

FSC Evaluation Final Report

Accelerating the Appropriate Adoption of Artificial Intelligence in
Healthcare

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Executive summary

Despite its ability to positively transform healthcare, a notable reluctance from healthcare providers to adopt AI within their practice is observed due to limited exposure and understanding of this technology (Wiljer et al., 2021). To tackle these challenges and capitalize on the potential of AI in healthcare, the "Accelerating the Adoption of AI in Healthcare" initiative was conceived. The central tenets of this project revolve around cultivating the necessary mindsets, skillsets, and toolsets essential for the seamless integration of AI. To realize this ambitious goal, a meticulously structured, multi-stepped, integrated knowledge translation approach was adopted, encompassing Scoping Reviews, Needs Assessments, Symposia, and four distinct programs: Innovation Hub, Clinician Champions and Healthcare Leaders, and Specialty Specific Programs, spanning eight iterations. These educational initiatives all focused on three core areas:

1. Developing and evaluating knowledge translation interventions
2. Examining contextual factors influencing program success
3. Identifying barriers and facilitators of program implementation

Critical to the project's realization were various resources and inputs, including contributions from stakeholders such as subject matter experts and project partners who invested their time and financial resources to develop the program. This collaborative effort paved the way for successful implementation and noteworthy outcomes on an individual, institution, and system level. The mindset initiatives, including needs assessments, scoping reviews, and environmental scans, have strategically pinpointed gaps and challenges in AI education for healthcare professionals. This foundational information enables us to tailor our program, curriculum, content, and resources to effectively address these gaps and enhance the impact of AI educational initiatives. Individually, the project empowered healthcare professionals by defining AI competencies and providing education opportunities. The evaluation results have high engagement and emphasize the inclusivity of the project's initiatives. It is essential to highlight the active participation of equity-seeking populations, including women, racialized individuals, and Indigenous communities. Institutionally, the project fostered a culture of trust and transparency, nurturing a patient-centric approach and confidence in AI systems. Systemically, the program gained interest from several healthcare providers signaling a shift towards the healthcare sector's greater readiness to adopt AI technologies.

Program evaluations served as a compass for refining directions, forming new partnerships, and uncovering lessons for service delivery. Ongoing collaboration with esteemed partners ensures the integration of project elements into various initiatives, thus expanding its reach and impact.

The lessons learned from the overall project include dynamically engaging stakeholders, recognizing the pivotal role of education in translating competencies to practical application, addressing ethical and responsible use of AI through education, and factoring in the audience's time constraints to shape program design. These insights guide future program development and governance across multiple levels.

In summary, the "Accelerating the Adoption of AI in Healthcare" initiative responds to the healthcare industry's hesitancy towards AI. With a multi-faceted approach, rigorous evaluation, and stakeholder collaboration, the project has pioneered the path towards a healthcare sector empowered to harness AI's potential and drive improved outcomes.

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Background

The healthcare industry has witnessed remarkable advancements in artificial intelligence (AI), promising significant improvements in patient care, quality, and cost-effectiveness. AI has found successful applications in various fields, including medical imaging, pharmacy, personalized medicine, and early disease detection (Lee and Yoon, 2021). However, despite the growing interest and potential benefits of AI, healthcare providers have displayed hesitancy in adopting this technology within their workplaces (Wiljer et al., 2021). Several factors contribute to this reluctance, including a lack of trust in unfamiliar and complex technology and limited experience in utilizing AI. The successful implementation of even the most advanced AI technology hinges on building user trust, which can be achieved through adequate education and understanding of AI (Wiljer et al., 2021).

In today's rapidly changing healthcare environment, it is crucial to highlight the importance of healthcare professionals embracing AI. Their adoption of AI technologies and tools is pivotal for enhancing patient care and healthcare outcomes, ultimately leading to more efficient and effective healthcare systems. Several factors contribute to this reluctance, including a lack of trust in unfamiliar and complex technology and limited experience in utilizing AI. The consequences of this hesitancy are significant and can lead to missed opportunities for improved patient care, enhanced diagnostics, and more efficient healthcare systems. In an ever-evolving healthcare landscape, the reluctance to embrace AI may result in healthcare providers compromising the delivery of optimal care and experiencing delays in service.

To address these challenges and seize the opportunities presented by AI in healthcare, the "Accelerating the Adoption of AI in Healthcare" project focused on empowering point-of-care healthcare providers and their leaders within the health system. The project aimed to accelerate the appropriate adoption of data-driven and AI-enhanced care by nurturing the mindsets, skillsets, and toolsets necessary for seamless AI integration (Wiljer et al., 2021). By designing and evaluating knowledge translation interventions and examining contextual factors, the project sought to overcome barriers and facilitate the successful adoption of AI technologies, ultimately leading to improved patient care and healthcare outcomes.

This project, guided by a comprehensive knowledge creation and action cycle, is a unique and pioneering initiative in healthcare education and AI adoption. In response to healthcare professionals' needs and challenges with AI implementation, it addresses a critical gap observed in the existing landscape. While other programs may touch on aspects of AI, these educational initiatives distinctly focus on meeting healthcare professionals precisely where they are in terms of AI adoption and competency. It recognizes healthcare professionals' diverse and complex needs across various fields, ensuring that the approach to AI adoption is adaptable, responsible and practical. As per our extensive scan, there currently needs to be more programs that comprehensively address these vital aspects of AI adoption in healthcare. Thus, this project's distinctiveness strengthens its importance and relevance in facilitating successful AI integration within healthcare systems.

