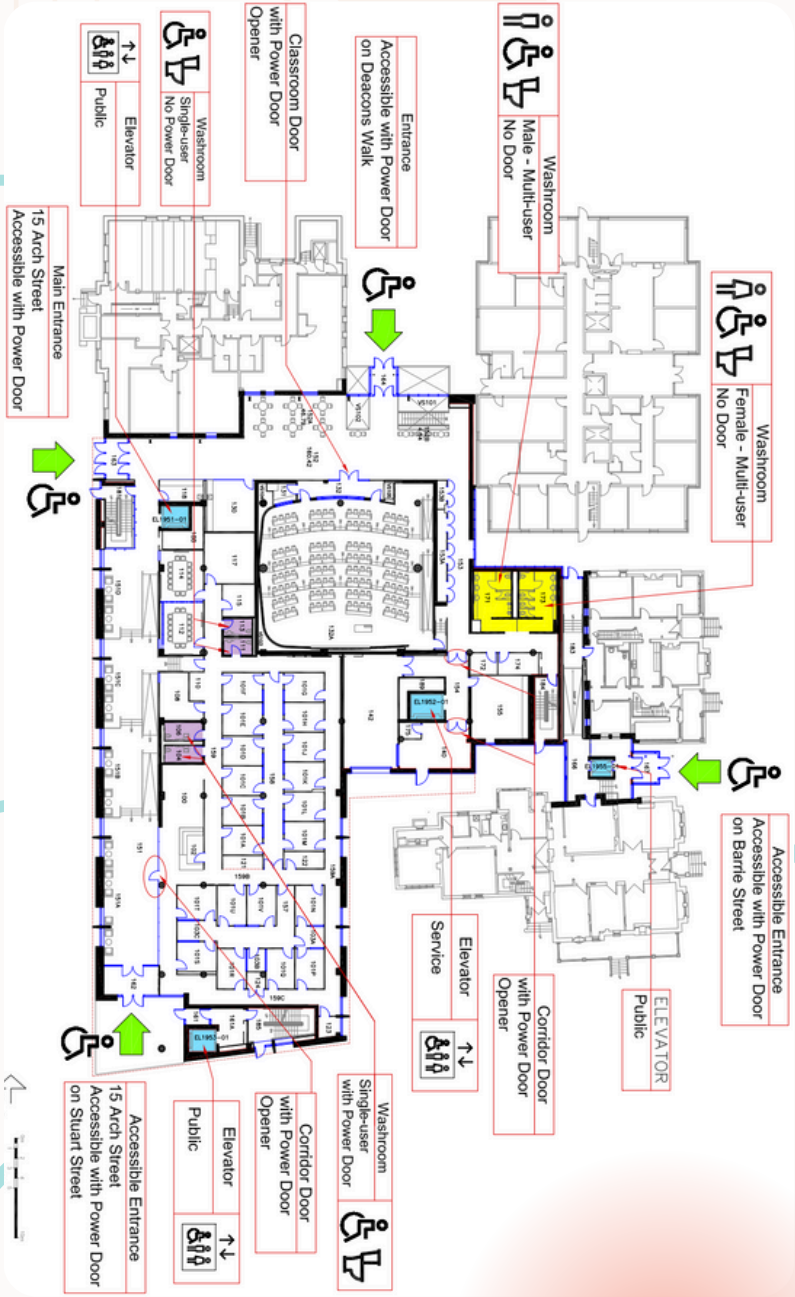
# SCHOOL OF MEDICINE BUILDING




# SCHEDULE

**REGISTRATION**
9:30 - 10:00AM

**INTRO & LAND ACKNOWLEDGEMENT**
10:00 - 10:10AM

**KEYNOTE: DR. COLLEEN M. FLOOD**
10:10 - 10:55AM

**BREAK**
10:55 - 11:15AM

**KEYNOTE: DR. IVAR MENDEZ**
11:15 - 12:00PM

**LUNCH**
12:00 - 12:30PM

**INDUSTRY SHOWCASE**
12:30 - 2:30PM

**RESEARCH COMPETITION**
2:30 - 4:00PM

**ATTENDEES:**
Scan this QR code to see the schedule on our website!

HHRC 2025

Saturday, February 22nd, 2025
Queen's School of Medicine

**HEALTH** AND **HUMAN RIGHTS** IN THE

# DIGITAL AGE


GUEST SPEAKER

Professor Emeritus of Neurosurgery and Director of Virtual Care and Remote Presence

