UNIVERSITY OF SASKATCHEWAN

Department of Medical Imaging

Research Day 2025

Book of Abstracts

Friday June 13th, 2025

Introduction and Acknowledgements:

Welcome to our 2025 Department of Medical Imaging Research Day.

This year we will be showcasing 19 projects by 5 medical students and 12 residents. Unfortunately, for the first time in many years we do not have any presentations by non-clinician researchers.

I would like to thank everyone who has worked to make this a successful research day. This includes the quality research produced by residents, medical students, researchers and department radiologists. Amanda O'Leary, Kailey Friesen, and Erin Cook have helped organize the day and make sure that everything goes smoothly. The local radiology groups (Associated Radiologists and University Medical Imaging Consultants) have donated funds for motivational prizes to keep the whole thing interesting.

This year we will again be awarding the 'Stuart Houston Award for Medical Imaging Research at the University of Saskatchewan'. Dr. Houston practiced medical imaging at the University of Saskatchewan for 32 years, publishing extensively on medicine and the history of medicine. He unfortunately passed away in 2022. There will also be prizes awarded for the best PQI project and best medical student project. A list of past winners can be found at the end of this book of abstracts.

We are also fortunate to have Dr Charlotte Yong-Hing from the University of British Columbia as distinguished guest, judge, and keynote speaker for this year's event. Dr. Yong-Hing is immediate Past President of the BC Radiological Society and is Medical Director of the BC Cancer Breast Screening Program. She co-chairs the UBC Radiology Equity, Diversity and Inclusion Committee and has also chaired the Canadian Association of Radiologists Equity, Diversity and Inclusion Working Group. Dr. Yong-Hing founded Canadian Radiology Women in 2018. We thank Charlotte for her time and experience.

On behalf of the University of Saskatchewan residency program and the Department of Medical Imaging I would like to sincerely thank everyone who has contributed to today. We look forward to an excellent day!

Dave Leswick
Research Director

Financial sponsors for today include:

2025 Medical Imaging Research Day Presentation List

8:00	D Leswick • Welcome	Introduction
8:10	C Yong-Hing • Fostering Equity, Diversity and Inclusion in Radiology Research	Keynote
8:40	J Sanayei • Examining Errors Leading to Inadequate Histories on Imaging Requisitions	Resident PQI
8:48	F Awan • Diagnostic Accuracy of Ultrasound in the detection of Anterior Acetabular Labral Tears in Comparison to MRI	Research (Med Student)
8:56	M Qureshi • Remote Work for a Good Cause: Quantifying Greenhouse Gas Emissions Savings from Remote Radiology Reading	Research (Med Student)
9:04	O Munir • Enhancing Environmental Sustainability in Diagnostic Radiology: Focus on CT, MRI, and Nuclear Medicine	Research (Med Student)
9:12	H Jamil • Climate-Conscious Radiology: Assessing Radiologists' Knowledge and Attitudes on their Carbon Footprint	Research (Med Student)
9:20	A A Hussain • Absence of Sacroiliitis on MRI Does Not Rule Out Inflammatory Changes in the Spine in Patients with Suspected Spondyloarthropathy	Research (Med Student)
9:28	***Break***	
9:45	M Hamilton • Assessing for Unnecessary Thyroid Nodule FNAs	Resident PQI
9:53	N Mistry • Prognostic Value of Scaphoid Fracture Initial and Follow-up Radiographs	Resident PQI
10:01	S Fouladirad • Effectiveness of the Screening Protocol for Periorbital Foreign Body Radiographs Prior to MRI	Resident PQI
10:09	J Muhammadzai • Daily Radiographs: Resident Perception on Developing Competence	Resident PQI

10:17	M Perlau • Ultrasound and Gallbladder Polyps: Appropriateness of Current Reporting Practice and Follow-Up Recommendations	Resident PQI
10:25	D Hui • Adherence to radiographic follow-up recommendations of possible occult fractures in the emergency department	Resident PQI
10:33	M Stewart • The Right Words at the Right Time: an analysis of the terminology used in early pregnancy reporting	Resident PQI
10:41	***Break***	
11:00	W Lounsbury • Can Ultrasound Close the Gap Between Severity of Knee Pain and Discordant Kellgren Lawrence Radiographic Grading of Knee Osteoarthritis?	Resident Research
11:08	A Jafri • Association Between Radiographic Morphologic Alterations of the Shoulder Joint and the Presence or Absence of Os Acromiale	Resident Research
11:16	N Mistry • Generating Synthetic Contrast-Enhanced CT Angiography Images from Non-Contrast Images Using a Slice-Consistent Brownian Bridge Diffusion Model	Resident Research
11:24	J Muhammadzai • Transrectal or Trans-perineal Prostate Biopsy: A Look Beyond Patient Positioning	Resident Research
11:32	P Surmanowicz • Correlation between Weber Classification of Ankle Fractures and Medial Clear Space Widening on Radiography	Resident Research
11:40	M Mabee • "It's High Noon at the Radiography Suite" Does having an additional 'high noon'/en face radiograph view aide in diagnosis of cortical breach in penetrating foreign bodies?	Resident Research

Keynote

Dr. Charlotte Yong-Hing

Fostering Equity, Diversity and Inclusion in Radiology Research

- Understand the role of EDI in advancing radiology research
- Identify barriers to EDI in research
- Implement strategies to integrate EDI into research practices
- Advocate for institutional and structural change

Dr. Yong-Hing is Vice Chair Equity, Diversity and Inclusion and Clinical Associate Professor at the University of British Columbia Department of Radiology. She is immediate Past President of the BC Radiological Society and is Medical Director of the BC Cancer Breast Screening Program. She works at BC Cancer Vancouver where she was Medical Director of Breast Imaging from 2017-2024, BC Women's Hospital, and two UBC affiliated community imaging clinics. She co-chairs the UBC Radiology Equity, Diversity and Inclusion Committee and also chaired the Canadian Association of Radiologists Equity, Diversity and Inclusion Working Group.

Dr. Yong-Hing founded Canadian Radiology Women in 2018 and has been invited to speak internationally about actionable ways to improve equity, diversity and inclusion within the Radiology workforce and training programs. In 2002, she won the inaugural UBC Radiology Equity, Diversity and Inclusion award.

Examining Errors Leading to Inadequate Histories on Imaging Requisitions

James Sanayei[1] and Tasha Ellchuk[1]

University of Saskatchewan, Department of Medical Imaging[1]

Practice Quality Improvement - work in progress

OBJECTIVE: To determine whether a significant portion of inadequate histories on medical imaging requisitions are due to preventable errors.

METHODS: ~500 ED and inpatient CT imaging requisitions for discharged patients from 2024-2025 will be randomly sampled. The history/indication will be collected from both PACS and the original written chart orders (scanned and available on SCM). The quality of the available history in PACS will be graded using objective and subjective criteria. Clearly inadequate histories will be compared to the original chart order to determine whether discrepancies between the written and electronic histories are to blame. Inpatients, ED patients, and stroke alerts/level 1 traumas will be evaluated separately.

RESULTS: TBD – awaiting research ethics board approval for data collection.

Diagnostic Accuracy of Ultrasound in the detection of Anterior Acetabular Labral Tears in Comparison to MRI

Fatima Awan[1], David Leswick[2], Prosanta Mondal[3] and Haron Obaid[2]

University of Saskatchewan, College of Medicine[1], Department of Medical Imaging[2], Clinical Research Support Unit[3]

Medical Student Research Project

OBJECTIVES: The objectives of the study are to (1) assess characteristic Ultrasound (US) appearances of Anterior Acetabular Labral Tears (AALT), (2) identify sensitivity, specificity, PPV and NPV of these US appearances compared to the gold standard MRI.

METHODS: A retrospective analysis was conducted to evaluate the US appearances of AALT such as labral irregularity, ossification, clefts and paralabral cysts. US scans were performed by musculoskeletal trained sonographers and MRI scans were carried out on 3T Siemens scanners. All US and MRI imaging was assessed by a musculoskeletal Radiologist.

