverse events (AEs) associated with internal gallbladder drainage in non-operative patients, comparing transpapillary endoscopic gallbladder stenting (EGBS), endoscopic ultrasound-guided gallbladder drainage (EUS-GBD), and percutaneous tract-matured internalization.

METHODS: A PRISMA-ScR search identified 523 records; nine studies (435 patients) met criteria. Two reviewers extracted indications, access route, stent type, technical and clinical success, recurrence, follow-up, and complications. All AEs were reclassified using numerical SIR grades (SIR-1 to SIR-5). Given heterogeneity, outcomes were synthesized descriptively.

RESULTS / DISCUSSION: Technical success was high across all modalities (EGBS 79-98%; EUS-GBD 94-100%; percutaneous internalization 91%). Early AE rates (intention-to-treat) were 5.9% for EGBS, 9.8% for EUS-GBD, and 3.0% for percutaneous internalization. Late AE rates (per-protocol) were 9.7%, 11.6%, and 6.7%, respectively, while PTGBD removal showed substantially higher late AEs (22.1%). AE patterns reflected access anatomy: EGBS primarily resulted in papillary/ductal events (mostly SIR-3); EUS-GBD produced transmural AEs, including bile leak and pneumoperitoneum (SIR-2/3, with 1 sporadic SIR-4); and percutaneous internalization demonstrated low severe AE rates (predominantly SIR-2/3). In the largest study, permanent EGBS was associated with fewer late AEs than drain removal.

CONCLUSION: Internal gallbladder drainage is feasible across transpapillary, transmural, and percutaneous routes, each demonstrating modality-specific AE profiles. Current evidence supports EGBS for durable drainage in appropriate anatomy, EUS-GBD for rapid internalization when transmural access is safe, and percutaneous internalization as an option when cystic-duct access is achievable. Further comparative work is needed to guide selection of patient-specific approach.

123605

Dynamic CTA and Radioprotection Measures: Effect of kV on Current Modulation and BMI

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: Retrospectively gated dynamic CTA (dCTA) offers detailed characterization of abdominal aortic aneurysm (AAA) deformability during the cardiac cycle but results in elevated radiation exposure. The objective is to compare image quality and radiation dose across different kilovoltages and Body Mass Index (BMI).

METHODS: This prospective study included 24 patients undergoing dCTA protocol, stratified into two cohorts (120 kV, n=7; 135 kV, n=17) and further subdivided by BMI (<25, 25-30, and >30 kg/m²). Image quality was assessed using image noise, contrast-to-noise Ratio (CNR), signal-to-noise ratio (SNR). Dose indices (CTDIvol) were systematically compared.

RESULTS / DISCUSSION: The 135 kV protocols yielded image noise comparable to 120 kV (22 HU vs 20 HU) despite a lower CNR and SNR due to increased Compton scattering. Mean CTDIvol was slightly lower in the 135 kV group (36.7 ± 10.6 mGy) compared to the 120 kV group (37.5 ± 27.1 mGy). Radiation exposure remained relatively stable across BMI groups in the 135 kV cohort, contrasting with the positive linear relationship between dose and BMI in the 120 kV cohort. This dosimetric stability at 135 kV is driven by increased photon penetration, which limits the compensatory rise in tube current (mAs) modulation typically required for larger patients.

CONCLUSION: Kilovoltage optimization is essential for radiation protection in dynamic CTA. High-voltage dCTA should be prioritized for patients with high BMI to prevent excessive radiation exposure while maintaining diagnostic image noise levels.

123622

Comparative Accuracy of AI-Driven Platforms and Radiologists in Generating Differential Diagnoses from Standardized Medical Imaging

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: Artificial intelligence (AI) driven platforms may have equivalent or better assessment of imaging data compared to radiologists 1-4. The objective of this study is to systematically assess the diagnostic performance of 2 AI-based imaging platforms relative to practicing radiologists, specifically in their interpretation of medical imaging and generation of differential diagnoses.

METHODS: A total of n=100 clinical cases, with respective radiographic imaging, will be extracted from "O'Brien, W. T. (2010). Top 3 differentials in radiology: a case review". Imaging analysis will be compared across 3 cohorts: Open AI GPT-5, Microsoft Copilot, and radiologists. A standardized 6-point scoring system was applied to each case, awarding up to 2 points for main-finding accuracy, 3 points for correct differential, and 1 point for the final diagnosis. Each case may therefore receive a maximum of 6 points as per alignment with the academic textbook being used as "gold standard". All statistical tests will be done using R Studio Version 2025.09.0+387.

RESULTS / DISCUSSION: Primary outcomes include accuracy scores out of 6. Preliminary data of 25 cases show that radiologists scored the highest with an average score of 4.33+/-1.09, followed by Open AI GPT-5 with 2.96+/-1.88, and Copilot with 2.26+/-1.84. Pending secondary outcomes include sensitivity for correct final diagnosis and inter-observer agreement using kappa statistics between Radiologist A and B, and between radiologists and AI systems.

CONCLUSION: By determining cohort and platform superiority, this study may help explore the integration of AI-based image interpretation into radiology to assist radiologists and optimize workflow, without compromising accuracy.