Robotics Program, University of Saskatchewan

Director, Virtual Health Hub

# Dr. Ivar Mendez

**MD, PhD, FRCSC, FACS, FCAHS**

Virtual care is transforming healthcare, breaking down geographical barriers and bringing specialized care to those who need it most. Yet, as technology reshapes the way we deliver medicine, critical questions arise about equity, accessibility, and the future of patient care. This talk explores the evolving landscape of virtual care technologies, from groundbreaking innovations in AI and robotic-assisted care to the delivery of care to Indigenous communities and the Ethiopian prenatal ultrasound project, which demonstrates the potential of remote presence technology in underserved regions. How can we harness emerging technologies to improve health outcomes while ensuring ethical and equitable access? Join Dr. Mendez as he shares his pioneering work in virtual healthcare, AI, remote presence robotics, and the future of healthcare delivery

GUEST SPEAKER

Dean
Faculty of Law

Queen's University

# Dr. Colleen M. Flood

**FRSC FCAHS JD MBA–LLB Hons**

Artificial intelligence (AI) is revolutionizing health care, offering groundbreaking advancements in diagnostics, treatment, and accessibility—yet it also poses profound risks to human rights. This talk explores the intersection of AI, health, and human rights, beginning with the international right to health and the promise AI holds for improving global care, particularly in low-resource settings. However, concerns around privacy, data security, safety and inequity loom large. Can AI truly serve humanity, or will humanity become subservient to AI? Join Dean Flood as she discusses how to harness AI's power while safeguarding fundamental heath human rights.

## IKNIFE

The iKnife enhances brain tumor surgery by using mass spectrometry to analyze electrosurgical smoke in real time. Deep learning compares tissue profiles to a database, allowing precise tumor removal while sparing healthy tissue.

## HEIDI AI

Heidi is the ambient clinical AI that frees you up from note-taking, insurance-pleading, results-finding, and all of the other tasks that increase a physician's administrative load.

## SIMX VR

SimX uses VR to simulate complex clinical encounters, enhancing critical thinking and judgment. By immersing learners in realistic scenarios, it helps improve patient outcomes.

# INDUSTRY SPEAKERS

HHRC 2025

## IKNIFE

TThe Intelligent Knife (iKnife) is a cautery tool that is helping improve the landscape of brain tumor surgery and research. It integrates mass spectrometry with real-time tissue analysis, enabling surgeons to distinguish between cancerous and normal brain tissue with unparalleled precision during surgery. During surgery, the iKnife uses the electrosurgical smoke generated from incinerating tissue. This smoke is analyzed using a mass spectrometer, which provides a detailed chemical profile of the tissue in seconds with the help of deep learning. These profiles are compared to a pre-existing database of normal and cancerous tissue, allowing for immediate identification by classification models. By enabling real-time, intraoperative decision-making, the iKnife aids in achieving complete tumor resection while minimizing damage to healthy brain tissue, which is critical in preserving neurological function.

## HEIDI AI

Heidi is the ambient clinical AI that frees you up from note-taking, insurance-pleading, results-finding, and all of the other tasks that increase a physician's administrative load.

## SIMX VR

SimX is revolutionizing medical education by providing immersive virtual reality (VR) simulations that supplement traditional training methods. This technology allows healthcare providers to practice high-stakes scenarios in realistic, interactive environments, improving clinical decision-making, teamwork, and preparedness. SimX also enhances culturally competent care by enabling providers to train with a diverse patient populations, fostering a deeper understanding of different cultural backgrounds and health needs. By expanding access to high-quality training, SimX is helping create a more skilled and equitable global healthcare workforce

# LETTER FROM THE CO-CHAIRS OF HHRC 2025

HHRC 2025

**The Health and Human Rights Conference (HHRC)** has been student-organized since its inception in 2001. The conference has always centred on addressing topical issues regarding human rights and health from interdisciplinary perspectives. Over the years, many advocates, industry leaders, community members, and students from institutions from across Canada have attended and contributed.

