DALHOUSIE UNIVERSITY | CONTINUING PROFESSIONAL DEVELOPMENT & MEDICAL EDUCATION

RADIOLOGY RESEARCH DAY

Halifax Infirmary Royal Bank Theatre & MS Teams
2026 May 07 - 12:40 PM to 5:15 PM

with 2026 Campbell Lecturer Dr. Michael Patlas,
Editor-in-Chief, Canadian Association of Radiologists Journal

Dalhousie University operates in the unceded territories of the Mi’kmaw, Wolastoqey, and Peskotomuhkati Peoples. These sovereign nations hold inherent rights as the original peoples of these lands, and we each carry collective obligations under the Peace and Friendship Treaties. Section 35 of the Constitution Act, 1982 recognizes and affirms Aboriginal and Treaty rights in Canada.

We recognize that African Nova Scotians are a distinct people whose histories, legacies and contributions have enriched that part of Mi'kma'ki known as Nova Scotia for over 400 years.

Championing equity, diversity, inclusion, and accessibility (EDIA) is integral to Dalhousie’s vision, mission, actions, and culture, and influences how we interact with one another on a daily basis. Our work in this area requires both acknowledging historical injustice and addressing ongoing systemic inequalities within our campus community and beyond.

The Planning Committee is committed to creating a meaningfully accessible and inclusive environment.

In planning this event we reviewed feedback from past events. We encourage your feedback on practices we could implement to improve equity, diversity, inclusion and accessibility in the future, either through the program evaluation form (link at right), or directly to radiology.research@dal.ca.

Evaluation Form

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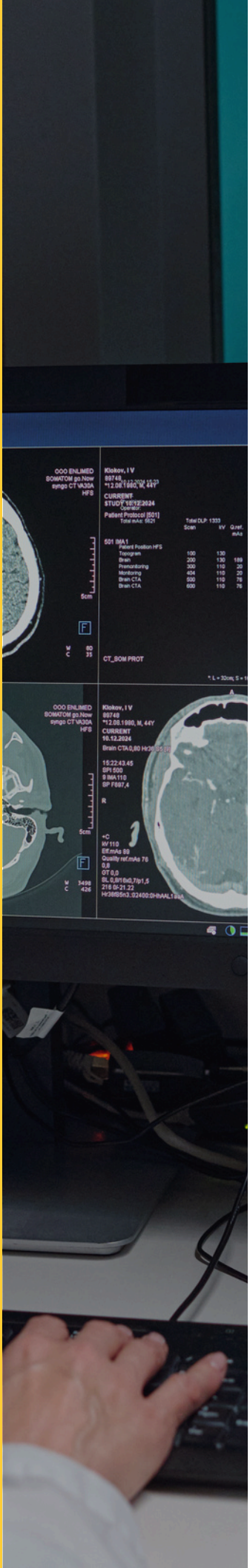


PROGRAM

RADIOLOGY RESEARCH DAY - 07 MAY 2026

Learning objectives

At the conclusion of this activity, participants should be able to:

- identify a range of research and quality activity being undertaken within the department *(CanMEDS roles: Medical Expert, Communicator, Collaborator, Scholar)*.
- recognize opportunities for research and quality collaboration with learners and faculty within the department and across disciplines *(CanMEDS roles: Medical Expert, Communicator, Collaborator, Scholar)*.
- recall the progress and outcomes of the research and quality projects presented *(CanMEDS roles: Medical Expert, Communicator, Collaborator, Scholar)*.

12:40 PM **Welcome**
Dr. Jennifer Payne, Associate Head, Research
Diagnostic Radiology

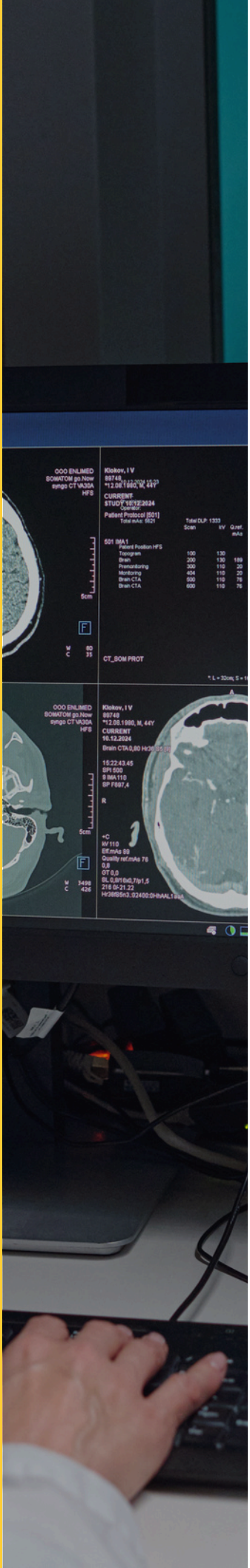
12:45 PM **A Rollercoaster Journey in Innovation**
Dr. Robert Abraham, Professor, Diagnostic Radiology
1:00 PM *Discussion*