Project Population

The project's engagement process allowed us to gather insights from key stakeholders representing different cross-sections of the healthcare system, ensuring that the educational interventions were co-created with the input of diverse voices. It is essential to note that while the initial program was open to general leaders and point-of-care providers across Canada, including Ontario, Quebec, British Columbia,

and Alberta, later iterations of the certificate programs focused on professionals within the Medical Imaging and Radiation Medicine and Mental Health fields. Through these efforts, we aimed to benefit most, if not all, of the targeted populations mentioned above. Please refer to Tables 1 and 2 for detailed demographic information on participants.

Publicly funded healthcare within Canada is universal and intended to include all Canadians (Marchildon and World Health Organization, 2013). Despite universal access and standard of care, equity challenges remain. The project aimed to serve a diverse and inclusive population representing various demographics within the publicly funded healthcare system in Canada. The target population included healthcare providers and leaders from different age groups, ethnic backgrounds, and socioeconomic statuses. We plan to acknowledge and address the systemic inequity for underrepresented and marginalized communities through an engagement process designed to enable the project team to surface critical stakeholder voices from different cross-sections of the systems and partner in co-creating educational interventions.

Geographical Locations: The project's reach extended to all regions of Canada, including both urban and rural areas. We aimed to ensure equitable access to AI education and coaching interventions for people from rural, remote, and northern communities. Additionally, due to widespread recruitment online strategies, we were able to engage participants globally, expanding the project's impact beyond Canadian borders.

Occupations and Sectors: The project's activities cater to various healthcare occupations and sectors. It targeted professionals in healthcare, including physicians, nurses, allied health professionals, administrators, and those in industry sectors like professional, scientific, and technical services and educational services.

As part of accelerating AI adoption in healthcare, we strategically focused on later iterations of the certificate programs to cater to leaders within the Medical Imaging and Radiation Medicine and Mental Health care fields. This approach allowed us to provide specialized and targeted educational interventions to address unique AI integration challenges in these disciplines.

Purpose

The project conducted by this grant served multiple purposes and aimed to provide valuable insights to partners, key project stakeholders, and external stakeholders. The evaluation findings were emphasized and intended to inform decision-making, guide program improvements, and support the overall success and sustainability of the AI education and coaching program.

To ensure a robust and validated approach, the knowledge transfer cycle framework was employed to transform the healthcare industry's mindset, skillset, and toolset, following a 3-step rapid prototyping approach (Wiljer et al., 2021). Stakeholders were actively involved and engaged throughout the process, beginning the journey of shifting their mindsets, skillsets, and toolsets (Wiljer et al., 2021). Design workshops were thoughtfully conducted to gather input and perspectives from relevant stakeholders, including project partners, healthcare professionals, and patient partners. These workshops successfully facilitated collaborative discussions to ensure the evaluation goals aligned with the project's objectives and met the information needs of the stakeholders. Additionally, one-on-one consultations were carefully

led with subject matter experts and evaluation specialists to refine and validate the evaluation goals, ensuring they were comprehensive and meaningful.

By undertaking a robust evaluation, we aimed to gather evidence on the educational interventions' effectiveness and impact, assess the program's reach and adoption, identify barriers and facilitators to AI adoption, and gain insights into emerging learning needs. These findings were strategically envisioned to be used by partners and key stakeholders to make informed decisions regarding program implementation, resource allocation, and scalability. The evaluation outcomes also provided crucial guidance in refining and optimizing the educational interventions based on evidence-based insights, ensuring the program's continuous improvement.

Furthermore, the evaluation findings were instrumental in engaging external stakeholders such as policymakers, healthcare organizations, and professional associations. The evidence generated through the evaluation effectively communicated the value and impact of the program, demonstrating its effectiveness in addressing the slow adoption of AI technologies in healthcare. These insights aimed to generate interest, support, and potential collaborations from external stakeholders further to promote the integration of AI in healthcare practice.

In summary, the evaluation in the grant report served to inform decision-making, guide program improvements, and provide evidence of the program's impact. The evaluation goals were developed through design workshops and stakeholder consultations, ensuring validity, relevancy, and alignment with project objectives. The findings were intended to be used by partners, key stakeholders, and external stakeholders to make informed decisions, refine interventions, and promote the integration of AI in healthcare.

Project Objective

The project's primary objective was to accelerate the appropriate adoption of data-driven and AI-enhanced care within the healthcare system by transforming the mindsets, skillsets, and toolsets of healthcare providers and leaders. To achieve this goal, we adopted a multi-stepped approach consisting of four (4) distinct programs and eight (8) iterations, all centered around three core areas.

1. *Developing and Evaluating Knowledge Translation Interventions:* The first objective focused on creating and assessing knowledge translation interventions to leverage data and AI to optimize healthcare delivery. These interventions primarily took the form of educational certificate programs and symposiums. These educational initiatives emphasized nurturing the skillset and mindset of individuals in the healthcare workforce. Additionally, we developed an innovation hub that served as a mentorship and coaching program specifically designed to enhance the toolset of clinicians.
2. *Examining Contextual Factors Influencing Program Success:* The second objective involved examining contextual factors influencing the success of the programs and the adoption of AI initiatives in healthcare. This comprehensive assessment allowed us to gain insights into the various factors influencing the outcomes and effectiveness of the interventions.
3. *Identifying Barriers and Facilitators of Program Implementation:* The final objective explored the barriers and facilitators of implementing AI education programs. We employed research methods such as pre-post surveys and semi-structured interviews following each program to gather relevant data. The RE-AIM framework guided all our evaluations, helping identify

considerations for future iterations, including reach, effectiveness, accessibility, implementation, and maintenance (Holtrop et al., 2021). These data collection activities provided valuable insights into the aspects of the learning environment that supported or hindered the program's success and participants' learning experience.