RESULTS: 37 patients met the inclusion criteria (F= 21, M= 16; mean age= 40.93 years, median age= 38 years). There were 15 left and 22 right hips. MRI showed labral tears in 28 patients. US showed labral clefts in 13 cases (sensitivity 46.4%, specificity 100%, PPV 100% and NPV 37.5%). Both modalities showed paralabral cysts in 5 cases (sensitivity and specificity of 100% as well as the negative predictive value and positive predictive value). US showed labral ossification in 9 cases (sensitivity 32.1%, specificity 100%, PPV 100% and NPV 32.1%). Labral irregularity on US was seen in 21 cases (sensitivity 71.4%, specificity 87.5%, PPV 95.2% and NPV 46.7%).

CONCLUSION: Preliminary findings support the role of the US as an initial imaging tool in evaluating AALT. The study shows high agreement between US and MRI when assessing labral clefts, irregularity and paralabral cysts. Analysis of a larger sample size is ongoing which will further clarify these findings.

Remote Work for a Good Cause: Quantifying Greenhouse Gas Emissions Savings from Remote Radiology Reading

Memoon Qureshi[1], Hasan Jamil[1], Kate Hanneman[2] and David Leswick[3]

University of Saskatchewan, College of Medicine[1] and Department of Medical Imaging[3].

University of Toronto, Department of Medical Imaging[2]

Medical Student Research Project

OBJECTIVE: To quantify the decreased commuting distance and associated greenhouse gas (GHG) emissions via radiologist remote reading at home.

METHOD: Research ethics board approval was obtained. A survey was distributed via SurveyMonkey to all radiologists at a Canadian academic radiology group asking for home address, commuting method, and estimated frequency of remote work for seats not obligated to be in-person. The group's schedule for June 2024 was used to determine actual distance and emissions, and theoretical distance and emissions if all seats were mandated in-person and if all seats not obligated to be in-person were worked remotely. For this abstract, data is only for June 1st-16th, 2024, but complete results will be presented at research day. Results were stratified by the city where the group is located and a rural site 141 km away.

RESULTS: 24 radiologists responded (92%); one response was excluded due to incorrect formatting. 23 radiologists commuted a total of 2,520 km in 16 days, producing 634 kg of CO_2 emissions. If all work was mandated in-person, this would increase to 5,929 km and 1,358 kg of CO_2 emissions. If all seats not obligated to be in-person were worked remotely, this would decrease to 2,450 km and 566 kg of CO_2 emissions. Extrapolated to one year, actual radiologist commute would account for 57,487 km and 14,463 kg of CO_2 emissions. Stratification by location shows 52% of emissions came from rural travel, despite accounting for only 13% of all seats (Table 1).

CONCLUSION: Remote radiology work significantly decreased distance travelled and CO_2 emissions produced by radiologists, particularly when able to cover remote communities without a local radiologist presence. Further increasing remote work opportunities has the potential for lowering radiology's overall carbon footprint.

	City		Rural		All	
	Round Trip Distance (Km)	Emissions (Kg CO2)	Round Trip Distance (Km)	Emissions (Kg CO2)	Round Trip Distance (Km)	Emissions (Kg CO2)
Actual	1366.975	306.82046	1152.8	327.4832	2519.775	634.30366
If Fully In-Person	1667.175	320.35872	4262.2	1037.26228	5929.375	1357.621
If Fully Remote	1297.675	238.94125	1152.8	327.4832	2450.475	566.42445

(Table 1: Actual and theoretical distances and emissions from the commute of 23 radiologists from June 1st to June 16th, stratified by location). Given that there are certain obligate in person seats, the "if fully remote" category refers to if all optional in person seats were to be done remotely.

Enhancing Environmental Sustainability in Diagnostic Radiology: Focus on CT, MRI, and Nuclear Medicine

Omer Munir[1], David A. Leswick[2], Roshini Kulanthaivelu[3], Hasan Jamil[1], Chloe Nguyen[4], Seyed Ali Mirshahvalad[5], Omar Islam[3]

University of Saskatchewan, College of Medicine[1] and Department of Medical Imaging[2]. Queen's University Department of Diagnostic Radiology[3]. University of Toronto College of Medicine[4] and Joint Department of Medical Imaging[5]

Medical Student Research Project

OBJECTIVES: This review aims to synthesize existing knowledge on the environmental impact of energy intensive imaging modalities of CT, MRI and nuclear medicine, and to propose strategies for improving sustainability in radiology departments.

METHODS: A broad review of literature was conducted using peer-reviewed articles and organizational environmental reports. No formal systematic methodology was used; however key themes were identified from a wide range of sources and consolidated in this review.

RESULTS: Medical imaging imposes a significant environmental burden due to high energy consumption and waste production. MRI is the most energy-intensive modality followed by CT, primarily from energy consumption during operations rather than production. Nuclear medicine, while relatively lower in energy consumption, relies on energy-intensive production and transport logistics. MRI and CT contrast agents and nuclear medicine radioisotopes pose long term contamination and ecological risks, as they are inadequately removed by wastewater treatment systems. A multi-pronged approach is required to promote sustainability within current radiology practices. Mitigation strategies include advanced wastewater treatment, contrast separation, alternative contrast agents, urine recycling, renewable energy adoption, optimized scheduling, sustainable infrastructure design, powering down equipment, AI-driven protocols, low-field MRI, and policy level changes.

CONCLUSION: Medical imaging contributes significantly to the healthcare environmental footprint. While more research is needed to identify and develop novel methods for increasing sustainability within radiology practices, several low-cost and high-impact interventions have been identified. Long-term improvements in sustainability will require a multi-pronged approach involving operational efficiency, infrastructure innovation, and policy changes to make medical imaging more sustainable.

Enhancing Environmental Sustainability in Diagnostic Radiology: Focus on CT, MRI, and Nuclear Medicine (continued)

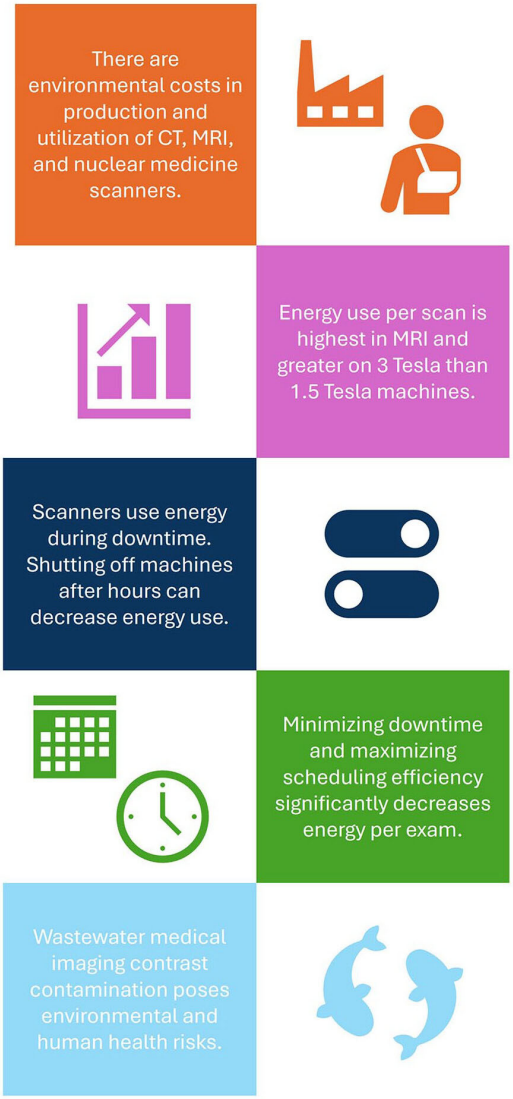

Figure 1: Infographic highlighting some of the highlights from the project

Climate-Conscious Radiology:
Assessing Radiologists' Knowledge and Attitudes on their Carbon Footprint

Hasan Jamil[1], Kate Hanneman[2] and David Leswick[3]

University of Saskatchewan, College of Medicine[1] and Department of Medical Imaging[3].
University of Toronto, Department of Medical Imaging[2]

Medical Student Research Project

OBJECTIVES: To assess radiologists' and radiology residents' knowledge and attitudes on the environmental impact of medical imaging.