Trainee Presentations (Non-Resident)
Moderator: Dr. Courtney Henry
Judges: Dr. Michael Patlas, Dr. Steven Beyea, Dr. Trevor McGrath, & Dr. Adela Cora

1:05 PM **Low-Dose CT Protocol for Pediatric Nephrolithiasis**
Adora Rooyakkers, Medicine, Dalhousie University
1:15 PM *Discussion*

1:20 PM **Implementation of a pre-procedural screening questionnaire for risk factor stratification and augmented antibiotic prophylaxis prior to transrectal US-guided prostate biopsy: Impact on urosepsis rates**
Marley Blommers, Medicine, Dalhousie University
1:30 PM *Discussion*

1:35 PM - 1:50 PM **Break (15 minutes)**



PROGRAM

RADIOLOGY RESEARCH DAY - 07 MAY 2026

Resident Presentations
Moderator: Dr. Sharon Clarke
Judges: Dr. Michael Patlas, Dr. Steven Beyea, Dr. Trevor McGrath, & Dr. Adela Cora

1:50 PM **Individualized CT for Pulmonary Embolism: Targeted Areas for Protocol Optimization**
Dr. Wolim Lee, DR Resident
2:00 PM *Discussion*

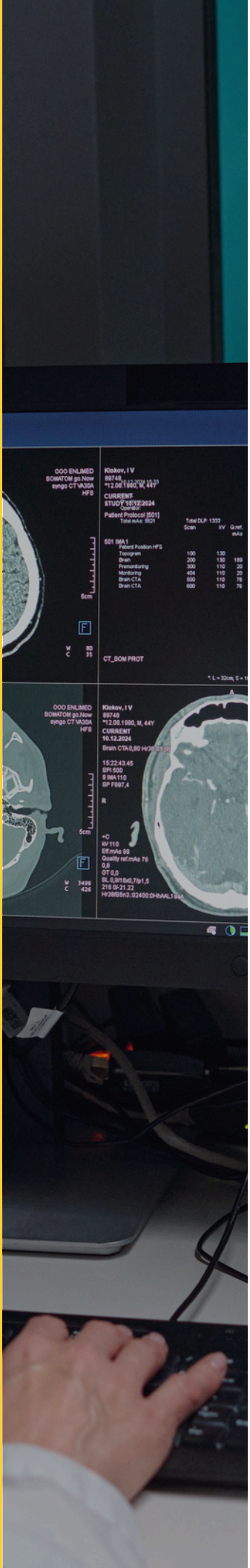
2:05 PM **Patients with Abnormal Diagnostic Imaging: Making Sure Lung Cancer Diagnosis is not Delayed**
Dr. Selina Dong, DR Resident
2:20 PM *Discussion*

2:25 PM **Sensitivity and specificity of magnetic resonance imaging for detecting extraprostatic extension of prostate cancer: a local quality assessment analysis**
Dr. Alex Durocher, DR Resident
2:35 PM *Discussion*

2:40 PM **Optimization of 68Ga-PSMA PET/CT Acquisitions Using Quantitative and Qualitative Metrics**
Dr. Logan Sept, DR & NM Resident
2:50 PM *Discussion*

2:55 PM **Serum, Scan, Scalpel: Biochemical Metrics for Parathyroid Scintigraphy in the Pre-Surgical Evaluation of Hyperparathyroidism**
Dr. Ryan Smith, DR & NM Resident
3:05 PM *Discussion*

3:10 PM - 3:25 PM **Break (15 minutes)**



PROGRAM

RADIOLOGY RESEARCH DAY - 07 MAY 2026

Fellow Presentation

Moderator: Dr. Courtney Henry

3:25 PM **Breast cancer screening participation in the lung cancer screening population**
Dr. Michele Khayat, Cardiothoracic Fellow, QEII Diagnostic Imaging

3:35 PM *Discussion*

Faculty Presentation

Moderator: Dr. Courtney Henry

3:40 PM **Radiologist-Guided Large Language Model for Automated MRI Body Imaging Protocol Selection**
Dr. Alessandro Guida, Assistant Professor, Diagnostic Radiology

3:50 PM *Discussion*

3 :55 PM - 4:05 PM **Break (10 minutes)**

4:05 PM **Dr. J. E. Campbell Lecture**

How to get your paper accepted to CARJ and 2026 updates
Editor-in-chief,
Canadian association of Radiologists Journal