When we were choosing a theme for the **24th** annual conference, **Health and Human Rights in the Digital Age**, discourse surrounding health and technology was cresting exponentially day by day. North America is continuing to shift toward practices run majorly by digital health tools, and the explosion of artificial intelligence development is at the forefront of medical innovation. The COVID-19 pandemic highlighted the gaps and need for streamlining health care and for telemedicine. For the 24th HHRC, we invite attendees to ponder on the implications that healthcare technology has on human rights. We are endlessly excited about the ways health technologies can improve the quality of healthcare. Simultaneously, we are responsible for addressing the new risks health technologies pose, and how they may exacerbate inequities.

Challenges pertaining to the use of digital health technologies extend beyond the development and delivery of the tools themselves. This necessitates a space for industry experts, clinical professionals, medical learners, and undergraduate students to consider the conditions in which digital health technology can be deployed with human rights in mind. Our speakers are uniquely qualified to examine socio-economic injustice using healthcare technology and to deliberate the best ways to preserve patient privacy and data security. Our research competition features original projects using new technologies to address access to healthcare or probing the reinforcement of discrimination in current technologies. We understand our conference cannot solve all the ethical dilemmas and technological barriers in a day. Our hope is to not only empower and equip attendees with an openness for new ideas, but also encourage continuous questioning of existing practices. We strongly believe advancement is always possible!

Thank you to everyone who made this weekend possible! It has been a pleasure seeing everyone's vision and hard work come to life. We are honoured to be a part of this legacy.

Sincerely,

**Chen Chen, Nicholas Hassan, Duo Li**
**Co-Chairs, HHRC 2025**

FEB 22, 2025

Queen's School of Medicine

HHRC 2025

# HEALTH AND HUMAN RIGHTS IN THE DIGITAL AGE

ABSTRACT BOOK

## DR. IVAR MENDEZ

Dr. Mendez received his MD and PhD from the University of Western Ontario, where he also completed his post-graduate training in Neurosurgery. His research Fellowship was done at the Department of Medical Cell Research, University of Lund, Sweden. Dr. Mendez was the Chairman and Founding Member of the Halifax Brain Repair Centre and Head of the Division of Neurosurgery at Dalhousie University and the QEII Health Sciences Centre for more than a decade. He was the Fred H. Wigmore Professor and Provincial Head of Surgery for Saskatchewan from 2013-2022. Dr. Mendez is the Director of the Virtual Health Hub, a highly innovative facility designed to provide virtual healthcare services, currently being built at the Whitecap Dakota First Nation in Saskatchewan.

## DR. ERGI DULI

Ergi is a first year medical student at Queen's. He completed a PhD at The University of Toronto where he studied the cellular mechanisms by which endothelial cells regulate clotting in rare renal diseases. Ergi is passionate about student development and career mentorship

## DR. JAHANARA RAJWANI

Jahanara is a medical student in the class of 2027. Prior to starting medical school, she completed her undergraduate degree in Honours Immunology at McGill University, and her PhD in cancer immunotherapy at the University of Calgary. In her spare time, she loves to hike (especially in the Rockies!), cook, run, and watch shows on Netflix.

