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HEAS x Medicine4Youth McMaster 2025-2026 Research Case Competition Booklet

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Abstract
The HEAS X Medicine4Youth McMaster research case competition was a collaboration between two established clubs at McMaster University, Medicine4Youth and Health, Equity, and Advocacy in Science. The competition provided McMaster students with the opportunity to delve into and explore local public health challenges in Ontario. They got a chance to present their proposed solutions to a public health issue of their choosing to a panel of expert judges consisting of MD and PhD professors at McMaster University. The top teams were identified according to the quality of their written and oral presentations, and their work has been included in this abstract booklet. Our case competition aimed to shed light on the most pressing local healthcare issues to foster deeper understanding, critical thinking and growth in our future physicians and healthcare workers. Moving forward, the Research Case Competition will continue to grow and expand to accommodate more student participants and shine a light on more local healthcare issues that challenge our healthcare system.

Keywords: undergraduate research; public health; healthcare; McMaster University

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Conference Abstracts
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HEAS X Medicine4Youth McMaster Research Case Competition Abstracts

Language as a Barrier: A Digital Mental-Health Model for Low-Income Newcomer Communities in Toronto

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Introduction: Toronto's low-income newcomer communities face persistent mental-health inequities driven by language barriers, digital illiteracy, and limited access to culturally appropriate care. In neighbourhoods such as Thorncliffe Park, where over 70% of residents speak a first language other than English, there is a reduced ability to understand public-health information, navigate digital platforms, and access timely healthcare support. This leads to delayed care and mental-health disparities among Toronto residents.
Methods: This proposal presents a digitally integrated task-sharing model designed to reduce language-based barriers to mental-health access. The initiative starts with training multilingual non-specialist providers, including peer workers, nurses, and community volunteers, to deliver Behavioural Activation (BA), an evidence-based psychotherapy that improves mood by helping individuals identify meaningful activities, schedule goal-directed routines, and gradually increase daily engagement. This approach has been validated in the global SUMMIT trial.
A multilingual mHealth application will be developed to support translated BA worksheets, psychoeducation, voice-guided instructions, appointment reminders, and mood-tracking tools. Implementation will begin by introducing biweekly virtual BA sessions, during which multilingual non-specialists will guide clients through BA tasks and monitor progress in outcomes such as symptom change, engagement, and digital confidence.
Results: The model is expected to increase access to psychotherapy by combining multilingual providers with an accessible digital platform. Implementation aims to enhance client engagement, reduce communication barriers, and empower those in communities with barriers to mental health care.
Conclusion: Through the combination of a task-sharing model with an accessible digital mHealth system, this proposal offers a suitable pathway to address gaps in mental health care within Toronto's newcomer communities. The model's main goals are to expand care capacity, reduce the language barrier for those seeking healthcare, and support equitable access to mental-health services for all Toronto citizens.

Bridging Digital Inequity in Northern Ontario: Implementing Community-Based Digital Access Points in Greater Sudbury

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Introduction: Greater Sudbury contains some of Ontario's most socioeconomically marginalized neighbourhoods, including Donovan, Flour Mill, and Copper Cliff. These areas rank high on the Ontario Marginalized Index for material deprivation and geographic isolation. A critical and under-recognized driver of health inequity is digital access barriers - limited affordable internet, low digital literacy, unstable devices, and lack of private spaces for virtual care. As Ontario expands digital health systems such as virtual primary care, online forms, MyChart portals, and virtual mental-health platforms, residents facing digital exclusion experience missed appointments, limited preventative follow-up, delayed prescriptions, and increased reliance on emergency departments.
Methods: A needs assessment drawing from regional broadband data, health-equity indicators, and community-infrastructure mapping informed the development of Digital Access Points (DAPs): small, community-embedded stations designed to reduce digital barriers in high-need neighbourhoods. DAPs are housed in existing infrastructures such as libraries, community centres, municipal housing buildings, and community health centres. Each DAP includes: (1) a private virtual-care room with computers and basic self-assessment tools; (2): trained digital navigators who assist with setting up patient portals, completing e-referrals, booking virtual appointments, and accessing mental-health platforms; (3) drop-in hours coordinated with local primary-care teams and Ontario Health Team workflows; and (4) a digital health-literacy library offering accessible information on medications, disease management, and prevention.
Results: DAPs are expected to increase successful virtual-care completion, improve chronic-disease monitoring, and reduce preventable emergency-department visits. The model is low-cost and scalable, leveraging existing buildings, staff, volunteers,

and community partnerships. Alignment with programs such as the Community Paramedicine Health Promotion Program further strengthens implementation feasibility.
Conclusion: Digital Access Points present a sustainable, community-anchored approach to reducing digital inequity in Greater Sudbury. By addressing foundational access barriers, DAPs support stronger continuity of care, greater engagement in preventive and virtual services, and more equitable health outcomes for marginalized northern communities.