Throughout the project, we applied rigorous qualitative research methodologies to gather and analyze data, allowing us to gauge the impact of educational interventions on healthcare providers and leaders. By addressing the project's objectives, we aimed to create a transformative impact on the healthcare industry, promoting the effective and efficient integration of data-driven and AI-enhanced care for better patient outcomes and healthcare delivery.

Assumptions

1. Collaboration with key stakeholders, including health professionals from various specialties and stages in their careers, is crucial to catalyze change in the project.
2. The project assumes that instructional designers and Subject Matter Experts (SMEs) will continuously update and refine training modules based on the evolving evidence base and innovations.
3. Effective partnerships or coalitions are expected to address the challenges and opportunities presented by the historical use of data and technology in different practice settings and health organizations (e.g., academic/teaching hospitals, community health organizations, mental health/addictions centers, long-term care facilities, team and solo practices, etc.). This diversity influences the comfort level of health professionals in adopting and integrating new technologies such as AI.

Contextual Factors:

1. *Type of Health Professional*: The diverse backgrounds of health professionals, including physicians, nurses, allied health professionals, and specialists, may require tailored approaches to meet their identified needs and preferences for learning and technology integration.
2. *Specialty*: Different medical specialties may have varying levels of exposure and experience with data-driven technologies. For example, fields like medical imaging, pathology, and personalized medicine may be more familiar with AI applications than other specialties.
3. *Stage in Career*: Health professionals at different stages of their careers, such as early-career professionals, mid-career practitioners, and senior experts, may have different levels of familiarity and comfort with AI and data-driven practices.
4. *Practice Setting/Health Organization Type*: The historical use of data and technology can vary across different practice settings and health organizations. For instance, academic and teaching hospitals might have greater exposure to evaluation and technological advancements, while community health organizations may have different technological infrastructure and data management practices.

The project acknowledges that these contextual factors can influence the comfort level of health professionals in adopting and integrating new technologies like AI. Thus, the project aims to consider these diverse factors and tailor its approach to maximize engagement and successful implementation.

Stakeholders

Stakeholders were actively engaged throughout the project, providing feedback during the design and development of program curricula. Strategies involved key stakeholders and subject matter experts, seeking their input at each stage and each stage and disseminating findings to optimize educational interventions and address emerging learning needs (Wiljer et al., 2021). Stakeholders for the FSC project were grouped into three categories: evaluation partners, health professionals, and educators. Stakeholders involved in the development and assessment of knowledge products for enhancing healthcare delivery through AI include:

Table 1: Stakeholders Engagement

Project Partners	Healthcare Professionals	Educators
<ul style="list-style-type: none"> – Vector Institute for Artificial Intelligence – Future Skills team – Associated Medical Services Healthcare – The Centre for Addictions and Mental Health – Digital Health Canada – Mental Health Commission of Canada – Michael Garron Hospital – Ontario Association of Social Workers – Ontario Nursing Informatics Group (ONIG) – Royal College of Physicians and Surgeons of Canada – Sick Kids Hospital – University of Toronto—Institute of Health Policy, Management & Evaluation – Trillium Health Partners – Joint Department of Medical Imaging 	<ul style="list-style-type: none"> – Healthcare providers – Health system leaders – Clinicians – Patient partners – Scientific advisory council – University Health Network (UHN) 	<ul style="list-style-type: none"> – Program advisory council – Michener Institute of Education at UHN – The Institute of Education Research (TIER)

Evaluation partners included Future Skills Canada and the Vector Institute, providing AI expertise. Various other projects and patient partners also collaborated. Health professionals, including clinicians and health system leaders, actively participated during the grant period. Educators from TIER and the Michener Institute of Education at UHN contributed their expertise in program content and delivery. The School of Continuing Education and Vector collaboration has resulted in the development of educational programs tailored to meet the specific needs of individuals, teams, and organizations within the healthcare

sector. These programs have demonstrated remarkable success, being successfully scaled at both national and international levels, thus underscoring the relevance and efficacy of the partnership's educational expertise.

The evaluation process is underpinned by ongoing consultation, feedback, and collaboration with stakeholders and partners, ensuring that the AI educational program aligns with their needs and leverages their expertise. Regular design workshops, one-on-one consultations, and committee meetings have been diligently conducted to develop and validate the evaluation's goals. These processes have facilitated the refinement and optimization of educational interventions and leveraged the insights and perspectives of all stakeholders, thereby ensuring the program's effectiveness and relevance.

Project Impact

The success of this project was articulated with a focus on transforming the mindset, toolset, and skillset of healthcare providers and their leaders regarding AI technologies in healthcare (Wiljer et al., 2021). Through various program iterations, the overarching goal was to promote responsible and equitable AI adaptation in healthcare.