# RACE-ADJUSTED CLINICAL DECISION-MAKING TOOLS: A COMPREHENSIVE SYSTEMATIC REVIEW

Meera Chopra, BHSc, MD(c) [1], Ramina Adam, PhD, MD(c) [2], Helena Kim, BHSc, MD(c) [3], Tony Ning, PharmD, MD(c) [1], Olsen Chan, BHSc, MD(c) [1], Ronesh Sukhdeo, HBSc, MD(c) [1], Sophie Tran, MSc, DC, MD(c) [2], Sami Berihun, MD(c) [1], Cynthia Maxwell, MD, MBA [4], Rulan Parekh, MD, MSc, MPH [5]

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[4] Department of Obstetrics and Gynaecology, Women's College Hospital, University of Toronto, Toronto, Ontario, Canada
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Race has historically been used in medicine as a proxy for biological differences among individuals. Accordingly, race has been incorporated as a risk or prognostic variable within many clinical decision-making tools; notably, the now-modified estimated glomerular filtration rate (eGFR) equation. However, we now understand race as a social construct, not a biological determinant, and one that does not account for genetic variations between people. The reliance on race as a proxy for biological, genetic, or social factors can result in dangerous over- or under-estimations of population health risks. Such equations may inadvertently perpetuate racial stereotypes and systemic inequities within healthcare. There have been growing concerns regarding the use of race within clinical decision-making tools.
This systematic review aims to identify and review clinical decision-making tools that include race as an input variable, with the goal of assessing the validity of its use within these clinical algorithms.

A comprehensive systematic literature review was conducted in OVID Medline, OVID Embase, Web of Science, and PubMed. Abstracts were screened by two reviewers to determine whether they met eligibility criteria, with disagreements resolved by a third reviewer.
We identified 7084 papers through our search strategy. Preliminary findings reveal 478 research papers that developed or validated clinical-decision making tools that include race as an input variable.

Many race-based clinical decision-making tools are widely used in medicine which can perpetuate health disparities among racialized populations. It is essential to distinguish race from ethnicity and to account for social determinants of health in these algorithms, as these factors often underlie risk differences that are inappropriately attributed to race.

# UNVEILING BIASES: DEMOGRAPHIC DISPARITIES IN AI-GENERATED VS. REAL-WORLD IMAGES OF OPHTHALMOLOGISTS

Siddharth Gandhi BMSc, MD Student [1], Katherine Jung BSc [2], Michael Balas MD [3], Parnian Arjmand MD MSc FRCSC [4,5]

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[2] Faculty of Medicine, University of Ottawa, Ottawa, Ontario, Canada
[3] Department of Ophthalmology and Vision Sciences, University of Toronto, Toronto, Ontario, Canada
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**Objective:** To evaluate demographic representation in AI-generated and search-engine-sourced images of North American ophthalmologists, overall and stratified by subspecialty, while comparing these representations to actual demographic data. Design: Cross-sectional analysis conducted in September 2024. **Subjects:** 1,000 AI-generated images and 1,000 search-engine-sourced images representing ten ophthalmology subspecialties in North America were included. **Methods:** Images were collected from four AI platforms (DALL·E 3, Firefly, Midjourney, Grok-2) and four search engines (Google, Bing, DuckDuckGo, Yahoo!). Reviewers visually inspected images using a standardized framework to determine the apparent gender, race, age group, and presence of professional attire or accessories. Statistical comparisons were made between AI-generated, search-engine-sourced, and actual demographic data from the Association of American Medical Colleges (AAMC) and Canadian Institute for Health Information (CIHI). **Main Outcomes Measures:** Distributions of gender, race, age group, and professional attire/accessories present in images. These were compared to actual demographic data. **Results:** AI-generated images depicted a higher proportion of men (69%) compared to search-engine-sourced images (64%, $p<0.05$), though both were slightly lower than the actual proportion of male ophthalmologists in North America (71-73%, $p<0.001$). White individuals were overrepresented in AI-generated images (81%) relative to both search-engine-sourced images (74%, $p<0.05$) and actual demographic data (69%, $p<0.001$). Younger individuals (<50 years) were significantly overrepresented in both image sets, with 82% in AI-generated images and 73% in search-engine sourced images, compared to only 45-46% in actual demographic data (both $p<0.001$). AI-generated images also depicted ophthalmologists with significantly more stereotypical medical accessories, including stethoscopes (17% vs. 2%, $p<0.001$), glasses (45% vs. 30%, $p<0.001$), and white coats (68% vs. 53%, $p<0.001$), compared to search-engine-sourced images. **Conclusions:** AI-generated and search-engine-sourced images of ophthalmologists show notable differences from actual demographic data. These findings highlight the importance of ensuring accurate professional representation in AI-generated and online content for reliable applications in healthcare and education.