METHODS: A survey was distributed via SurveyMonkey to all radiologists and radiology residents at a Canadian academic centre. Respondents used a 5-point Likert scale to evaluate ten statements on climate change and radiology. Descriptive statistics were calculated and stratified by age group. Knowledge of healthcare's contribution to climate change was assessed via multiple-choice questions and ranking of the perceived top 5 contributors within radiology to greenhouse gas (GHG) emissions.

RESULTS: 32 of 70 (46%) individuals responded (18 radiologists, 14 residents; 14 younger than 35, 10 between 35 and 50, 8 older than 50). 91% agreed or strongly agreed that climate change was real; 47% indicated climate change is a top priority now (21% of <35 and 75% of 50+) and 87% thought that it should be a top priority (Table 1). 38% agreed or strongly agreed that radiology is a significant contributor to climate change. 72% were motivated to implement actions to decrease climate impact. 56% of respondents correctly selected 4-8% as the estimated healthcare-related GHG emissions in Canada. MRI and CT were the most frequent options selected as top contributors to radiology's GHG emissions.

CONCLUSIONS: Respondents displayed moderate understanding of radiology's contribution to climate change. Younger respondents were more pessimistic about current societal prioritization of climate change, although motivation to adapt was similar across age groups. Knowledge and perception of radiology as a driver of climate change was imperfect, showcasing the need for targeted education.

Climate-Conscious Radiology:
Assessing Radiologists' Knowledge and Attitudes on their Carbon Footprint (continued)

Statements	Overall Responses						
	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree	Weighted Average (Overall)	% Agree/Strongly Agree (Overall)
Regarding Reality of Climate Change and Societal Priorities:							
Climate change is real	0	1	2	4	25	4.66	91%
Attempting to slow the advance of climate change is a top priority for society today	1	10	6	9	6	3.28	47%
Attempting to slow the advance of climate change should be a top priority for society today	1	1	3	7	20	4.38	84%
Regarding the Impact of Radiology and Potential Areas for Improvement:							
The profession of radiology is a significant contributor to global climate change	2	6	12	8	4	3.19	38%
There currently exist one or more avenues of change within the profession of radiology that could significantly reduce its contribution to climate change	0	3	5	16	8	3.91	75%
If avenues arise that would significantly reduce radiology's contribution to climate change, then pursuing them should be a top priority for the profession	0	1	7	16	8	3.97	75%
If presented with actions to decrease greenhouse gas emissions in my department, I would be motivated to implement them	1	0	4	19	8	4.03	84%
Regarding Remote Radiology and its Environmental Benefits:							
When given the option, I prefer to work remotely	1	7	6	11	7	3.50	56%
If there was a push to continually increase the amount of radiology that is done remotely, I would be supportive of this	0	6	4	16	6	3.69	69%
Part of my preference for working remotely is to decrease my greenhouse gas emissions from commuting	6	5	7	12	2	2.97	44%

Statements	Age-Stratified Responses		
	% Agree/Strongly Agree (Age <35)	% Agree/Strongly Agree (Age 35-50)	% Agree/Strongly Agree (Age >50)
Regarding Reality of Climate Change and Societal Priorities:			
Climate change is real	93%	90%	88%
Attempting to slow the advance of climate change is a top priority for society today	21%	60%	75%
Attempting to slow the advance of climate change should be a top priority for society today	86%	80%	88%
Regarding the Impact of Radiology and Potential Areas for Improvement:			
The profession of radiology is a significant contributor to global climate change	36%	30%	50%
There currently exist one or more avenues of change within the profession of radiology that could significantly reduce its contribution to climate change	71%	90%	63%
If avenues arise that would significantly reduce radiology's contribution to climate change, then pursuing them should be a top priority for the profession	79%	60%	83%
If presented with actions to decrease greenhouse gas emissions in my department, I would be motivated to implement them	86%	80%	88%
Regarding Remote Radiology and its Environmental Benefits:			
When given the option, I prefer to work remotely	64%	70%	25%
If there was a push to continually increase the amount of radiology that is done remotely, I would be supportive of this	79%	70%	50%
Part of my preference for working remotely is to decrease my greenhouse gas emissions from commuting	50%	40%	38%

Table 1: Survey questions and responses overall and by age-group. Presented data includes proportions of respondents indicating each response with overall weighted averages. Percent who agree or strongly agree are presented both overall and stratified by age group.

Absence of Sacroiliitis on MRI Does Not Rule Out Inflammatory Changes in the Spine in Patients with Suspected Spondyloarthropathy

Adam Ali Hussain[1], Navdeep Sahota[2], Prosanta Mondal[3], and Haron Obaid[2]

University of Saskatchewan, College of Medicine[1], Department of Medical Imaging[2], and Clinical Research Support Unit[3]

Medical Student Research Project (Work in Progress)

OBJECTIVES: To determine the prevalence and distribution of inflammatory changes in the spine on MRI among patients with suspected spondyloarthropathy who show no evidence of sacroiliitis on dedicated sacroiliac joint imaging.

MATERIALS: This retrospective study involves the review of 500 MRI scans performed using 3T scanners with a spondyloarthropathy protocol at SHA hospitals. Eligible adult patients will have undergone imaging of the whole spine and sacroiliac joints. Exclusion criteria are all postsurgical patients or patients with infectious, neoplastic, and traumatic pathologies of the spine. MRI scans will be interpreted by two musculoskeletal radiologists. Ethics approval has been obtained from the U of S Ethics Review Board. Data abstraction and statistical analysis will be conducted in collaboration with Clinical Research Support at the University of Saskatchewan.

RESULTS: This project is currently in progress. Preliminary review has commenced, and data collection will begin once operational approval and PACS access are finalized. We anticipate reporting the proportion of patients with isolated spinal inflammatory changes and characterizing common patterns of spinal involvement in the absence of sacroiliitis.

CONCLUSION: This study seeks to challenge the current diagnostic emphasis on sacroiliac joint involvement in spondyloarthropathy. Demonstrating spinal inflammation in patients with normal sacroiliac joints may support broader MRI criteria and earlier diagnosis, ultimately improving patient management and outcomes.

Assessing for Unnecessary Thyroid Nodule FNAs

Max Hamilton[1] and Mia du Rand[2]

University of Saskatchewan, Department of Medical Imaging. Associated Radiologists[1,2]

Practice Quality Improvement – Ongoing Project

OBJECTIVE: Thyroid biopsies are a common radiology procedure with over 600 biopsies performed within Saskatoon and the periphery in 2024. As biopsy numbers in general are increasing, there is interest in finding ways to reduce biopsy wait times and improve efficiency. As a result, it is of interest if we are performing too many thyroid biopsies. Therefore, the objective of this PQI project was to assess the percentage of thyroid FNAs that are positive for malignancy and evaluate whether unnecessary FNAs are occurring.

METHODS: Using Powerscribe, records of thyroid FNAs performed in 2024 were obtained. 100 FNAs each from RUH, SCH and the periphery sites were randomly selected. To assess the percentage of FNAs that were positive, the TI-RADs score for biopsied nodules were obtained from the prior ultrasound report and the pathology results were collected from EHR.

RESULTS: Data collection is ongoing, however preliminary results from 100 RUH and 100 SCH FNAs comprising 216 nodules found 162 were benign (75%), 2 were suspicious for malignancy (0.9%), and 9 were positive of papillary thyroid carcinoma (4.2%). 47 TR3 nodules were all negative. Of the 117 TR4 nodules, only one was positive (0.9%) and of the 55 TR5 nodules, 10 were positive (20%).

CONCLUSION: Initial results suggest our malignancy rate is on the lower end of the reported literature which ranges from 5-10%. Further data analysis for this project will assess biopsies from the periphery and for unnecessary FNAs due to incorrect TI-RADs classifications or nodules having been previously biopsied.