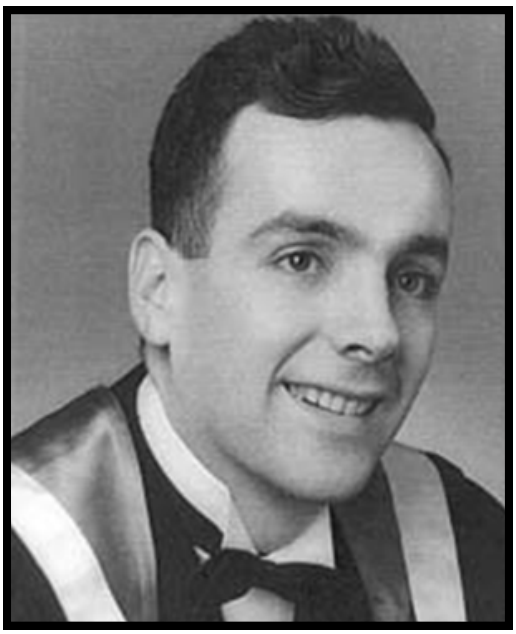
Professor and Chair, Department of Medical Imaging, Temerty Faculty of Medicine, University of Toronto

4:50 PM *Discussion*

5:05 PM **Awards & Closing**
Dr. James Clarke, Head, Diagnostic Radiology
Dr. Jennifer Payne, Associate Head, Research

- Best Trainee Presentation (non-resident)
- Best Resident Presentation
- RSNA Roentgen Resident Research Award
- Dr. Charles Lo Prize in Radiology Research
- Dr. David C. Barnes Research Technologist Award

DR. J. E. CAMPBELL LECTURESHIP



The Dr. John E. Campbell endowment was established by the members of the Dalhousie Faculty of Medicine Class of 1958 in memory of Dr. Campbell. It is supported by financial contributions made by his family, friends and classmates. Each year, the Dr. J.E. Campbell Lecture in Radiology Research is presented by a distinguished visiting speaker and is the highlight of our Research Day event.

Dr. Campbell completed his medical training at Dalhousie University in 1958 and specialized in diagnostic radiology at the Victoria General Hospital, Halifax, and Royal Victoria Hospital, Montreal.

He later took a staff position at the Royal Victoria Hospital where he also coordinated radiology resident and medical student radiology teaching at McGill University. In 1967, he became Assistant Director at Sunnybrook Hospital in Toronto and 10 years later became the chief of radiology.

He had many professional accomplishments. He was a founding and active member of the Uroradiological Society and served as a member of the society's board of directors.

Dr. Campbell suffered many physical hardships, including two bouts of poliomyelitis. He passed away from cancer in 1984 at age 54.

HIS LIFE IS A TALE OF DETERMINATION, COURAGE, AND INTELLECTUAL BRILLIANCE."
- DR. R.W. MCCALLUM

2026 DR. J. E. CAMPBELL LECTURE

“How to get your paper accepted to CARJ and 2026 updates”

Dr. Michael Patlas
Editor-in-chief,
Canadian Association of Radiologists Journal

Professor and Chair, Department of Medical Imaging, Temerty Faculty of Medicine, University of Toronto

Objectives:

- **To summarize current status of the Journal**
  (CanMEDS roles: Medical Expert, Collaborator, Scholar)
- **To discuss challenges and opportunities to advance the CARJ**
  (CanMEDS roles: Medical Expert, Collaborator, Scholar)
- **To explain reviewers’ recruitment and retention strategies**
  (CanMEDS roles: Medical Expert, Collaborator, Scholar)

CARJ

The Canadian Association of Radiologists Journal (CAR Journal) is a peer-reviewed, Medline-indexed publication that presents a broad scientific review of radiology in Canada.

Since its first publication in 1950, the journal has been dedicated to publishing articles pertaining to current, cutting-edge diagnostic and therapeutic radiology as well as guidance on emerging techniques and technologies.

DR. J. E. CAMPBELL LECTURER

Michael N. Patlas, MD, FRCPC, FACR, FASER, FCAR, FSAR, is a Professor and Chair, Department of Medical Imaging, Temerty Faculty of Medicine, University of Toronto.

Michael leads the largest academic medical imaging department in Canada with over 550 talented faculty members and trainees. He is an Editor-in-Chief for Canadian Association of Radiologists Journal and six radiology books, and author of over 255 peer-reviewed papers, editorials, and book chapters. Michael presented 280 invited lectures and scientific and educational abstracts. His Editorial Board memberships (past or current) include journals such as AJR, Diagnostic & Interventional Imaging, La Radiologia Medica, Emergency Radiology, Current Problems in Diagnostic Radiology, Current Radiology Reports and Annals of Clinical and Laboratory Science.