# WHAT'S TRENDING AND WHAT'S TRUE? A PILOT STUDY ON TIKTOK AND MELANOMA PREVENTION

S. O'Neill, MD Student, BSc [1], J. Smith, MSc Student, BMSc [2], M. Ward, MSc, MD [3]

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Melanoma is the third most common skin cancer and is responsible for most skin cancer-related deaths in Canada. While melanoma can occur at any age, it is particularly prevalent among adolescents and young adults (AYA) aged 15-39, where it ranks overall as the third most common cancer. The rise of social media presents unique opportunities for disseminating melanoma prevention messages. TikTok, the most globally downloaded app from 2020-2022, attracts a predominantly young audience and leverages visual content to appeal to varying literacy levels. Understanding who shares melanoma-related information on TikTok and whether their messages are rooted in established guidelines is critical. Misinformation can perpetuate harmful behaviours, while credible and engaging content can promote effective prevention strategies. A codebook was developed based on a 2019 Instagram study with adaptations made according to the Canadian Cancer Society guidelines on melanoma prevention. In this pilot study, a search of TikTok was conducted using the #melanoma hashtag and the top 20 videos were captured. The majority of content was shared by patients (45%) and healthcare professionals including physicians and nurses (30%). Interestingly, the perceived gender of the creator was woman in 90% of the content. Overall, content focused on prevention (45%), diagnosis (85%) and melanoma treatment (25%). In the content focused on prevention, all disseminated advice aligned with the guidelines set out by the Canadian Cancer Society, with recommendations of sunscreen use (77%), protective gear (22%), seeking shade (22%), and avoiding indoor tanning equipment (33%). A full study will be conducted to capture 150 videos over three future timepoints. These preliminary results help to validate our codebook and indicate that TikTok is being used as a tool to disseminate melanoma prevention information, and therefore may be an effective health promotion strategy amongst AYA.

# YOU WON'T BELIEVE YOUR AIS: ARTIFICIAL INTELLIGENCE-GENERATED MEDIA OF MEDICALIZED CHILDREN

Muhammed Mukadam, Research Assistant [1]

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**Introduction:** In recent years, images and videos depicting children in medical settings — referred to as "medical child media" (MCM)— have become central to fundraising campaigns for children's hospitals, awareness initiatives, and other public health causes. As AI software become capable of creating and distributing lifelike images of children in medicalized contexts, a critical question arises: how can society protect the rights and dignity of real children while navigating the potential benefits and ramifications of synthetic alternatives?

**Methodology:** Images of children with varying medical conditions were carefully curated through the generative AI software Midjourney® and were complied into a 1-minute video. This video was presented to a purposive sample of healthcare professionals and parents of children with medical conditions, including one with expertise in AI. Feedback on the video was captured through a focus group and assessed at two distinct moments, after the video was presented and after disclosing the images were AI-generated.

**Results:** Midjourney experienced difficulty recreating certain medical conditions (e.g. trisomy 21) or medical technologies (e.g. tracheostomy). The focus group revealed contrasting viewpoints. Concerns included feeling deceived when disclosing they were AI-generated images, misrepresentation of vulnerable groups, the inherent bias of the AI, and the use of unlicensed content in the creation of the AI tool and generation of these images. However, benefits included the potential for greater diversity among images, protection of patient confidentiality, absence of coercion or favouritism when choosing real-life patients as models, and cost-effectiveness.

**Conclusion:** Public perception showed contrasting perspectives that may inform policymakers and stakeholders on the use of MCM. Ethically, the production and use of MCM, whether involving real or synthetic images, calls into question societal responsibility toward medicalized children. How can we ensure that AI-generated media represents medical experiences accurately, respects the dignity of real individuals, and does not exploit vulnerable populations?