Prognostic Value of Scaphoid Fracture Initial and Follow-up Radiographs

Neel P. Mistry[1], Prosanta K. Mondal[2], Navdeep Sahota[1], Laura Sims[3] and Haron Obaid[1]

University of Saskatchewan, Department of Medical Imaging[1], Clinical Research Support Unit[2], Department of Surgery Division of Orthopedic Surgery[3]

Practice Quality Improvement

INTRODUCTION: Scaphoid fractures are the most common type of carpal bone fractures. However, their detection presents a unique challenge, leading to delayed diagnosis and potential complications such as non-union or avascular necrosis. Early detection of scaphoid fractures is crucial, but the clinical impact of delayed radiographic confirmation remains unclear. This study investigates whether the timing of fracture detection influences complication rates.

METHODS: This retrospective multi-center cohort study assessed adult patients with radiographically confirmed scaphoid fractures. Patients were divided into two groups: initial radiograph positive, and initial radiograph negative but follow-up radiograph (10-14 days later) positive. Rate of complication including non-union, delayed union, avascular necrosis, widening of scapholunate interval, VISI/DISI deformity, and progression to surgery were assessed. Categorical variables were analyzed using the Chi-square test to assess for statistically significant differences in complication rates.

RESULTS: From Jan 1, 2021, to Jun 30, 2024, 209 patients were screened for eligibility, with 110 patients (64 in initial radiograph positive and 46 in follow-up radiograph positive) included in the final analysis. Included were individuals with a confirmed scaphoid fracture and at least 6 months of imaging follow-up to assess for complications. 25 (23%) participants were female and 85 (77%) were male. Median age was 27.0 years (IQR 19.0–38.0). The co-primary outcomes of non-union and avascular necrosis were greater in the follow-up positive group compared to the initial positive group (59% vs. 10%, $p<0.0001$ and 54% vs. 19%, $p<0.0001$, respectively). This was also the case for fracture displacement (74% vs. 47%, $p<0.05$). There was no statistically significant difference between groups for delayed union, VISI/DISI deformity, and surgery.

CONCLUSION: Scaphoid fractures detected on follow-up radiographs are associated with significantly higher rates of non-union and avascular necrosis compared to those detected on initial imaging. These findings illustrate the need for vigilant follow-up in cases with high clinical suspicion despite negative initial radiographs, while underscoring the need for improved early diagnostic strategies to reduce long-term complications.

Effectiveness of the Screening Protocol for Periorbital Foreign Body Radiographs Prior to MRI

Saman Fouladirad[1] and Haron Obaid[1]

University of Saskatchewan, Department of Medical Imaging[1], Royal

Practice Quality Improvement

PURPOSE: 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.

Effectiveness of the Screening Protocol for Periorbital Foreign Body Radiographs Prior to MRI (Continued)

		Location				
		Tertiary hospital	Community hospital 1	Community hospital 2	Community clinics	Total
Demographics	Age Years (SD)	54 (17)	50 (12)	60 (17)	52(S13)	54 (16)
	Male	68	7	7	13	96
	Female	1	1	1	1	4
Presentation	Outpatient	16	8	5	14	43
	Inpatient	46	0	3	0	49
	Emergency	7	0	0	1	8
Total		69	8	8	15	100
Foreign body?	Yes	30	4	4	6	44
	No	22	3	1	7	33
	Occupation Risk	4	0	0	0	4
	Yes, but removed	7	0	2	0	9
	Not sure	2	1	0	1	4
	No history	4	0	1	1	6
Total		69	8	8	15	100
MR Location	Not obtained	4	0	1	1	6
	Tertiary	65	0	0	5	70
	Community 1	0	8	0	3	11
	Community 2	0	0	7	3	10
	Clinics	0	0	0	3	3
Total		69	8	8	15	100
Xray Result	No	68	7	7	15	97
	Yes	1	1	1	0	3
Total		69	8	8	15	100
MRI	Brain	27	1	1	2	31
	Spine	16	0	2	1	19
	Body	13	1	3	4	21
	MSK	9	6	1	7	23
	Not obtained	4	0	1	1	6
Total		69	8	8	15	100

Table 1: Comparison of demographics, presentation, response to questionnaire, Xray and MRI data across different hospital centres based on location at initial presentation for orbital radiograph.

Daily Radiographs: Resident Perception on Developing Competence

Javeria Muhammadzai[1], Jordan Russell[1] and David Leswick[1]

Department of Medical Imaging, University of Saskatchewan[1]

Practice Quality Improvement

OBJECTIVE: To address resident interest in incorporating daily radiographs into their training, a recommendation of ten daily radiographs was introduced at our institution for diagnostic radiology residents on rotations at the Royal University Hospital, Saskatoon. The aim was to enhance resident competence and ability to incorporate radiographs as part of daily workflow.

METHODS: A pre- and post-recommendation audit was completed for PGY 2-5 to determine uptake of daily radiographs. An anonymous post-recommendation survey was administered to residents who had experienced the training program both before and after introduction of the recommendation (n=14). The survey gauged resident perception of competence on radiographs by subspecialty, ability to incorporate these daily and ideal number of daily radiographs using questions, answered mostly on a 5-point Likert scale, and two multiple choice questions. Responses were objectively analyzed. An additional anonymized follow-up survey will be administered to assess potential barriers to radiograph uptake.

RESULTS: There was positive correlation between general resident perception of competence and PGY year, with high confidence in reading musculoskeletal and chest radiographs by most resident years. There were mixed responses for radiograph uptake, with a mean response of "Sometimes" for all residents. Ideal number of daily radiographs was mode value of 10, with PGY 5 residents leaning towards higher numbers.

CONCLUSION: Overall, there is resident consensus that at least ten daily radiographs are necessary for developing competence. The variable preliminary uptake will be explored further in this ongoing project.

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

Michaela Perlau[1] and David Leswick[1]

University of Saskatchewan, Department of Medical Imaging[1]

Practice Quality Improvement

BACKGROUND/OBJECTIVE: There is significant variation among radiologists in reporting practices and management recommendations of gallbladder polyps visualized on ultrasound. This is likely in part due to multiple different guidelines, many of which are often changing, and a paucity of data on malignant potential of polyps. New research suggests that the majority of gallbladder polyps are benign, and that previous guidelines were too conservative in management recommendations, resulting in unnecessary follow-up imaging and surgical referrals. We recommend use of the 2022 SRU consensus on the *Management of Incidentally Detected Gallbladder Polyps*, with clear risk stratification and management recommendations based on polyp morphology, size, and patient risk factors.

METHODS: A review of abdominal ultrasound reports at Saskatoon Medical Imaging was performed to identify cases with gallbladder polyps.

RESULTS: 79% reported number of polyps, 97% reported polyp size, 9%reported polyp morphology. 85% of reports included polyps in the impression while only 28% provided the appropriate follow-up recommendation using the referenced 2022 SRU Guidelines.

DISCUSSION/INTERVENTION: There was wide variability in both polyp characterization and management recommendations. We will implement Powerscribe templates and ultrasound technologist worksheets containing the 2022 SRU guidelines. Data will be assessed post-intervention, with the goal of increasing consistency in radiology reports and recommendations.

Adherence to radiographic follow-up recommendations of possible occult fractures in the emergency department

Daniel Hui[1], Nick Vassos[1]

University of Saskatchewan, Department of Medical Imaging[1]

Practice Quality Improvement

OBJECTIVES: Subtle nondisplaced fractures can be initially occult on radiographs. Conservative management with follow-up radiographs to assess for healing can increase detection of these fractures. This project aims to determine rates of follow-up radiographs performed when recommended in the radiology report.

METHODS: This was a retrospective study examining reports from extremity radiographs performed in the JPCH Emergency Department in the setting of trauma between January 2019 and October 2023. Radiographs with conditional follow-up recommendations were excluded. The presence of follow-up radiographs in PACS was documented. The electronic health record was reviewed to determine the presence of a documented primary care provider and the patient's management plan.