Reducing Cardiovascular Disease within Indigenous Communities in Thunder Bay through Mobile Testing: A Proposition to Address Healthcare Inequities

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Introduction: The abundance of cardiovascular disease (CVD) in northern rural areas of Ontario gives rise to public health concerns for many residents. With the focus on Indigenous communities in Thunder Bay, this issue can be attributed to restricted transportation caused by low-income and telecommunication barriers. Current treatments, such as developing a cardiovascular surgery program, fail to examine the influence of social inequities on access to blood testing and treatment. To overcome this, our proposal aims to target preventative strategies through a travelling CVD testing system.
Methods: The proposal aims to expand mobile testing services, increasing access for clinical testing in Thunder Bay's Indigenous communities. Our proposal will be discussed with the Canadian federal government and the Matawa chief council, representing Treaty 9 and the Robinson-Superior area for communication, trust, and funding. LifeLabs will also be contacted for a partnership to implement their established mobile clinics and testing services in Thunder Bay. Representatives from the Indigenous healthcare organization, *Anishnawbe Mushkiki*, will be contacted to establish a relationship with Fort William, Thunder Bay's largest Indigenous community. LifeLab technicians, trained volunteers, and Indigenous health care practitioners will be recruited to operate this mobile service through partnership and communication. This plan will be implemented over 5 years to all other 23 Thunder Bay reserves, then continued long term.
Results: The success and sustainability of our plan will be monitored monthly by updating and evaluating the training of recruited individuals, and annually tracking fatal CVD rates of Indigenous communities in Thunder Bay. With mobile testing, high levels of CVD will be detected and treated early on, reducing the risk of late detection and fatality.
Conclusion: By improving the accessibility of preventative care to this area, the income disparity will be addressed by increasing health care access to Indigenous communities.

The PAD Initiative: Improving Prenatal Care Access in Indigenous Thunder Bay Communities

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Introduction: Lack of accessibility to prenatal healthcare in Indigenous Thunder Bay communities due to low-income disparities, is the root cause of Indigenous women being required to engage in birth evacuation. The federal birth evacuation policy requires Indigenous women living in remote locations to relocate to urban hospitals weeks prior to birth, often resulting in adverse health outcomes such as infant mortality and morbidity. In a 2022 national survey, 93.6% of respondents agreed that the Canadian government should act to end routine birth evacuations. Moreover, 95.8% of respondents supported ensuring that Indigenous pregnant individuals should have access to qualified Indigenous midwives in their communities.
Methods: The solution is to bridge the gap between Indigenous and Western healthcare to increase accessibility to prenatal care and reduce birth evacuation. The plan of action is prevention, accessibility, and desire – the PAD initiative. Prevention of inadequate or uninformed prenatal care involves more education about prenatal care and strengthening pathways to midwifery. This will be accomplished by recruiting volunteer medical professionals to conduct seminars in high schools, and through implementing a night school to teach midwifery courses with the integration of Indigenous culture. Accessibility to prenatal care involves making prenatal care available within the community. This includes establishing mobile clinics with Indigenous midwives, and eventually fixed Indigenous birth centres in the community. Desire for Indigenous women to engage in prenatal care is supported by incorporating Indigenous practices into care. This involves training current midwives about Indigenous practices, and gradually increasing the number of Indigenous midwives.

Results: The effectiveness of the initiative can be measured through surveying the experiences of women in receiving prenatal care.
Conclusion: Overall, increased interest in pursuing midwifery improves the provision of local reproductive care, necessary resources for the pregnant Indigenous individuals in Thunder Bay.

The No One Left Behind Model – Combined Approaches Addressing Health Disparities in Low-Income Thunder Bay Communities: A Research Study

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Introduction: Thunder Bay experiences some of the deepest income-based health disparities in Ontario. Data from Public Health Ontario revealed residents in Thunder Bay's marginalized codes face worse health outcomes than those in more affluent ones. The primary contributor to Thunder Bay's inequities is Ontario's capitation based primary care model. Traditional capitation models pay physicians based on the number of patients they roster, rather than the intensity or complexity of care required. Capitation disincentivizes physicians from accepting complex, low-income patients, who express requiring more time and coordination. Instead, healthier, relatively higher-income younger patients centred around specific communities are preferred.
Methods: This approach outlines a two-part solution: (1) The proposal of a longitudinal family physician (LFP) model *specifically* in areas of high disparity, adapted from reforms in British Columbia, which integrate case-complexity into the capitation system, no longer making it solely based on patient count. This model also creates opportunity for higher earning potential, incentivizing current Thundery Bay family doctors to move off the capitation model and for new doctors to relocate to Thunder Bay. (2) The use of NP/PA's in family clinics. By including just one or two NP's and PA's in each clinic, the number of primary care providers available to see patients essentially doubles or triples.
Results: This dual solution will make the current capitation model more equitable across all income groups, while also ensuring overall system capacity is strengthened; the system will continue to provide timely, high-quality care for both higher and lower-income residents, helping facilitate the previous, equitable redistribution of already-limited resources.
Conclusion: By implementing the LFP model, less doctors will use the capitation model, more doctors available to accept patients, and more primary care providers who are able to see patients. These solutions together will help ease the health disparity found in this region.

Conflicts of Interest
The authors declare that they have no conflicts of interest.

Authors' Contributions
AD, AAJ, and AA: Planned and oversaw the entire program, conceptualized and organized the research conference, reviewed and selected top abstracts, and provided final approval for publication.
AAJ and AD: Assisted in securing and communicating with the guest judges and mentors.
AA: Gathered and prepared all abstracts for publication, organized and put together this booklet.
HA, HJ, and AFJ: Assisted in preparing and organizing the conference before and on the day of, assisted in reviewing and identifying top abstracts.

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