# EMERGING CRISIS LINE TECHNOLOGIES, AUTONOMY AND STRUCTURAL VIOLENCE: CRITICAL REVIEW AND POLICY REFORM: PERSPECTIVES FROM A (RETIRED) CAMH 988 RESPONDER

Delphine Ang, BHSc Student [1]

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Large-scale crisis line services offer unprecedented accessibility for on-demand mental health support in multiple modalities. These services aim to provide rapid support and emergency intervention for mental health crises. However, structural agendas favour protecting organizational liability, publicity and funding at the expense of user wellbeing and autonomy. Powerful surveillance tools strengthen paternalistic and opaque practices. These practices may constitute structural violence against marginalised users through inappropriate profiling and unnecessary emergency intervention, under the benevolent guise of 'active rescue'. Such practices risk exacerbating the distress and suicidality of service users. To critically evaluate the practice of nonconsensual emergency intervention (NCEI) on crisis line service users in individual risk situations and improve relevant policies with the aim of protecting user autonomy and wellbeing. A selective literature review on crisis line NCEI was utilised to gather evidence on the positive and negative effects of NCEI on service users. Bioethical theories of autonomy were applied to critically evaluate current NCEI practices. While peer-reviewed articles were prioritised, the dearth of research necessitated the usage of non-peer reviewed resources such as advocacy reports, news articles and Reddit forums. The CAMH 988 service is used as an archetype due to its national scale, adherence to current NCEI standards and technological capabilities. Trans Lifeline is used as a comparison due to its outspoken stance against NCEI, contrary to the industry standard.From existing evidence, ethical evaluation and service comparison, policy changes are suggested with the aim of protecting user autonomy. Existing knowledge gaps relevant to policymaking are highlighted. Potential policy implications are briefly explored. Dismantling structural violence inherent in crisis line services could restore user autonomy, dignity and safety in such virtual spaces. Clarification of NCEI policies may improve the quality and consistency of crisis line services and reduce the burden of moral distress on service providers. Such policy reforms would shift industry standards towards a focus on user autonomy, away from the current model of paternalism and structural agendas.

# STRENGTHENING LOW-COST PROSTHETIC SOLUTIONS IN THAILAND/MYANMAR THROUGH ACADEMIC INSTITUTION-NGO COLLABORATION

Emese Elkind, Biomedical Computing Student [1], Olivia Radcliffe, MSc Student [1], A. T. Tun, 3D Project Manager [2], Laura Connolly, PhD Student [1], Colleen Davison, Associate Professor [3], Eva Purkey, Associate Professor [4], Gabor Fichtinger, Professor [1], Kanchana Thornton, Director [2]

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The ongoing civil war in Myanmar, along with the related coup in 2021, have displaced millions of refugees to Thailand, where many lack immigration status and cannot access medical care. The Burma Children Medical Fund (BCMF) addresses these challenges by providing funding and support for medical treatment, including a 3D-printed prosthetics program initiated in 2019 for individuals with limb loss. Due to limited Computer-Aided Design (CAD) experience, BCMF staff have turned to open-source prosthetic designs. We aim to establish an academia-NGO partnership to strengthen BCMF's efforts, provide technical support, and broaden outreach to underserved communities needing low-cost, body-powered prosthetic devices. Our collaboration includes Queen's University volunteers traveling to BCMF's workshop for on-ground support and continuing remote assistance. As BCMF utilizes open-source prosthetic designs from platforms such as Thingiverse, we wanted to maintain the 3D printing workflow while addressing gaps in open-source prosthetic offerings. We identified three critical needs: devices for short-below-elbow amputees, above-elbow amputees, and a detachable, rotatable wrist. In response, we modified BCMF's most used prosthetic design to customize the model for these specific needs. We conducted iterative testing for durability and comfort, ensuring constant communication between staff and recipients, allowing patient feedback to guide our designs. Over the past two years, Queen's University has sent two volunteers to BCMF, with another planned for this year. So far, five recipients use our short-below-elbow prosthetic design, and one has received a quick connect wrist. In addition, we are currently collaborating remotely on a new prosthetic design for above-elbow amputees. This partnership between Queen's University and BCMF improves access to low-cost prosthetic solutions, expands BCMF's recipient pool, and demonstrates the potential for future partnerships between educational institutions and NGOs to address disparities in healthcare access.