Specific measures of success included increasing AI literacy among healthcare providers (HCPs), equipping them with the knowledge and skills needed for competent and safe practice in the context of AI (Wiljer et al., 2021). Additionally, the project aimed to foster a shift in the conversation about AI technologies in healthcare, emphasizing responsible and equitable AI integration (Wiljer et al., 2021). This entailed engaging stakeholders in meaningful discussions and creating a culture of trust and transparency around AI.

The project's success was closely tied to the implementation of knowledge translation initiatives for the adoption and implementation of AI in clinical practice. These initiatives aimed to enhance the understanding and practical application of AI technologies among HCPs. Furthermore, the project team aimed to disseminate successful interventions and educational tools across different healthcare organizations to support the broader adoption of AI (Wiljer et al., 2021).

The overall project's success was evaluated based on the impact of the interventions in enhancing AI literacy among HCPs, promoting responsible AI practices, fostering a culture of trust, and facilitating the integration of AI in healthcare. These objectives were critical in achieving the project's ultimate vision of advancing the appropriate and effective use of AI technologies for better patient outcomes and healthcare delivery.

Methods

Implementation (Process)

The needs assessment highlighted the importance of accreditation and multidisciplinary educational teams that can speak to various aspects of AI implementation. In addition, it discussed the importance of flexibility in hopes of not overwhelming participants who may have competing commitments. The project partners expressed confidence in the project's potential to effectively address the identified needs by ensuring the active involvement of many subject matter experts (SMEs) throughout the program. The

SMEs comprising clinicians, industry leaders, and researchers, collaborated as a multidisciplinary educational team to provide diverse perspectives on AI-enabled care. This composition of experts was deemed crucial based on the needs assessment findings, which emphasized the significance of a multidisciplinary approach for successfully implementing an AI program.

Another identified need among the target population was the requirement for flexibility within the course structure to accommodate participants' busy schedules. To address this, several measures were implemented during the program:

- The courses were delivered virtually in the evening, allowing participants to conveniently attend sessions alongside their work commitments.
- Recorded lectures were made available to students who desired content review or needed to catch up on missed lectures.
- A flexible approach was adopted by allowing extensions or waivers on specific assignments, mitigating the stress and pressure associated with the course.

Additionally, a few of the programs achieved accreditation from other organizations. This was able to encourage students to participate and provide reassurance of the program's quality and standards. Overall, the project incorporated SME engagement and flexibility in course delivery as critical strategies to fulfill the stated needs and ensure an optimal learning experience for participants.

This project was made possible through the contribution of various resources and inputs. An instructional designer played a vital role in designing the course syllabus, ensuring a well-structured and practical learning experience. Subject matter experts, serving as mentors, guest lecturers, and teaching assistants, provided valuable insights and guidance throughout the program, informing participants about different aspects of AI implementation and development. An evaluation team was crucial in supporting program delivery and conducting research activities, including data collection, analysis, and publications. Project partners collaborated closely to support program delivery, development, and research, bringing their expertise and resources to the initiative. The program relied on a learning platform as the delivery medium for some programs, utilizing software solutions such as Zoom, MS Teams, NVIVO, Otter AI, and REDCap, among others. Time was dedicated to research activities, program evaluation, planning, and delivery. Moreover, financial resources were utilized to support program delivery and research activities and compensate the teaching team and research assistants for their valuable time and contributions. The collective effort and utilization of these diverse resources and inputs were instrumental in the successful implementation and outcomes of the program.

Table 2: Evaluation Questions

Evaluation Question	Indicator	Method	Data sources
Did we find collaboration and partnerships useful and what was the impact of the	Leveraging Expertise from Partners - Vector's AI Knowledge and Michener's Implementation Support, IVADO,	- Enhancing Program Reach and Effectiveness: through Collaboration with Michener and Vector, along with our project and support partners.	- Pre/post Surveys: Gathered insights on participant sources of information, indicating engagement through partner emails and word of mouth. - Recruitment: Partners contributed to recruiting

partnerships on the process?	CAMH and other Support Partners	<p>- Co-Design and Format Determination: Collaborative approach led to program design and structure.</p> <p>- Support and Timeline Management: Partners aided in defining support and timeline benchmarks.</p> <p>- Ongoing Communication: Regular FSC meetings facilitated ongoing dialogue and progress tracking.</p>	<p>participants and engaging instructors.</p> <p>- Expert Engagement: Number of experts engaged through partnerships.</p> <p>- Guest Lectures: Number of guest lectures facilitated through collaboration.</p>
How did we spend the money to use it in a meaningful way?	Additional investment and partnership support, including successful collaboration	Allocation of resources	Throughout the project, diligent budget tracking has been maintained to ensure ethical and appropriate utilization of funding as outlined in the proposal. Furthermore, the project's value and impact led to the grant extension approval, enabling the development and expansion of the program for a broader audience. This extension also facilitated the creation of two specialized programs targeting specific healthcare specialties, aligning with the project's expansion objectives. We acknowledge and greatly appreciate the support of our sponsors, FSC, for enabling the realization of these enhancements.
Did our engagement strategies help reach the targeted populations?	Strategic Recruitment of Healthcare Professionals (HCPs) and Leaders	Proactive Outreach and Collaboration with Key Stakeholders, Including Project and Patient Partners	Collaboration with diverse organizations such as Michener, CAMH, and MHCC facilitated access to a broad spectrum of healthcare professionals seeking to acquire expertise in AI. This approach ensured extensive reach and engagement (n = ~900)
Did the evaluation team build a positive	Adapting the teaching staff depending on the	Insights from Post-Evaluation Interviews, Participant Testimonials,	The post-evaluation interviews captured participants' value and positive experiences across all