RESULTS: 178 patients were included. 43% (76/178) of patients received short-term follow-up radiographs (within two weeks). 49% (65/133) of patients linked with a primary care provider received follow-up compared to 23% (10/44) without. Of patients not receiving short-term follow-up radiographs, 21% (21/102) were treated for presumed fracture and 61% (62/102) were given a clinical diagnosis of soft tissue injury. 4 of the patients without short-term follow-up had radiographs of the same region at a later date (between 1 to 4 years), of which only 1 patient showed evidence of chronic avulsion fracture.

CONCLUSIONS: Follow-up radiograph rates in the JPCH emergency department are low, but this may be relate to the high proportion of these patients with low clinical suspicion for fracture. A small proportion of patients are treated for presumed fracture despite negative radiographs. There are few repeat presentations with only one patient demonstrating sequelae of chronic fracture.

The Right Words at the Right Time:
an analysis of the terminology used in early pregnancy reporting

Matthew Stewart[1] and Jordan Russell[1]

University of Saskatchewan, Department of Medical Imaging[1]

Practice Quality Improvement Project

BACKGROUND: This quality improvement project assessed the use of terminology in reporting of early pregnancy viability, which is a common litigious issue. Terminology examined were outlined in a multidisciplinary consensus statement published in the New England Journal of Medicine, which states that following their recommendations will bring reporting of early pregnancy viability as close to 100% specificity and positive predictive value as possible.

METHODOLOGY: Reports with the appropriate search terms were assessed in Montage (from SMI and RUH). Data was extracted into excel, searching for the terminology outlined in the consensus statement. As an intervention, a macro was created in Powerscribe, which included a "pick list" of the terminology and criteria outlined in the article. Pre and post intervention analysis was performed and manually reviewed for quality assurance.

RESULTS: Pre-intervention analysis found that 30% of reports did not include the terminology outlined in the article. This does not mean that incorrect information was conveyed to clinical teams. Themes were identified to categorize way in which reports were coded as "incorrect." Post intervention launch, an analysis was performed, showing mild to moderate uptake of the macro. 23% of reports post intervention were coded as incorrect. Primary feedback about the macro was that it was too verbose. Future steps could include shortening the macro and adding an additional intervention to help improve adherence to terminology.

Can Ultrasound Close the Gap Between Severity of Knee Pain and Discordant Kellgren Lawrence Radiographic Grading of Knee Osteoarthritis?

Wara Lounsbury[1], Myles Mabee[1], Johannes M van der Merwe[2], Prosanta Mondal[3], David Leswick[1] and Haron Obaid[1]

University of Saskatchewan, Department of Medical Imaging[1], Division of Orthopedic Surgery[2], and Clinical Research Support Unit[3]

Research Project

OBJECTIVES: There is a discordance between pain and severity of knee osteoarthritis (OA) based on radiographic features, which remains a challenging scenario in managing these patients. Our hypothesis is that knee ultrasound (US) is useful in conjunction with radiographs to close the gap between discordant pain and Kellgren-Lawrence (KL) score.

METHODS: A total of 143 patients were included in the study. A musculoskeletal trained radiologist graded radiographic evidence of OA using the KL grading system. The visual analog scale (VAS) scores for pain were obtained from orthopedic surgery clinic notes. The patients were categorized into four subgroups: low KL grade-low pain, low KL grade-high pain, high KL grade-low pain, and high KL grade-high pain.

RESULTS: There was an association between meniscal pathology and VAS score. There was also an association between KL grade (grouped into absent, mild, and moderate-severe OA) and meniscal pathology, cysts, osteophytes, synovitis and bursitis, with the greatest percentage of US pathology occurring in the mild OA grouping. A significant association was found between the combined KL grade and VAS score subgroups and the presence of meniscal pathology, synovitis, osteophytes and bursitis, with the groups with mod-severe OA having a greater percentage of these US pathologies, regardless of pain score. None of the US pathologies were significantly higher in the subgroups with discordant pain.

CONCLUSION: Meniscal pathology is closely associated with pain, suggesting it may explain the disconnect between pain and KL scores. Nevertheless, the analysis revealed no clear increase in US pathologies in discordant pain groups.

Association Between Radiographic Morphologic Alterations of the Shoulder Joint and the Presence or Absence of Os Acromiale

Ali Jafri[1], Nicholas Vassos[1] Soo Kim[2], Laura Kim[3] and Haron Obaid[1]

University of Saskatchewan, Department of Medical Imaging[1], School of Rehabilitation Science[2] and Division of Orthopaedic Surgery[3]

Resident Research Project

OBJECTIVES: Os acromiale— an unfused secondary ossification centre in the acromion— represents a known anatomical variant of the acromion that is often discovered incidentally on imaging. There has been recent interest in an association between Os acromiale and rotator cuff injury, with some authors positing a decrease in subacromial space associated with the variant as one possible mechanism. Even so, there is a paucity of data in the literature with regards to objective measures of subacromial space in patients with os acromiale.

METHODS: We conducted a retrospective review of shoulder radiographs in the Saskatoon health region demonstrating os acromiale, as well as those with no findings of os acromiale. We then annotated these shoulder radiographs with measurements published in the literature, and known to approximate subacromial space and thus predict rotator cuff injury as a result. These included acromiohumeral centre edge angle, acromion greater tuberosity impingement index, the greater tuberosity angle, critical shoulder angle, and acromial index.

RESULTS: Thirty-four patients with Os Acromiale, and thirty-four patients without os acromiale were included in the study. The remainder of data collection is pending at this time.

CONCLUSIONS: Pending

Generating Synthetic Contrast-Enhanced CT Angiography Images from Non-Contrast Images Using a Slice-Consistent Brownian Bridge Diffusion Model

Neel P Mistry[1*], Pouya Shiri[1*], Xin Yi[1] and Scott J Adams[1]

University of Saskatchewan, Department of Medical Imaging[1]

*N.P.M. and P.S. contributed equally to this study.

Resident Research Project

OBJECTIVES: CT angiography (CTA) is essential for diagnosing aortic conditions but requires iodinated contrast, which carries risks for patients with renal impairment or a history of contrast reactions and presents drawbacks such as increased costs and environmental impact. This study proposes and evaluates a novel deep learning approach – Slice-Consistent Brownian Bridge Diffusion Model (SC-BBDM) – to generate synthetic contrast-enhanced CTA images from non-contrast CT images, aiming to reduce contrast-related risks while preserving vascular detail and anatomical consistency.

METHODS: This retrospective study used 100 triphasic (non-contrast, arterial, venous) thoracic CTAs from the publicly available Coltea-Lung dataset. Two versions of each scan were prepared: one focusing only on the aorta (aortic volume [AV]) and another including both the aorta and heart (cardiac-aortic volume [CAV]). SC-BBDM was trained to convert non-contrast images into synthetic CTA images using style-key conditioning and inter-slice trajectory alignment. Performance was compared to two baseline models (Pix2Pix and CyTran) using both quantitative metrics (peak signal-to-noise ratio [PSNR], structural similarity index measure [SSIM], normalized root mean square error [NRMSE]) and expert qualitative review.

RESULTS: SC-BBDM using the AV approach outperformed baseline models on all metrics. Specifically, SC-BBDM achieved a PSNR of 36.820, SSIM of 0.932, and NRMSE of 0.015 – outperforming both CyTran (PSNR 33.807, SSIM 0.975, NRMSE 0.022) and Pix2Pix (PSNR 33.889, SSIM 0.980, NRMSE 0.021). SC-BBDM preserved vascular structures and image contrast more accurately than CyTran and Pix2Pix, especially on challenging slices. Qualitative review confirmed improved anatomical clarity, particularly in the aortic arch and descending aorta, with fewer artifacts and better inter-slice consistency compared to baseline models.

CONCLUSION: SC-BBDM enables generation of high-quality synthetic contrast-enhanced CTA images from non-contrast scans, preserving vascular anatomy while reducing reliance on contrast agents.