# ENERGY USAGE REDUCTIONS AND COST SAVINGS WITH PORTABLE MRI: IMPROVING ACCESS TO CARE

Zier Zhou, MD Student [1]. Nawab Azizi, MD Student [1], Alex Ibrahim, MD Student [1], Omar Islam, MD, Associate Professor [2]

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Magnetic resonance imaging (MRI) is a key diagnostic tool in medicine, but conventional machines have high purchase and operational costs, making them difficult to implement in resource-limited environments. Portable MRI (pMRI), however, operates at significantly lower magnetic field strengths, consuming less energy. Although its indications are limited, this technology helps assess stroke, hemorrhage, and hydrocephalus at the bedside, minimizing adverse events from moving critically ill ICU patients. To explore the feasibility of pMRI implementation to improve access to care, we evaluate the energy usage and cost savings of pMRI compared to their regular counterparts. A literature search was conducted in the Embase and PubMed databases to identify relevant English-language articles published from 2014 to present. The following keywords and/or subject headings were used: "MRI", "portable MRI", "ultra-low field MRI", "energy", "power", "cost", and "feasibility study". Original research and review articles were screened and selected based on relevance and quality. Data was extracted to determine energy usage and cost savings. Approved by the FDA and Health Canada, Hyperfine™ pMRI is a 64 mT scanner that has been used for neuroimaging in recent years. Using values from existing literature and assuming 13 hours of daily operation, this pMRI consumes 21.45 kWh daily, which is approximately 16.9 times less than a fixed 1.5T MRI and 24.7 times less than a 3T MRI. Annual cost savings from energy use were calculated to be $32,056.97 CAD compared to 1.5T MRI and $47,394.36 CAD compared to 3T MRI. Overall, portable MRI systems show promise in saving substantial energy and reducing associated costs to improve sustainability and health equity, especially in remote regions with limited resources. With the increased access to diagnostic imaging and decreased need for patient travel, this technology is expected to enhance health outcomes.

# DIGITAL HEART FAILURE SCREENING PATHWAY IN A REMOTE INDIGENOUS COMMUNITY: BRIDGING HEALTH GAPS AND PROTECTING HUMAN RIGHTS

Andy Lee, MD Student [1], Mali Worme, MD MPH [2]

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**Background/Objective:** First Nation populations in the James and Hudson Bay (JHB) region face disproportionately high burdens of cardiovascular disease. Limited access to specialized cardiac care in remote communities can undermine the right to health equity. This initiative aimed to implement a digital heart failure (HF) screening pathway in partnership with the Weeneebayko Area Health Authority (WAHA) and the University Health Network (UHN) to improve early detection, timely intervention, and health outcomes. **Methods:** From January to June 2024, the UHN/WAHA team co-developed an HF screening protocol aligned with Canadian Cardiovascular Society guidelines. Primary care providers at WAHA's Moose Factory site referred 113 patients for HF evaluation. A combination of on-site and virtual consultations via the Ontario Telemedicine Network (OTN) supported diagnosis, triaging, and management. Patient characteristics and outcomes were analyzed through retrospective chart reviews. **Results:** Of the 113 patients referred, 72 were evaluated by UHN cardiology—either in-person or through telemedicine—resulting in more accurate diagnoses and tailored treatment plans. The mean age was 60.2 years (range 31–87), with 64% male and 36% female. Common reasons for referral included HF assessment (66.7%), diagnostic evaluation (76.4%), and medication titration (65.3%). Following telemedicine assessments, 40.3% of patients enrolled in a remote monitoring program (Medly), facilitating ongoing digital support. **Conclusion:** Integrating digital health solutions within remote First Nation communities can reduce barriers to specialist cardiac care and advance the right to equitable health services. Ongoing efforts focus on refining referral pathways, expanding digital infrastructure, and strengthening partnerships to sustain long-term improvements in cardiovascular care access.