learning space for participants?	iteration or format of the course	Community of Practice Platforms	<p>programs. These positive experiences resulted from the evaluation team's ability to analyze feedback after each iteration and adapt the program to create the optimal learning environment for participants.</p> <p>A quote collected from a mental health program participant: "I feel like they [the course instructors] asked for class feedback regularly throughout the course. And they were very receptive to the responses that came back"</p>
Did the evaluation team develop the programs over time in a meaningful way that considered lessons learned?	Iterative development process for continuous improvement	<p>Program interventions were refined based on evaluation findings. Adopting a developmental evaluation approach and continuous improvement processes enhances implementation.</p> <p>A good example of this was the development of the mental health AI course. We held a symposium to engage with the population. We then did a needs assessment (citation) and then engaged with several partners including the Mental Health Commission of Canada to identify gaps and develop an appropriate program and delivery approach.</p>	<p>The evaluation team systematically refined the programs over time, incorporating valuable lessons learned through an iterative development process. The interventions underwent enhancements guided by evaluation findings, demonstrating a commitment to continuous improvement. Adopting the iterative ADDIE and Health Equity and Inclusion Frameworks bolstered the implementation strategy. This progress was supported by insights from interviews and survey results across all program phases.</p>

Effectiveness

Evaluation Question	Indicator	Method	Data sources	Timeline
To what extent do AI educational interventions increase participants'	Shifting the mindset, skillset and toolset of individuals	Participants self-reported knowledge, confidence, and skills in	Pre- and post-program questionnaires, Needs	Indications of change emerged immediately after program completion from

knowledge, confidence, and skills in integrating AI into practice?		integrating AI into practice	Assessments, Interviews	participant feedback.
To what extent do AI educational interventions increase institutions' knowledge, confidence, and skills in integrating AI into practice?	Transformation of the institutional mindset, skillset, and toolset	Collaboration with essential stakeholders, integration of diverse perspectives	Pre- and post-program questionnaires, Needs Assessments, Interviews	Initial progress observed; however, a longer duration and continued effort are required to achieve a sustained and systematic transformation.
To what extent do AI educational interventions increase systems' knowledge, confidence, and skills in integrating AI into practice?	Facilitating a transformation in the mindset, skillset, and toolset of individuals and organizations to drive enduring systemic transformation.	Systemic shifts towards AI adoption by leveraging the iterative ADDIE and Health Equity and Inclusion Frameworks	Program evaluation inquiries pertaining to these themes	Progressing towards change, however, requires further investment in time and effort to achieve a sustained systemic transformation.

This three-year project assessed the effectiveness of AI educational interventions on individuals, institutions, and the broader healthcare system. For individuals, these interventions showed indications of increased knowledge, confidence, and skills in integrating AI into practice, evidenced by self-reported data and feedback immediately after program completion. Institutions displayed initial progress in transforming their mindset, skillset, toolset, collaboration among stakeholders, and integration of diverse perspectives. However, achieving sustained transformation in institutions requires longer-term effort. Similarly, the system demonstrated progress towards enduring systemic transformation through shifts in individuals' mindsets, skillsets, and toolsets. Nevertheless, achieving a fully sustained systemic transformation requires further investment in time and effort.

Efficiency

Evaluation Question: What was the most efficient and effective way to utilize our resources and what did we learn over the grant period?

Appropriately allocating the grant budget has been pivotal in achieving project success and desired outcomes. A significant portion of the budget has been designated for the evaluation team's salaries. The consistency and dedication of the evaluation team have been crucial to the

project's accomplishments, highlighting the importance of fair compensation that acknowledges their hard work.

Collaboration with diverse partners and stakeholders, including Vector and Michener, has been pivotal to the project's achievements. The evaluation team's ability to establish and nurture meaningful relationships with these entities has been a valuable resource. While the relevance of these relationships evolved throughout the grant period, they consistently contributed to the project's success by offering valuable insights and expertise.

Time Efficiency Gained: The project's iterative nature allowed us to save time by applying lessons learned from each phase. This approach ensured continuous improvement, improving the project's efficiency and effectiveness.

Causal attribution:

A comprehensive evaluation approach was adopted to determine the extent to which outcomes can be causally attributed to the project intervention, incorporating qualitative and quantitative data sources. Feedback from participants, instructor evaluations, and internal conversations were collected to gain insights into the project's impact. Additionally, data from interviews, surveys, and pre-/post assessments were used to identify themes and quotes that shed light on the project's influence on outcomes. The iterative approach and logic models further supported the understanding of causal relationships. By triangulating information from these various sources, we aimed to enhance our confidence in attributing outcomes to the project intervention and understanding its role in achieving the desired results.

Evaluation Results

The evaluation employed diverse approaches to gather and surface evaluative insights, considering partner learning needs, feasibility, and capacity. Quantitative and qualitative methods were used to collect and analyze data, including surveys, interviews, focus groups, and document analysis. As this project followed the KTA framework, the evaluation results will be reported in three sections, mindset, skillset and toolset.

Online Activity

Our project made effective use of an informative and engaging website to connect with participants. The website garnered over 6,000 unique users, with an average of three course pages viewed per visit. Notably, 73.76% of our audience resided in Canada, 18% in the United States, and the remaining 2% in Nigeria.