123627

Environmental Evaluation of Ultrasound Service Delivery Models for Rural and Remote Communities

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OBJECTIVE: To perform a comparative environmental evaluation of four ultrasound service delivery models for rural and remote communities by quantifying the carbon footprint (kg CO₂e) per examination.

METHODS: We adapted an economic evaluation framework to compare four models of ultrasound service delivery in rural Canada: Model 1 (Telerobotic only), Model 2 (Telerobotic + Itinerant), Model 3 (Itinerant only), and Model 4 (Status Quo: Patient travel). A multi-way probabilistic analysis (10,000 Monte Carlo simulations) was used to compare total average carbon emissions, categorized by healthcare system and patient sources. One-way sensitivity analyses were performed, comparing alternative models to the status quo. Results were interpreted in the context of a cost-minimization analysis from a publicly funded healthcare payer perspective.

RESULTS / DISCUSSION: The hybrid “Telerobotic + Itinerant” model (Model 2) was the lowest-emission strategy (5.12 kg CO₂e per exam; 95% CI: 3.81-7.26). This was statistically significantly lower than the “Patient travel only” model (Model 4) (309.75 kg CO₂e; 95% CI: 200.98-447.71). All alternative models were dominant (both cost-saving and emissions-reducing) compared to the status quo. Model 2 was the superior strategy, reducing emissions by 304.19 kg CO₂e and saving \$155 per exam.

CONCLUSION: A hybrid telerobotic and itinerant sonographer model is the most environmentally and economically sustainable approach. Patient travel is the overwhelming contributor to the carbon footprint of rural ultrasound services. Implementing a hybrid telerobotic model can significantly reduce healthcare’s environmental impact, generate substantial cost savings, and improve service accessibility for remote populations.

123629

Impact of AI Assistance on Radiologist Follow-up Recommendations in Chest Radiography

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: To evaluate how access to artificial intelligence (AI) assistance affects radiologists’ follow-up and treatment recommendations when interpreting chest radiographs.

METHODS: We performed a secondary analysis of the Collab-CXR multi-reader study, involving 227 radiologists who each interpreted 324 frontal chest radiographs. The primary outcome was whether radiologists recommended follow-up or treatment for a given case (yes/no). Explanatory variables included radiologist demographics, sub-specialization, self-reported AI experience, years in practice, information condition, AI confidence, and pathology category. We used multivariable generalized linear mixed-effects models with random intercepts for radiologist and case to account for clustering, reporting odds ratios with 95% confidence intervals.

RESULTS / DISCUSSION: Radiologists with AI assistance were more likely to recommend follow-up/treatment compared to those with only clinical history (adjusted odds ratio [aOR] 1.12, 95% confidence interval [CI] 1.07-1.17; $p < 0.0001$). High AI confidence ($\geq$ median) was strongly associated with recommending follow-up/treatment (aOR 15.7, 95% CI 15.1-16.27; $p < 0.0001$). Radiologists with extensive AI experience were less likely to recommend follow-up/treatment than those without AI experience (aOR 0.53, 95% CI 0.31-0.91; $p = 0.0218$). In models stratified by AI confidence, AI assistance reduced follow-up/treatment recommendations when confidence was $<$ median (aOR 0.92 and 0.88; $p < 0.0001$).

CONCLUSION: AI assistance was associated with increased follow-up/treatment recommendations by radiologists, especially when model confidence was high, highlighting the impact of human-AI interaction. Low-confidence outputs reduced follow-up, suggesting calibrated trust rather than blind reliance, while radiologists with greater AI experience were less influenced by AI prompts.

123639

Geographic and Sex Distribution of LI-RADS Research Globally: A Cross-Sectional Meta-Research Study

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PRESENTER LEVEL OF TRAINING: Medical Student

OBJECTIVE: To determine whether the geographic and sex distribution of studies assessing LI-RADS and those included in the LI-RADS individual participant data (IPD) database reflect the global burden of HCC.

METHODS: We conducted a cross-sectional meta-research study comparing the country- and sex- specific HCC prevalence from GLOBOCAN 2022 with the distribution of studies eligible for and included in the LI-RADS IPD database. Studies were identified through a systematic search of four databases.

RESULTS / DISCUSSION: We identified 470 eligible studies including 98,014 patients; of these, 76 studies comprising 11,924 patients contributed to the IPD database. Geographic representation was uneven: Asian and African countries-despite bearing much of the global HCC burden-were markedly underrepresented in both the eligible set and the IPD cohort, while North America was overrepresented. Sex distribution was also imbalanced, with female patients significantly underrepresented relative to the global prevalence of HCC in women (eligible studies: $Z = -21.95$, $p < 0.0001$; IPD: $Z = -9.02$, $p < 0.0001$). These geographic and sex-based disparities suggest that current LI-RADS evidence is disproportionately derived from select populations and practice environments, potentially limiting its generalizability and diagnostic equity.

CONCLUSION: LI-RADS research is disproportionately reported from certain regions and underrepresents female patients. Improving global and demographic inclusivity is essential to strengthen the system's generalizability and ensure equitable diagnostic performance.



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