# VISUALIZATION OF THE PERIPHERAL ZONE FOR TRANSRECTAL ULTRASOUND GUIDED PROSTATE BIOPSY

Catherine O. Wu [1], B. Diao [2], L. Groves [1], T. Ungi [1], R. Kikinis [3], P. Mousavi [1], G. Fichtinger [1]

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The diagnosis and treatment of prostate cancer are reliant on accurate biopsy of the prostate, the systematic sampling of its anatomical zones under transrectal ultrasound (TRUS) guidance. Unfortunately, TRUS offers poor appreciation of the prostate anatomy zones, in addition to low sensitivity in showing early-stage cancerous foci growing in these zones. Recently, "fusion biopsy", which consists of spatial navigation that registers TRUS with multi-parametric magnetic resonance imaging (MRI), has been emerging as a new alternative for prostate biopsy. This method possesses a lower expertise barrier, allowing less experienced practitioners to perform the procedure with improved accuracy and guidance. However, this technique requires technology which cannot be universally translated due to the cost of the required equipment. Thus, in low-resource centres in the sub-Saharan region, the procedure is still reliant solely on TRUS guidance. This presents a challenge as the increasing biopsy rates, driven by improved screening awareness, generates a growing need for clinicians who can perform an effective prostate biopsy using sole TRUS guidance. Through this work, we propose and demonstrate a low-cost methodology to implement software capable of automatically reconstructing a visual overlay of the prostate capsule and the prostate's peripheral zone (PZ) onto TRUS. To evaluate the visualization, we produce twelve TRUS volumes overlaid with their own corresponding PZ from MRI as the ground truth, and on each of the same volumes, a PZ from another patient overlaid. In pixel to pixel comparison of the resulting models to their ground truths, we achieve a mean dice score of 0.61 ± 0.04. To determine the effectiveness of our workflow, we also complete a qualitative analysis of the visual accuracy and usefulness of the PZ overlays. Through this work, we demonstrate the use of machine learning, segmentation, and registration on different imaging modalities, illustrating the potential for developing rapid and low-cost improvements to prostate biopsy.

# ASSESSING THE EFFICACY OF 'MHEALTH' SUPPORTED PATIENT NAVIGATION TOOLS IN INCREASING FOLLOW-UP TO CERVICAL CANCER SCREENING IN TANZANIA

M. Sanjayan, BHSc Student [1], M. Chelva, PhD [1,2], K. Yeates, MPH, MD [1]

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Undergraduate Author Email: 20ms136@queensu.ca

Tanzania has a high burden of cervical cancer (CC), with the fourth highest incidence rate in the world. Despite improvements in screening methods, loss of follow-up for CC is high. Many studies describe the potential of using patient navigation (PN) tools to increase linkage to care; however, there is limited testing and comparison on the efficacy of various PN strategies. Furthermore, the variability in the application of nurse-assisted or SMS-assisted types of PN in existing studies highlights the need to compare these strategies and determine their feasibility. The primary objectives of this study are to 1) determine the efficacy of mobile health assisted PN on follow-up rates to CC screening, 2) evaluate their potential to be incorporated as added features to the WEMA application, and 3) determine the feasibility these strategies among Tanzanian women and healthcare providers. This study is being conducted among HPV-positive women, aged 25 to 49 years. Each participant is randomized to one of four conditions: 1) no navigation, 2) nurse-assisted navigation, 3) SMS-assisted navigation, and 4) a combination of both strategies. To learn more about the acceptability of the various PN strategies, 10 to 15 participants from each condition, 10 healthcare providers, and government stakeholders will participate in focus group discussions and semi-structured interviews. All qualitative data will be collected after the program has been implemented for 6 months. The results of this study are expected to inform stakeholders and policymakers on the use of PN tools to improve follow-up to CC screening in Tanzania, and to gain diverse perspectives on improvements that can be made to these interventions to ensure long-term acceptance in Tanzania's National Cervical Cancer Prevention program. Although results are pending, this research holds promise in addressing the need to eliminate cervical cancer as a public health problem.