We employed a multi-platform approach to boost program recruitment and visibility, including social media channels such as Twitter, Instagram, Facebook, and LinkedIn. We posted a total of 48 times for the Leaders program, 28 for the Clinician Champions program, 8 for Mental Health, 6 for Medical Imaging, and 4 for Symposia. Our extensive mailing list encompassed 704 contacts. Furthermore, in collaboration

with various stakeholders and their platforms, we delivered 30 weekly posts through the "What's Happening Now" newsletter within UHN.

In line with our commitment to fostering a community of practice among AI educational initiative participants, we utilized the Circle platform, which currently boasts 209 active members and an additional 414 invited individuals. This dynamic online presence has been pivotal in maintaining engagement and facilitating knowledge exchange among our diverse community.

Table 3: Project Demographics

Program N= number of participants enrolled	Geographic Location n(%)*	Occupations n(%)*	Equity-seeking n(%)*
<i>Mindset</i>			
Symposia 1 N = 321	Ontario: 67.1% Quebec: 20.1% British Columbia: 2.7% Alberta: 3.9% Nova Scotia: 0.5% Newfoundland: 0.3% New Brunswick: 0.3% Out of country: 5.8%	Healthcare practitioners: 34% Healthcare leader/ executive: 11% Administrators: 11% Other (e.g., business owner, consultant): 45%	Women: 52.0% Racialized: 35.0% Indigenous: 1.0%
Symposia 2 N = 160	Ontario: 80.7% Quebec: 1.9% British Columbia: 3.0% Alberta: 2.6% Manitoba: 1.1% Nova Scotia: 2.2% Prince Edward Island: 0.7% Saskatchewan: 0.4% Out of country: 6%	Healthcare administrator: 22% Healthcare leader/executive: 16% Researcher: 13% Healthcare provider: 12.5% Student (undergraduate, graduate): 12.5% Patient-partner: 0.06% Other (e.g., business owner, consultant): 20%	Women: 44.0% Racialized: 33.7% Indigenous: 0.7%
<i>Skillset</i>			
Clinician Champions N = 157	Ontario: 69.1% British Columbia: 6.2% Alberta: 5.6% Quebec: 9.6% Manitoba: 2.2% Saskatchewan: 0.6% Prince Edward Island: 1.3% Northwest Territories: 0.6% Out of country: 1.3%	Healthcare administrator: 10.0% Healthcare leader/executive: 1.25% Researcher: 5.0% Healthcare provider: 21.25% Student (undergraduate, graduate): 5.0% Patient-partner: 1.25% Other (e.g., business owner, consultant): 10.0%	Women: 51.2% Racialized: 4.8%
Healthcare Leaders N = 103	Ontario: 77.7% British Columbia: 1.9% Alberta: 8.7%	Healthcare administrator: 45.45% Healthcare leader/executive: 9.09% Researcher: 4.55%	Women: 64.1% Racialized: 66.7%

	Manitoba: 1.1% Nova Scotia: 1.0% Quebec: 1.9% Out of country: 6.6%	Healthcare provider: 27.27% Student (undergraduate, graduate): 4.55% Patient-partner: 1.82% Other (e.g., business owner, consultant): 6.82%	
Mental Health N = 36	Ontario: 80.8% Newfoundland: 3.8% Nova Scotia: 3.8% Out of Country: 11.54%	Healthcare administrator: 10% Healthcare leader/executive: 10% Researcher: 10% Healthcare provider: 56.6% Student (undergraduate, graduate): 0 % Patient-partner: 0 % Other (e.g., business owner, consultant): 13.4%	Women: 76.9% Racialized: 50%
Radiation Medicine/Medical Imaging N = 100	Nova Scotia: 4.7% British Columbia: 12.4% Alberta: 16.3% Ontario: 58.1% Newfoundland: .77% Quebec: 1.6% Out of Country: 8%	Researcher: 1.6% Healthcare provider: 86.8% Student (undergraduate, graduate, medical): 7% Other (e.g., health professional, consultant): 4.7%	Women: 53.6% Racialized: 44.6% Indigenized: 3.6%
<i>Toolset</i>			
Innovation Hub N = 12	Ontario: 90% Manitoba 10%	Healthcare Administrator: 11.1% Healthcare provider: 55.5% Student (undergraduate, graduate): 33.3%	Women: 30.8% Racialized: 38.5%

* Statistics are based on the number of recorded responses.

* Percentages are calculated to 1 decimal.

Phase I: Transforming Mindset

- Instructor-Learner Needs Assessment
- Patient Partner Needs Assessment
- Mental Health Needs Assessment
- Environmental scan
- AI-Enabled Mental Healthcare: A National Discussion (Symposium 1)
- AI-Enabled Care: Building Collaboration for Deeper Learning and Better Care (Symposium 2)
- Scoping reviews
 - AI Education Scoping Review
 - Mentoring Coaching Scoping Review
 - IDEA Scoping review

All three completed needs assessments allowed the evaluation team to gain invaluable information crucial when the various certificate programs (see: skillset) were in the developmental process.

Instructor-Learner Needs Assessment: This assessment identified important elements that hinder or help facilitate AI education for healthcare providers. It also highlighted the various gaps in AI education that can be minimized if certain course development or delivery aspects are changed. Participants stated their valuable opinions on the importance of the mode of delivery.