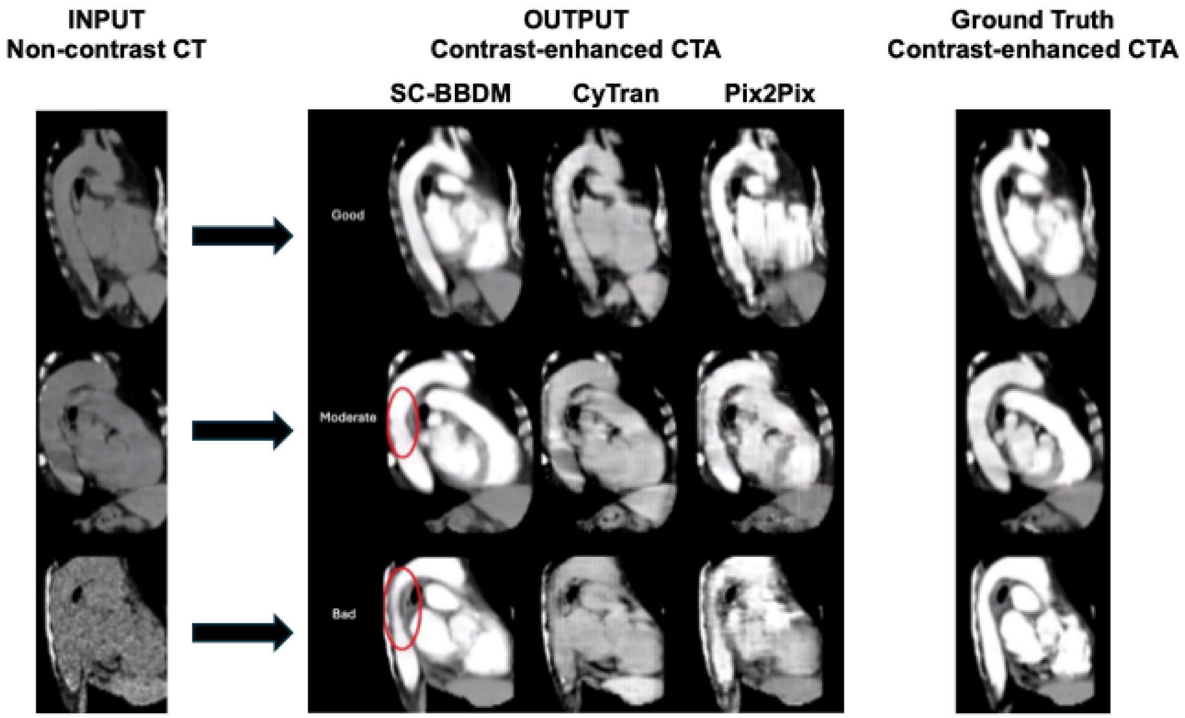

Figure 1. Synthetic contrast-enhanced CTA images generated from non-contrast CT images using SC-BBDM, compared to synthetic contrast-enhanced images generated using baseline models (CyTran, Pix2Pix). The ground truth contrast-enhanced CTA is provided for reference. Rows present three representative examples. SC-BBDM demonstrates fewer artifacts and better inter-slice consistency compared to baseline models. Red circles highlight notable artifacts or discrepancies.

Transrectal or Trans-perineal Prostate Biopsy: A Look Beyond Patient Positioning

Javeria Muhammadzai[1] and Jeffery Bird[1,2]

University of Saskatchewan, Department of Medical Imaging[1] and Associated Radiologists[2]

Resident Research Project

OBJECTIVE: Prostate cancer is the most common non-skin cancer in men in Canada, and it is the third highest cause of cancer-related mortality in men. Gold standard for diagnosis is biopsy. Ultrasound-guided biopsies can be done using the transrectal (TRUS) or trans-perineal approach and both are currently used across Canada, with variability based on group practice and physician comfort.

Post-biopsy complications include infections, including sepsis requiring hospitalization, bleeding and urinary retention. For TRUS biopsy, there is great variability in the cited post-procedure infection rate (0.1 - 7.0%), whereas for the trans-perineal approach, reported incidence of infections and sepsis is close to zero (0-0.2%).

With recent transition in practice at a single center in Saskatoon, from TRUS to trans-perineal approach, our objective is to compare the post-biopsy complications between the two approaches. Secondary objectives of interest include time taken to biopsy and difference in diagnostic rates between approaches, including targeted biopsy.

METHODS: Currently underway is a retrospective chart review of patients who underwent trans-perineal prostate biopsies from July 2023 – June 2024 and an equal number of consecutive trans-rectal biopsies preceding that. Data variables such as age, co-morbidities, immune status, anti-coagulation status, post-biopsy complications occurring up to 30 days after biopsy, time taken to biopsy and diagnostic pathology are being collected. Abstracted data will be de-identified and aggregated and single and multi-variate analyses will be performed.

RESULTS: Preliminary data will be shared with attendees.

Correlation between Weber Classification of Ankle Fractures and Medial Clear Space Widening on Radiography

Philip Surmanowicz[1], Max Hamilton[1], Prosanta Mondal[2] and Haron Obaid[1]

University of Saskatchewan, Department of Medical Imaging[1] and Clinical Research Support Unit[2]

Resident Research Project

OBJECTIVES: Recently, there has been growing interest among the orthopaedic surgery literature on injuries to the deltoid ligament and, by extension, the degree of medial clear space widening in Weber ankle fractures. Our project aims at quantifying the degree of medial clear space widening in Weber A, B, and C ankle fracture patterns.

METHODS: Weber A, B, and C ankle fracture radiographs were retrospectively evaluated with measurements taken of the medial, lateral, and superior clear spaces and data gathered on associated injuries to the medial and posterior malleoli. Multivariable regression analysis was performed with the goal of assessing whether there were significant differences among the Weber fracture types for medial, lateral, and superior clear space widening.

RESULTS: A total of 473 radiographs were retrospectively evaluated with 127 being Weber A, 216 Weber B, and 130 Weber C. Among these Weber fractures, there were an additional 89 with associated fracture of the medial malleolus and 62 of the posterior malleolus. The mean medial clear space measured for Weber A fractures was 3.3 mm +/- 1.1, for Weber B fractures was 4.3 mm +/- 2.4, and for Weber C fractures was 5.7 mm +/- 3.6. Weber C fracture patterns demonstrated significantly greater medial and lateral clear space distances than Weber A or B fracture patterns. Additional fractures of the medial or posterior malleoli were also associated with greater medial and lateral clear space distances.

CONCLUSION: Weber C fracture patterns demonstrate significantly increased medial clear space widening in comparison to Weber A and B fracture patterns.

"It's High Noon at the Radiography Suite"
Does having an additional 'high noon'/en face radiograph view aide in diagnosis of cortical breach in penetrating foreign bodies?

Myles Mabee[1], Nicholas Vassos[1], Navdeep Sahota[1], and David Leswick[1]

University of Saskatchewan, Department of Medical Imaging[1]

Resident Research Project

OBJECTIVE: We propose that there is diagnostic utility in the addition of one more radiologic view acquired for penetrating foreign bodies to assess for cortical breach centered on and along the long axis of the foreign body attempting to follow its exact track.

METHODS: The standard protocol for radiographic imaging of penetrating foreign bodies imaged at our institution at minimum two orthogonal views, an additional 'high noon' view was added to this protocol in the presence of a partly penetrating foreign body.

Two radiologists reviewed the images with and without the additional 'high noon' views to assess whether there was cortical breach. The level of certainty was also assessed using a 5-point Likert scale ranging from definitely no cortical involvement to definitely cortical involvement (Table 1). There was a short delay between assessments without the 'high noon' views and with them. The two radiologists also subjectively assessed where the high noon view was useful for each of the patients (yes/no question).

RESULTS: Correct identification of cortical vs no cortical involvement was seen on 13/17 and 14/17 patients on initial assessment (reviewer 1 and 2, respectively) with improvement to 14/17 and 17/17 after the addition of the high noon radiograph.

Reviewer 1 reported that the high noon view subjectively helped assessment on 10/17 (59%) cases while reviewer 2 reported the high noon view subjectively helped assessment on 9/17 (53%) of cases.

CONCLUSIONS: The high noon view is a fast, cheap, and effective method for increasing diagnostic confidence in identifying cortical disruption from penetrating foreign bodies.