Dr. Patlas is a Past-President of Canadian Emergency, Trauma and Acute Care Radiology Society. He is a fellow of the American College of Radiology, the American Society of Emergency Radiology, the Canadian Association of Radiologists, and the Society of Abdominal Radiology. Dr. Patlas received Gold Medal from the European Society of Emergency Radiology in 2022, Medal of Excellence from the Canadian Emergency, Trauma and Acute Care Radiology Society in 2024, and Gold Medal from the Canadian Association of Radiologists in 2025. He is an Honored Member of the Association of Radiologists of Ukraine and the Society of Emergency Radiology, India.

JUDGES & MODERATORS

The Planning Committee would like to extend our appreciation to those who are serving as judges and moderators for this year's program:

Judges

- Dr. Steven Beyea, Professor & BIOTIC Science Lead, Dal. Diag. Radiology
- Dr. Trevor McGrath, Assistant Professor, Dalhousie Diagnostic Radiology
- Dr. Adela Cora, Associate Professor, Dalhousie Diagnostic Radiology
- Dr. Michael Patlas, Professor & Chair, Medical Imaging, U. of Toronto

Moderators

- Dr. Sharon Clarke, Associate Professor, Dalhousie Diagnostic Radiology
- Dr. Courtney Henry, Assistant Professor, Dalhousie Diagnostic Radiology

RSNA ROENTGEN RESIDENT RESEARCH AWARD

RSNA® Radiological Society of North America

This award allows residency program directors and department chairs to recognize residents for outstanding research efforts.

Every year, the department puts out a call to upper year residents to self-nominate for this award. Nominations are reviewed by the Radiology Research Council and the Associate Head, Research, who puts forward a recommendation to the Program Director.

The recipient is announced at Radiology Research Day.

Inaugural

DR. DAVID C. BARNES RESEARCH TECHNOLOGIST AWARD

We are delighted to introduce the *Dr. David C. Barnes Research Technologist Award*, created to recognize the exceptional contributions of technologists to radiology research within our department. Announced last year at the 30th anniversary of Radiology Research Day as the *QEII Research Technologist Award*.

Dr. Barnes served with distinction as Research Director from 1998 to 2007 and as Department Head from 2008 to 2019, during which time he consistently championed the entire team involved in radiology research — technologists, trainees, scientists, staff, and clinicians alike.

Dr. Barnes' unwavering commitment to fostering a collaborative and innovative research environment continues to inspire our community, and we are pleased and proud to present the inaugural award at this year's Radiology Research Day.

DR. CHARLES LO PRIZE IN RADIOLOGY RESEARCH

Dr. Charles Lo served as Department Head of Diagnostic Radiology from 2003 to 2008. This prize was established to recognize his strong support of Radiology's research mission. It provides the ability to recognize our faculty investigators for their exceptional research efforts.

Each year, faculty are invited to submit nominations of members who have made outstanding contributions to research. The award is funded through a Dalhousie endowment established by Dr. Lo's colleagues.

Recent recipients of the Prize have included Dr. Robert Abraham, (2025), Dr. David Volders (2024), Dr. Kim Brewer (2023), Dr. Jennifer Payne (2022), and Dr. David Barnes (2021).

PROGRAM EVALUATION

EVALUATION FORM

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Evaluations are an opportunity for participants to provide valuable feedback to the Planning Committee.

We encourage all participants complete an evaluation.

Evaluations will be accepted from May 7th - 21st, 2026.

Thank you for your participation.

PLANNING & DISCLOSURES

The Chair would like to thank the members of the 2026 Research Day Planning Committee for their valuable contributions:

- Dr. Heather Curtis (Faculty representative)
- Dr. David Hodgson (Learner representative)
- Angie Kinsman (Chair)
- Dr. Jennifer Payne (Associate Head - Research)
- Grayson Porter (Research Associate)

Planning Committee disclosures:

- Dr. David Hodgson
  - Membership on advisory boards or equivalent: NED Medical Inc. (Scientific Advisory Board Member); Hollo Medical Inc. (Co-founder and CMO)
  - Funded grants, research or clinical trials: Hollo Medical Inc. (ACOA REGI Award)
  - Patents on a drug, product or device:
    - *Methods and Systems for Administration of Liquid Content*. Ned Medical Inc., Nov. 2024. David MD Hodgson, Richard Yazbeck, Jim Pellitier. Application 63/715,067
    - *Aerosol Delivery Device*. Hollo Medical Inc., Jan 2022 (2025). David MD Hodgson, Sara Fedullo, Brandon Beach. Patent: D 1,057,942.
    - *Haptic Feedback Flowrate Control Valve*. Hollo Medical Inc., Oct. 2022. David MD Hodgson, Sara Fedullo, Brandon Beach. Application: 63/405,551.
    - *Delivery Device*. ABK Biomedical Inc. Oct. 2019 (2022). David MD Hodgson, Marc Andre Gregoire, Kathryn MA Atwell, Gary M Donofrio, Robert J Abraham, Evan C Wiens, Brenna C Kettlewell. Patent: 12194272, 11504468.
- Dr. Jennifer Payne
  - Direct financial relationships: Nova Scotia Breast Screening Program - part-time employee
  - Other relationships: Densitas, Inc. - spouse of CEO

Program Funding Disclosures

- Funding for the Campbell Lecture is provided by the Dr. JE Campbell Endowment Fund, held at Dalhousie University. The endowment was established by the members of the Class of 1958, in memory of Dr. Campbell. It's supported by financial contributions made by his family, friends and classmates.
- There are no sponsors for this event.

CONTINUING PROFESSIONAL DEVELOPMENT AND MEDICAL EDCUATION

This activity is an Accredited Group Learning Activity (Section 1) as defined by the Maintenance of Certification Program of the Royal College of Physicians and Surgeons of Canada, and approved by Dalhousie University Continuing Professional Development and Medical Education.

You may claim a maximum of 3.75 hours (credits are automatically calculated).

Educationally approved by Dalhousie University Continuing Professional Development and Medical Education.

DALHOUSIE UNIVERSITY | CONTINUING PROFESSIONAL DEVELOPMENT & MEDICAL EDUCATION

ABSTRACTS

Trainees (non-resident)

Low-Dose CT Protocol for Pediatric Nephrolithiasis

A. Rooyakkers, J. Kimber, W. MacNevin, C. Gamache, E. Tonkopi, K. Milford, T. Fortuna, K. O'Brien, D. Keefe, M. Kraus

Background

Pediatric nephrolithiasis is increasing in prevalence, requiring imaging for diagnosis and management. While ultrasound is the first-line modality, it has limitations in detecting small, distal, or radiolucent stones. Non-contrast CT is a second-line imaging modality but carries radiation concerns, underscoring the need for low-dose, indication-specific protocols.

Methods

A national survey of Canadian radiologists assessed current practice patterns, awareness, and availability of pediatric low-dose CT protocols for nephrolithiasis. An ultra–low-dose CT protocol was developed and optimized using phantom-based studies with Catphan image quality assessments. The impact of varying parameters, including tube current and tube voltage, on radiation dose and image quality were systematically evaluated. Preliminary clinical use assessed feasibility for stone detection.

Results

Survey responses indicated widespread familiarity with "low-dose" CT; however, most institutions did not have a dedicated nephrolithiasis-specific protocol. Reducing minimum tube current decreased radiation dose at the expense of increased noise and reduced spatial resolution. Lowering tube voltage to 80 kV provided the most favorable balance between dose reduction and image quality due to compensatory tube current modulation. Clinical application confirmed sufficient image quality for stone detection and follow-up imaging.

Discussion

Low-dose CT protocols for pediatric nephrolithiasis are inconsistently defined and underutilized. Indication-specific optimization, particularly using lower voltage and appropriate tube current settings, can achieve substantial dose reduction with adequate diagnostic image quality. Implementation of low-dose CT nephrolithiasis protocols is warranted to reduce cumulative radiation exposure.

ABSTRACTS

Trainees (non-resident)

Implementation of a pre-procedural screening questionnaire for risk-stratification and augmented antibiotic prophylaxis prior to TRUS-guided prostate biopsy: Impact on urosepsis rates

M. Blommers, B. Thompson, A. Costa, T. McGrath, M. Rivers-Bowerman

Background

In Nova Scotia, the standard diagnostic method for prostate cancer is transrectal ultrasound (TRUS)-guided core needle biopsy. The rate of urosepsis following TRUS-guided prostate biopsy ranges from 0.3%-3.1%, leading to significant patient morbidity and healthcare resource utilization. This study evaluated institutional urosepsis rates before and after introducing a pre-procedural screening questionnaire designed to identify patients at elevated risk of urosepsis.