“Since we were trying to get away from lecturing mode, it seems that currently people... students, would like to enjoy the most meeting industry specialists. So it's more like guest lectures, but not in the way that an external person comes and describes what they do. It's more like a podcast or it's more like a Q&A session when students are involved and actually asking that guest of some prepared questions.” [ID 14]

Further, the needs assessment participants noted the importance of keeping the course materials palatable for students needing to be better versed in the AI curriculum.

“I think, similarly, one of the things that we got a lot of feedback on, was the didactic portions of the curriculum, which at times could get quite technical. And I think a lot of the learners, particularly those who are who were clinicians and did not have a lot of past training on statistics or data science could struggle with. You know, needed to be a lot more... a lot more open for questions, a lot more engaging in terms of ensuring that people are kind of following along. It would be easy to get lost quite early on in a lecture and not be able to follow the rest of it.” [ID 11]

The needs assessment was conducted to increase the number of HCP and leaders across Canada exposed to AI programs and increase opportunities to address the gaps in AI competencies. Based on the insights from the learners/educators, it was directly applied to the various AI education programs for healthcare providers that were funded by this grant. With all of these considerations taken into account during the development of the certificate programs, the delivery and curriculum were refined based on suggestions like these. The participants of the various certificate programs were able to increase their AI knowledge.

Patient Partner Needs Assessment: This needs assessment made it apparent that healthcare providers play an invaluable role in the future of AI and digital technologies. This further supported the need for an increased number of education programs that focus on implementing AI into healthcare.

“I mean, I think I would worry about us totally removing the human part of this. That compassion and connection with a person who understands your health condition is really important...I would like a person who understands the question that I'm asking. So, I think it's making sure that we don't undervalue the importance of connection to other human beings, especially when we're talking about health care and the fears and anxieties that come up, about our health, so that we have someone who can not only answer our questions, but understand our fears and worries...” [ID9]

The relevant information collected through this report helped promote the desire for the programs and important patient-provider discussion included within the curriculum. On an individual level, this further supported the need and positive impact that AI education programs could have by emphasizing that while patients are comfortable with AI being introduced, they still value the human connection with their doctors. Findings like such promote a change in attitude towards adopting AI in healthcare by patients and providers.

Mental Health Needs Assessment: Importantly, the needs assessment showed evaluators that within the mental health field, there has been a notably slower adoption of AI, yet there is an educational desire from mental health professionals.

“I would want to have an opportunity to use it with a seasoned practitioner and understand exactly what it's doing. Especially where we're talking about our brain, I would want to know for sure that it couldn't, or wouldn't, cause any harm to the client... I would want to really understand how it could be helpful in terms of the outcomes.” [ID 11]

“If you're going to authorize an app to be used across the province, hospitals have no idea of how to do this... so I think first we're going to have to figure out how to do it safely, how to implement it, and then we're going to have to train people on how to do that. So, I think that's sort of a curriculum that needs to be developed.” [ID 7]

Based on these findings that there is a need for increased knowledge in AI and mental health care, the evaluation team created a specialty program (see: Skillset), to educate mental health and addiction care professionals by providing a general understanding of AI as well as practical opportunities for clinical implementation.

Environmental scan: An environmental scan was conducted to evaluate the current programs available to educate healthcare professionals about AI. 13 different programs were evaluated; the program aim, content, mode of delivery and length were all focus areas. The comprehensive environmental scan of current AI education programs and engagement has been instrumental in identifying critical gaps and needs within the field. This scan serves as the foundation for our programs, allowing us to strategically design a curriculum, develop relevant content, and provide access to resources that directly address these gaps, thus enhancing the project's effectiveness and impact of AI educational initiatives for healthcare professionals. This allowed the evaluation team to gauge what is already available and begin to create our programs' curriculum and course structure (see: skillset) off these findings. This helped develop the certificate programs to increase the number of educational opportunities to address gaps in AI competencies and increase AI knowledge, motivation and confidence.

Symposiums

The first symposium, AI for Good: Building Collaboration for Deeper Learning and Better Care Symposium, was a collaborative event by IVADO Labs, The Michener Institute of Education and Vector Institute on April 29, 2021. Together, the 3-hour symposium educated 321 participants on the importance of AI education and literacy, adopting AI into clinical practice, and skill development. This workshop allowed participants to increase their knowledge of AI, increasing the number of HCP and leaders exposed to AI education programs. Further, the positive results from polling questions and a post-survey indicate that this symposium increased demand for further AI education. The symposium panelists emphasized the importance of prioritizing robust infrastructure, fostering collaborative discussions, and enhancing data literacy to ensure success in AI project planning. A clear definition of objectives and deliverables in coordination with the evaluation team was also highlighted as a critical factor for the effective implementation of future programs.

AI-Enabled Mental Healthcare: A National Conversation Symposium was the second symposium collaboratively led by the Michener Institute of Education at UHN (Michener), the Mental Health Commission of Canada, Vector Institute (Vector), and Centre for Addictions and Mental Health (CAMH). On June 15, 2022, 255 participants attended, including administrators, executives, healthcare providers, researchers, educators, students, patient partners, and other occupations related to mental healthcare. A keynote speaker and expert panelist of 4 shared their experiences with AI research, implementation, and adoption into practice, followed by an interactive discussion and Q&A with symposium attendees. Half of the respondents were familiar with AI in clinical settings but had not used AI directly. In contrast, the other half expressed interest in working with AI in a clinical setting, and only a few had experience. They were currently using AI-based tools in clinical practice. During the symposium, 40% of attendees responded to four polling questions, indicating their interest in future event topics related to clinical implementation of AI, issues of bias and ethics in AI, and innovative AI research projects.