"It's High Noon at the Radiography Suite"
Does having an additional 'high noon'/en face radiograph view aide in diagnosis of cortical breach in penetrating foreign bodies? (continued)

	Without High Noon			**With High Noon**			
	Rev 1	Rev 2		Rev 1		Rev 2	
Case	Likert	Likert		Likert	Did the HN view help (Y=1, N=0)	Likert	Did the HN view help (Y=1, N=0)
1	4	1		5	1	1	0
2	1	1		1	0	1	0
3	3	3		2	1	2	1
4	3	3		1	1	1	1
5	2	2		1	1	1	1
6	1	2		1	0	1	1
7	1	2		1	0	1	1
9	2	4		1	1	2	1
10	2	3		2	0	2	0
11	3	2		2	1	1	1
12	4	1		4	1	1	0
13	1	1		1	0	1	0
14	4	3		4	0	2	1
15	1	1		1	1	1	0
16	3	2		2	1	2	0
17	4	2		1	1	1	1
18	1	1		1	0	1	0

Table 1: Likert rating of involvement of cortex (1=definitely does not involve cortex, 5=definitely involves cortex) for each case plus binary assessment of if the high noon view was helpful.

Follow us on Social Media!

In case you didn't know, we have X/Twitter and Instagram accounts for our University of Saskatchewan Medical Imaging Research!

Our goal is to increase the visibility of medical imaging research activities coming out of Saskatchewan as well as providing an archive of activities. Please consider following these accounts to see the recent presentations, publications, and other research activities from our department. Older more historical papers will also occasionally be shared as a way of acknowledging and preserving our department's history.

If you are giving an external presentation, have had a recent paper published or received funding – please contact David Leswick so that it can be shared.

Our X/Twitter account is: USask Radiology Research@RadResearchSask

Our Instagram account is: U of S Radiology Research@usask_radiology_research

Prizes:

All prizes have been cosponsored by Associated Radiologists and University Medical Imaging Consultants / Saskatoon Medical Imaging. We again thank them for their support.

Prizes are as follows:

- 'Stuart Houston Award for Medical Imaging Research at the University of Saskatchewan'. Awarded for the best research resident research presentation. ($750)
- Best Quality Assurance Project ($500)
- Best Medical Student Project ($500)
- Best Research Presentation by a Non-Clinician (no 2025 projects)

Past Prize Winners

We would like to again recognize prize winners from previous years as follows:

Stuart Houston Award for Medical Imaging Research at the University of Saskatchewan

2024: Anurag Dalai (with D Leswick and S Machtaler) for the project "Energy Stewardship in MRI"

2023: Sonali Andrahennadi (with U Goncin, and S Machtaler) for the project "Contrast Enhanced Ultrasound Imaging for Assessing Renal Perfusion in New Zealand White Rabbits"

2022: Yuhao Wu (with B Burbridge) for the project "Using Virtual Reality in Undergraduate Radiology Education"

2021: Samuel Pike (with D Leswick, H Obaid, I Lutz, and J Butchko) for the project "Proximal Femoral Epiphyseal Spurs and their Association with Acetabular Labral Tears on MRI in Symptomatic Patients"

2020: (split award) Dr. Samuel Pike (with Dr. Tan and Dr. Burbridge) for the project "A Comparison of Complication Rated Associated with Totally Implanted Venous Access Devices in the Arm vs. Chest"

2020: (split award) Dr. Yuhau Wu (with C Theoret and B Burbridge) for the project "Flipping the Passive Radiology Elective"

2019: Leanne Langford (with K Urmson, D Leswick, and T Sander) for the presentation "Determining Residual Gastric Volume in Healthy Children using Ultrasound"

2018: Scott Adams (with B Burbridge, A Badea, N Kanigan, L Bustamante, I Mendez and P Babyn) for the project "A Crossover Comparison of Standard and Telerobotic Approaches to Prenatal Sonography"

2017: Neil Kalra (with JN Pena-Sanchez, A Badea, S Vanderby, and P Babyn) for the project "A Day in MR: Exam Variation and Appropriateness of MRI Exams in Canada"

2016: Meredith Lynch (with D Leswick, S Kisch, R Bryce & H Lim) for the project "Image Quality in Day Optimizing Throughput (Dot) Knee MRI vs Routine Knee MRI"

2015: Navdeep Sahota and Nasir Khan (with M Shepel and H Obaid) for the project "Posterior Ankle Labral Changes at MRI: A Preliminary Study"

2014: Christopher Plewes (with B Burbridge) for the project "Comparison of a Power Injectable Versus a Non Power Injectable Totally Implanted Venous Access Device in the Upper Arm"

2013: Nasir Khan (with H Obaid, M Shepel & D Leswick) for the project "An MRI Study to Correlate between Increased Lateral Tibial Slope and Articular Cartilage Changes in the Knee"

2012: Christopher Plewes for the project "Towards Efficient MR Utilization"

2011: Darin White (with D Fladeland) for the project "Dual-Energy CT Pulmonary Angiography – Part I: Image Quality"

2010: Adelaine Wong (with D Leswick, H Nikota & S Webster) for the project "Dose Reduction in Scoliosis Surveys"

Best Quality Assurance Project

2024: Myles Mabee (with D Leswick) for the project "Does Call Have to be Miserable? Resident Perception after Implementation of Pre-Call Half Days"

2023: Myles Mabee (with M Shepel and D Leswick) for the project ""No Delay, No Do-Overs". Assessing Time Delay and Orientation of Reformatted Images on Trauma Extremity CT Scans"

2022: Vladimir Ljubojevic (with T Ellchuk and D Leswick) for the project "RUH MRI Failed Studies: Examination and Intervention"

2021: Leanne Langford (with R Ostrowski, S Wiebe and C Theoret) for the project "Radiographic Assessment of Retained Surgical Items and Development of Medical Imaging Standard Work Order"

2020: Luhe (Lotus) Yang (with D Leswick, M Butler, and T Ellchuk) for the project "Evaluation of the Modified Barium Swallow Study Conducted with the Presence or Absence of a Radiologist"

2019: Raza Naqvi (with S Bharadway, R Kennedy, R Bigsby, P Babyn and C Anderson) for the project "The Effect of Coordinated Investigations for Rural Lung Cancer Patients on Traveling and Time to Staging Completion".

2018: Raza Naqvi (with S Bharadway, R Kennedy, R Bigsby, P Babyn and C Anderson) for the project "The Effect of Coordinated Investigations for Rural Lung Cancer Patients on Traveling and Time to Staging Completion"

2017: Jimmy Wang (with T Ellchuk, R Otani, G Groot and P Babyn) for the project "On-line TI-RADS Calculator"

2016: Navdeep Sahota (with H Obaid) for the project "Pre-MRI Patient Questionnaire: Clinical Audit"

2015: James Huynh (with D Leswick and F Rashidi) for the project "Retrospectively Conducted First Cycle of Practice Quality Improvement Evaluating the Technique of Liver Span Measurement Used by Sonographers at a Single Institution"

2014: Meredith Lynch (with B Burbridge) for the project "Use of Power Injectable Ports for Contrast Enhanced CT and MR"

2013: Brandy Sessford (with V Chow) for the project "Management of Asymptomatic Adnexal Cysts identified on Ultrasound: A Clinical Audit Project at the Saskatoon Health Region"

Best Non-Clinician Researcher Presentation Award

2024: Una Goncin (with R Geyer and S Machtaler) for the project "Aptamer-functionalized microbubbles for ultrasound molecular imaging of bowel inflammation in animal models of acute colitis."