Methods

As a quality improvement initiative, we retrospectively reviewed 992 patients who underwent TRUS-guided systematic and/or targeted prostate biopsy between 2022 and 2025. Beginning in October 2023, a nursing-led pre-procedural questionnaire screened for diabetes, immunosuppression, recent hospital admission or antibiotic use, history of antibiotic resistance, prior biopsy-related urosepsis, and healthcare worker status. Patients who screened positive received intramuscular tobramycin (2 mg/kg, max 200 mg) one hour prior to biopsy, in addition to routine oral antibiotic prophylaxis. Electronic medical records including imaging, were reviewed to identify cases of urosepsis. Rates were compared using Fisher's exact test.

Results

Of 992 patients [mean (SD) age, 67 (7) years], 457 were screened using the questionnaire and 535 were not. Twenty patients (2%) developed urosepsis [mean (SD) age 68 (6) years], accounting for 143 total hospital days (median 3; range 1-64). Cultured organisms included E. coli (55%), Klebsiella (10%), and other/unspecified gram-negative bacteria (35%).
Urosepsis rates were lower after questionnaire implementation (2.6 vs. 1.3%, p=0.15), administration of tobramycin (2.2 vs. 1.4%, p=0.59), and with fewer (<12) biopsy cores (2.3 vs. 1.4%, p=0.47), though none reached statistical significance.

Discussion

Implementation of a pre-procedural screening tool and risk-based augmented prophylaxis reduced institutional urosepsis rates from 2.6% to 1.3%. Despite a lack of statistical significance, the reduction is clinically meaningful given the morbidity and 143 inpatient days associated with urosepsis. The low baseline urosepsis rate limits statistical power; expanded cohort analysis is underway.

ABSTRACTS

Residents

Individualized CT for Pulmonary Embolism: Targeted Areas for Protocol Optimization

K. MacMillan, W. Lee, D. Manos, J. Kang

Background

Suboptimal CT PE studies can be as high as 19.3%, leading to repeat studies or missed diagnosis. This study aimed to identify pre-exam patient factors associated with indeterminate CT PE studies and to identify areas for individualized protocol optimization.

Methods

REB approval was obtained. All consecutive inpatient, emergency, and outpatient CT PE studies performed at Central Zone over a 3-month period were reviewed. 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) was measured. We calculated patient cross sectional area (CSA) and effective diameter using the scout radiograph. Original reports were used to classify studies as indeterminate, negative, or positive for PE. Patient's weight and height was also collected when available.

Results

Of 798 CT PE studies, 14% were indeterminate, 14% positive, and 72% negative. Indeterminate studies had higher tachycardia (35%) and poor CO (14%), with lower MPA enhancement <250 HU (46%) and larger body habitus (mean CSA 968 cm^2, effective diameter 34.7 cm, BMI 34.7) compared with negative (23%, 8%, 7%; CSA 765 cm^2, 30.9 cm, BMI 27.9) and positive studies (14%, 5%, 7%; CSA 836 cm^2, 32.4 cm, BMI 28.8).

Discussion

Indeterminate CT PE studies may be associated with tachycardia, decreased CO, lower MPA enhancement, lower SNR/CNR larger patient cross-sectional area/effective diameter and higher BMI. 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 surrogate for patient weight to guide contrast dosing and may better assess thoracic-specific weight distribution.

Patients with Abnormal Diagnostic Imaging: Making Sure Lung Cancer Diagnosis is not Delayed

S. Dong, J. Borgaonkar

Background
Early diagnosis of lung cancer allows for timely treatment and better outcomes. Unfortunately, patients may experience delays in diagnosis if they do not have a primary care provider (PCP), especially if they present with non-specific symptoms. Medical imaging plays a critical role in diagnosis. As such, a direct referral pathway between radiologists and the thoracic clinic may help expedite diagnoses in patients with abnormal imaging findings. This quality audit establishes the baseline volume of chest x-rays that recommend further imaging work-up of suspected lung malignancy.

Methods
Outpatient chest x-rays completed at the Queen Elizabeth II Health Sciences Centre in September and October 2024 were analyzed. We calculated the proportion of cases that recommended further imaging with CT, as well as the time from chest x-ray to CT, and CT to thoracic clinic visit. Data was stratified by whether the patient had a PCP.

Result
Overall, 1432 chest x-rays were analyzed, and 58 chest x-rays (4%) recommended a CT. Of these cases, 10 CTs were not done, few of which did not have a PCP. The time to thoracic clinic visit varied greatly (20 to 238 days) with an average time of 113 days.

Discussion
This clinical audit establishes the baseline volume of chest x-rays with findings suspicious for lung cancer. Many patients who had a PCP still experienced delays in obtaining further imaging, highlighting the importance of a direct referral pathway between radiologists and the thoracic clinic. These results will help the implementation and assessment of a direct referral pathway aimed at timely lung cancer diagnoses.

ABSTRACTS

Residents

Sensitivity and specificity of magnetic resonance imaging for detecting extraprostatic extension of prostate cancer: a local quality assessment analysis

A. Durocher, C. Wang, S. Clarke

Background

Accurate identification of extraprostatic extension (EPE) on prostate MRI is critical for risk stratification and surgical planning in prostate cancer. While published data demonstrate high specificity and moderate but variable sensitivity of MRI, local diagnostic performance has not been established.

Methods

We conducted a retrospective QI study of patients with prostate cancer who underwent preoperative prostate MRI followed by radical prostatectomy at the QEII (April 2023 – March 2025; QI Hub #428). MRI reports were reviewed for EPE assessment and correlated with prostatectomy and/or initial biopsy reports. ROC analysis was performed across threshold categories of increasing EPE likelihood based on MRI features (i.e. capsular contact length and contour bulge). Cases with discordant MRI and pathologic EPE status were reviewed to identify patterns of over- and underestimation, including assessment by tumor location and size.

Results

65 patients were included. ROC analysis yielded an area under curve (AUC) of 0.68 and overall accuracy of 66%. Sensitivity was 52%, specificity 75%, positive predictive value 57%, and negative predictive value 71%. Increasing the EPE threshold improved specificity at the expense of sensitivity. Overestimation of EPE was more common in apical lesions, while underestimation was more common for smaller and transition zone lesions.

Discussion

MRI demonstrated moderate performance for detection of non-focal EPE (AUC 0.68), comparable to published data (0.65-0.80). Sensitivity (52%) was also comparable to prior studies (40-60%), while specificity (75%) was lower than typically reported (85-95%). Exploratory analysis suggested reduced diagnostic accuracy for smaller lesions and those located in the transition zone or apex. These findings provide a basis for targeted interventions, including focused education on interpretation pitfalls, to improve diagnostic performance in routine practice.

Optimization of 68Ga-PSMA PET/CT Acquisitions Using Quantitative and Qualitative Metrics

L. Sept, E. C. Henry, S. Burrell, I. R. Macdonald

Background
Optimizing 68Ga-PSMA PET/CT acquisition parameters is essential to balance diagnostic image quality with workflow efficiency and radiation dose reduction. This study aims to model reduced scan time and/or radiotracer dose while preserving diagnostic confidence in prostate cancer imaging.

Methods
In this retrospective study, standard-of-care 68Ga-PSMA PET/CT scans were reconstructed to simulate progressive reductions in scan time and/or administered dose. Reconstructed datasets were randomized and independently reviewed by fellowship-trained Nuclear Medicine physicians, comparing them to the original clinical images. Inter- and intra-observer agreement were assessed. Quantitative metrics, including SUVmax and variability, were measured in normal and pathologic tissues. Results were also compared with similarly reconstructed phantom datasets.

Results
Five clinical PSMA studies were reconstructed to simulate reductions of up to 50% in scan time/dose, yielding 25 total datasets. Qualitative analysis demonstrates high diagnostic confidence in reconstructed images relative to standard acquisitions with diagnostic confidence maintained with up to 30% time/dose reductions. Quantitative analysis shows preservation of uptake metrics in the reconstructed studies. Further statistical analysis, including agreement measures and phantom validation, is ongoing to further refine optimal reduction thresholds.

Discussion
Substantial reductions in scan time and/or radiotracer dose are feasible without compromising diagnostic quality in 68Ga-PSMA PET/CT. Implementation of these optimized protocols will improve departmental efficiency and increase patient throughput while reducing radiation exposure. Ongoing analysis will further refine optimal limits for clinical adoption.

Serum, Scan, Scalpel: Biochemical Metrics for Parathyroid Scintigraphy in the Pre-Surgical Evaluation of Hyperparathyroidism

R. Smith, V. Linehan, S. Burrell, I. Macdonald

Background
Definitive treatment for hyperparathyroidism is typically surgical, and pre-operative localization of abnormal parathyroid glands can help limit extent of surgery and morbidity. Parathyroid scintigraphy is a well-established method for localization. Our objective was to correlate parathyroid scintigraphy results with patient biochemistry, surgery, and pathology to inform appropriateness criteria for imaging and assess the predictive value of biochemical metrics in the imaging workup of hyperparathyroidism.

Methods
This retrospective study included 421 patients. Patients were grouped based on primary versus secondary hyperparathyroidism, and clinical profiles were reviewed for scan result, blood work, surgical results, and pathology. Performance metrics of scintigraphy were analyzed. Demographics and bloodwork were compared between positive and negative scans. Predictors of positive scans were identified by multivariate logistic regression analysis. The performance of biochemistry to predict scan results was evaluated by ROC analyses.