2023: Marianna Horn (with H Senger, M Brinkmann, and S Machtaler) for the project "Developing Contrast-Enhanced Ultrasound Imaging to Assess Rainbow Trout Intestinal Inflammation for Use in Environmental Monitoring"

2022: Marianna Horn (with H Senger, M Brinkmann, and S Machtaler) for the project "Contrast-Enhanced Ultrasound Imaging of Rainbow Trout Intestinal Inflammation

2021: Marianna Horn and Una Goncin (with R Geyer, M Brinkman, and S Machtaler) for the project "Ultrasound Molecular Imaging of Fish to Evaluate the Impact of Water Contamination on Inflammatory Bowel Disease in First Nations Communities"

2020: Una Goncin (with Raja Solomon Viswas, Eric Price and Steven Machtaler) for the project "Targeted ^{89}Zr-Labelled Radiodroplets for Imaging Inflammation in a Murine Model of Inflammatory Bowel Disease (IBD)"

2019: Una Goncin (with N Ton, A El Kaffas, M Brinkmann, and S Machtaler) for the project "Contrast-Enhanced Perfusion Imaging in Teloest Model Organisms, Rainbow Trout (*Onchorhynchus mykiss*)"

Best Medical Student Project

2024: Huzaifa Saeed (with S Boctor and S Adams) for the project "Personalized Screening Intervals to Increase the Efficiency of Lung Cancer Screening"

2023: Amy Zhou (N Kashani, J Ospel, N Singh5, A Ganesh, J Holodinsky, M Almekhlafi, Fouladira, A Frost, L Yang, R Otani1, B Newton, A Persad, R Cooley, S Wasyliw, B R Graham, G Hunter, A Gardner, U Ahmed, L Peeling, and M Kelly) for the project "ASPECTs and Decisions for Endovascular Thrombectomy in Acute Stroke System of Care Across the Province of Saskatchewan"

2022: Richard Ngo (with B Burbridge) for the project "The Utilization of Augmented Reality and Virtual Reality for Undergraduate Medical Student Radiology Education: A Scoping Review".

2021: Josh Rattee (with H Obaid) for the project "Correlating Biceps Proximal Long Head Pathology and Superior Humeral Head Migration"

2020: Robert Henderson (with X Yi, S Adams and P Babyn) for the project "Automatic Classification of Multiple Catheters in Neonatal Radiographs with Deep Learning"

2019: None (no medical student presentations)

2018: Bjorn Hunter (with D Leswick and N Kalra) for the project "Patient Symptom Questionnaires Result in Higher ACR and CAR Appropriateness Scores Compared with Physician Requisitions for Knee MRI"

2017: Jaques Van Heerden (with M Shepel and H Obaid) for the project "The Utility of Dual Energy CT in Visualizing the Menisci in Patients Unfit for MRI".

2016: Scott Adams (with B Burbridge, A Badea, L Langford, L Bustamante, I Mendez & P Babyn for the project "Initial experience using a telerobotic ultrasound system to perform adult abdominal examinations"

2015: Haven Roy (with B Burbridge) for the project "To CT, or not to CT? The influence of computed tomography on the diagnosis of appendicitis in obese pediatric patients"
2014: Danielle Dressler (with D Leswick) for the project "Canadian Association of Radiologists (CAR) Annual Scientific Meetings: How Many Abstracts Go On to Publication?"
2013: (split award) David Horne (with D Leswick & H Lim) for the project "The Case Breast Radioprotection During Abdominal CT"
2013: (split award) Neil Kalra (with B Burbridge, D Pinelle, G Malin & K Trinder) for the project "USRC: A Novel Method for Incorporating Diagnostic Radiology Images into the Medical School Curriculum"
2012: Anuj Dixit (with P Babyn) for the project "Contrast Media Safety and Education"
2011: (split award): Larissa Breanne Irving (with D Leswick, D Fladeland & H Lim) for the project "Knowing the Enemy: Health Care Provider Knowledge of CT Dose & Associated Risks"
2011: (split award): James Zheng (with D Leswick & D Fladeland) for the project "CT Dose to Patients Receiving Scans of Multiple Body Sites at a Single Visit in Saskatoon"
2010: Patricia Jo (with D Leswick, D Fladeland, R Otani & H Lim) for the project "Reduced Dose with Maintained Image Quality Utilizing 100 kVp Carotid CT Angiography"
2009: Chance Dumaine (with D Fladeland, D Leswick, and H Lim) for the project "Improving Radiation Dose from Diagnostic CT Examinations in Saskatchewan"
2008: Sumeer Mann (with Grant Stoneham) for his projects "Reproduction of a Phantom and Development of a 3D CT Reconstruction Protocol for the Assessment of Ventricular Volumes" and "Comparison of CT 3D Volumetric Analysis of Ventricular Size to Visual Radiological Assessment" and "Correlation of Frontal and Occipital (F/O) Horn Ratio to Ventricular Volume in Patients of Varying Ages, and Comparison with Evan's Ratio"

Department Paper of the Year

2022: U Goncin, W Bernhard, L Curiel, C. R Geyer, S Machtaler. Rapid Copper-free Click Conjugation to Lipid-Shelled Microbubbles for Ultrasound Molecular Imaging of Murine Bowel Inflammation. *Bioconjugate Chem.* 2022, 33, 848−857

2021: U Goncin, N Ton, A Reddy, A El Kaffas, M Brinkman, S Machtaler. Contrast-Enhanced Unltrasound Imaging for Assessing Organ Perfusion in Rainbow Trout (Oncorhynchus Mykiss). *Sci Total Environ.* 2021. 750:141231

Past Visiting Professors/Distinguished Guests

2025: Dr. Charlotte Yong-Hing – University of British Columbia

2024: Dr. Kate Hanneman – University of Toronto and Toronto General Hospital Research Institute

2023: Dr. Govind Chavhan – University of Toronto and Hospital for Sick Children

2022: Dr. Nicola Schieda – University of Ottawa (virtual)

2021: Dr. Brian Hargreaves - Stanford University (virtual)

2020: None (COVID)

2019: Dr. Marco Essig – University of Manitoba

2018: Dr. Jacob Jaremko – University of Alberta

2017: Dr. Iain Kirkpatrick – University of Manitoba

2016: None

2015: Dr. Karen Finlay - McMaster University

2014: Dr. Robert Lambert – University of Alberta

2013: Dr. Jonathon Leipsic – University of British Columbia

2012: Dr. Sheri Harder – Loma Linda University

2011: Dr. Richard Ehman - Mayo Clinic

2010: None (Dr Resnick cancelled because of travel delays)

2009: None

2008: Dr. Martin Reed – University of Winnipeg

2007: Dr Ian Suchet – University of Saskatchewan

2006: Dr Eric Stern – University of Washington

Resident Research Award (awarded 2007 to 2009)

2009: Leslie Chatterson (with D Leswick*, D Fladeland, M Hunt & S Webster) for the project " Lead Versus RADPAD® Shielding for Fetal Dose Reduction during Maternal CT Pulmonary Angiography"

2008: Jennifer Tynan (with M Duncan and B Burbridge) for the project "Reduction of Adult Fingers Visualized on Pediatric Intensive Care Unit (PICU) Chest X-rays Following Radiation Technologist and PICU Staff Radiation Safety Education"

2007: Greg Kraushaar (with C King) for the project "Back to the Future: Shortening the Z Axis on Helical CT PE Studies without Compromising Diagnostic Power"

Resident Research Second Place Award (awarded 2008 to 2012)

2012: Nicolette Sinclair (with B Burbridge) for the project "Fluoroscopy of the Cook Vital Arm Port at the time of Removal"

2011: Andrew Scott (with D Leswick) for the project "Shaken or Swirled? Mixing Gadolinium for Arthrography"

2010: Aileen Rankin (with D Leswick) for the project "Patient Positioning in CT and the Induction of Sternoclavicular Joint Pneumatosis"

2009: Christina Theoret (with G Stoneham) for the project "Fibroid Size Reproducibility US vs MRI at Royal University Hospital"

2008: Sharon Goo for the project "Does Percutaneous Balloon Cryoplasty Improve Hemodialysis Access Longevity"

RSNA Roentgen Research Award:

2021: Scott Adams
2020: Raza Naqvi
2019: Scott Adams
2018: Neil Kalra
2016: Danielle Dressler
2015: Chris Plewes
2013: James McEachern
2012: Andrew Scott
2011: Leslie Chatterson
2010: Matylda Machnowska

Department of Medical Imaging Researcher of the Year:

2018-19: Steven Machtaler
2017-18: Humphrey Fonge
2016-17: Brent Burbridge