Results
Positive tests—occurring in 52% of patients—were associated with higher parathyroid hormone (PTH) and corrected calcium. However, PTH was only predictive of a positive test in patients with secondary hyperparathyroidism. On multivariate analysis, male sex, corrected calcium, and younger age were predictors of a positive scan. Corrected calcium was the most predictive with an OR of 1.28 for every 0.1 mmol/L increase. Based on ROC analysis, corrected calcium had an AUC of 0.628 and a cutoff of 2.65 mmol/L maximized sensitivity (88%) and specificity (35%) for a positive test.

Discussion
Several biochemical metrics, including corrected calcium levels, were predictive of positive imaging. Biochemistry and scintigraphic performance significantly differed between primary and secondary hyperparathyroidism, suggesting that tailored management approaches are required. This work sets a foundation for the development of a robust biochemical scoring system to optimize patient selection for parathyroid imaging.

ABSTRACTS

Fellows

Breast cancer screening participation in the lung cancer screening population

M. Khayat, D. Manos

Background

Lung and breast cancers are the two most frequently diagnosed malignancies in women. Asymptomatic screening reduces specific mortality for both these cancers. Multiple Canadian and international organizations recommend imaging-based screening for breast and lung cancer (mammography and low dose CT respectively) and the province of Nova Scotia has organized screening programs for both. The objective of this clinical audit is to determine the percentage of lung cancer screening program patients, eligible for breast screening, that are not up to date with breast screening.

Methods

Inclusion criteria included all people between 50 and 74 years old, listed as female sex at the time of registration, that had a baseline lung cancer screening CT scan, in Central Zone Nova Scotia, between January 1st 2024 and December 31st 2024, in the context of Nova Scotia's organized lung screening program. Data were collected using the Nova Scotia province-wide Picture Archiving and Communication System (which includes all image-based breast and lung screening in Nova Scotia). Up to date breast imaging was defined as any breast screening (mammography or MRI) performed anywhere in Nova Scotia in the 3 years prior to the lung screening CT. When no breast screening was identified, ineligibility criteria for breast cancer screening was assessed using prior cancer history (prior breast malignancy) as collected by the lung screening program, and imaging data (breast implants).

Results

272 women had a baseline lung screening CT scan with 24 of them ineligible for breast cancer screening. Of the remining, 63% were up to date with breast screening. 4% had breast imaging done within 3 years, other than a screening mammogram. 33% were not up to date with breast screening imaging.

Discussion

A third of eligible women seeking lung cancer screening in Central Zone Nova Scotia do not complete the recommended breast cancer screening. It is uncertain if this reflects access barriers, patterns related to self-referral versus provider-referral, limited awareness or another issue. There may be opportunities for the cancer screening programs to better coordinate service.

ABSTRACTS

Faculty

Radiologist-Guided Large Language Model for Automated MRI Body Imaging Protocol Selection

A Guida, J Oxner, JR Kowalski, R Jessome, J Rowe, T McGrath, S Clarke, C Bowen

Background

Protocolling, the selection of imaging parameters from clinical referrals, is a time-intensive task that contributes to radiologist burnout, accounting for up to 6.3% of the workday. While fine-tuned AI models have shown promise, they require substantial training and are difficult to adapt when clinical protocols change. We evaluated zero-shot (no training) large language models (LLMs) for MRI body protocolling using protocol-definition keywords and clinical histories extracted from previously protocolled requisitions in Central Zone.

Methods

We retrospectively collected 1,000 MRI body requisitions, split into training (70%), validation (15%), and test (15%) sets. Ground truth was established by two radiologists through independent review and consensus. A zero-shot GPT-4.1 approach was developed, using keyword-based protocol descriptions to emulate expert radiologist reasoning (35 protocols defined). Prompts were iteratively refined with radiologist input and assessed using McNemar's test. Test performance (n = 135) was measured using top-1, top-2, and top-3 accuracy across five runs and compared with two radiologist benchmarks.

Results

GPT-4.1 achieved mean accuracies of 86.5% (top-1), 99.0% (top-2), and 100.0% (top-3), with top-1 ranging from 85.3% to 87.5%. It outperformed both radiologists on top-1 accuracy and exceeded inter-rater agreement (78%), indicating superhuman performance.

Discussion

This zero-shot, prompt-based approach enables accurate MRI protocol selection without model training, improving adaptability and interpretability. Protocol definitions can be easily updated, and the system can transition across LLM versions without retraining. Perfect top-3 accuracy supports its potential for clinical decision support, including identifying duplicate requisitions. Limitations include single-centre data and exclusion of multi-protocol cases. Future work will assess real-world deployment and expansion to other imaging domains.