Scoping reviews: Two scoping reviews were completed as part of the mindset portion of this project, one on AI education and the other on mentoring/coaching.

AI education Scoping Review: Many essential aspects were brought to light during this scoping review. Firstly, AI education curriculum topics were categorized into three (3) competencies, including cognitive (informatics), psychomotor (leadership) and affective (perception of AI humanistic AI-enabled care). Furthermore, we learned key implementation factors, including the enablers and barriers that would affect the execution of a successful AI education program. Finally, four (4) guiding principles were developed to aid in the successful future program development, including the need for regulatory strategies, a multidisciplinary approach, a competence-based curriculum and AI's role in the interaction between patients and clinicians.

Mentoring Coaching Scoping Review: The scoping review was an important step in understanding the current landscape of literature available. It was helpful for the evaluation team in a few keyways; firstly, identifying gaps in the literature surrounding implementing technology made the need for more work to be done in this area apparent. Secondly, the impact of a mentor on a mentee was a powerful finding that became clear through the searches. Finally, the evaluation team developed guiding principles for future program development, including important aspects such as a strong relationship, the impact of multidisciplinary engagement, clear expectations and sustainability. All these findings directly contributed to the design and development of our AI healthcare Innovation hub program (see: Toolset).

Phase II: Transforming Skillset

- Healthcare Leaders Certificate Program
- Clinician Champions Certificate Program
- Specialty Programs:
 - o Medical Imaging and Radiation Therapy Certificate Program
 - o Mental Health and Addiction Care Certificate Program

An extensive developmental process took place when preparing for the onset of each iteration of the various programs. Furthermore, although all of the programs differed, there were crucial elements that stayed consistent that helped champion their success. Based on the extensive initial research regarding

shifting HCP's mindset, the evaluation team created knowledge translation programs to help equip clinicians and their leaders with the skillset to adopt AI into their practices and organizations.

As highlighted previously in the mindset section, preliminary research done through sources such as needs assessments parallels well with these courses' development. The needs assessment, the Environmental scan and scoping reviews informed the development of these programs in many ways. First, they identified what clinicians and leaders seek in AI education. The needs assessments identified the learning objectives of clinicians and leaders for a program like such, which aided the evaluation team in our work with subject matter experts to develop a curriculum that aligned with these various goals. In addition, the environmental scan allowed evaluators to analyze already available programs, which ensured that these programs brought something new to the pre-developed AI education programs.

As expected, each program differed slightly from the other in terms of the mode and methods of delivery, but there were critical similarities among all the programs. The programs were all held online due to the COVID-19 pandemic. However, this method was also very accommodating to participants who had busy work and personal lives to uphold. Furthermore, all the programs had expectations of the participants to obtain their certificates. This may include attendance, weekly assignments, pre-readings and/or a capstone project. The individual differences will be outlined below.

"It was presented in both written and there was a video content for the assignments, and you could choose to access additional videos or resources, I thought that that was helpful for different learning styles."

(Clinician Champion- Cohort 2)

"I think the virtual format actually worked really well. Especially executives are so busy, right? So instead of having them to travel all the way downtown to go to a class, you know, they can just, you know, turn on their computer and log into zoom." (Healthcare Leader- Cohort 1)

"Yes, it was a well thought out and the delivery was linear. And I don't think anybody could do a better job." (Healthcare Leader- Cohort 2)

In addition, a great level of care was taken when each teaching team was chosen. Although the teams varied depending on the program, the evaluation team worked closely with project partners to select those who would be the best fit for the program. In addition, if the program required, teaching assistants (TAs) were carefully chosen to facilitate the course. Finally, among all the programs, guest lecturers were brought in to provide their expertise and share case study examples. Participants found the guest lecturers to be a helpful and engaging addition to their learning experience.

"The speakers and [instructor] were concise and clear, because they brought a different perspective, all of them individually. And of course, the tears were very helpful with the feedback on the assignments, of course, [program lead] has been them, it has been fantastic." (Healthcare Leader- Cohort 2)

"I found that the instructor was super engaging, I think it was really helpful to have somebody who had had a healthcare background, teaching the course because it gave us the ability to talk about our like real world health care problems and somebody to actually understand like how the system works, and how it really affects us and how who can kind of see the whole picture, even though they might not be a

specialist in our area, that they were able to kind of see how this might affect us and understand what we're trying to ask. I think that like the TAs did a really good job.” (Clinician Champion- Cohort 3)

The ADDIE Model guided the program development for agile and iterative adult education development. ADDIE, analyze, design, development, implementation and evaluation (CAMH, 2021). The Health Equity and Inclusion Framework for Education and Training, developed by the Centre for Addiction and Mental Health (CAMH), includes the ADDIE model to ensure that the program development, delivery, and evaluation are designed with a health equity lens, mapping to each dimension of inclusion, diversity, equity and accessibility (IDEA) within the education design cycle (CAMH, 2021). For each program that was implemented, the ADDIE model was followed. First, we analyzed the literature available and completed the needs assessments, scoping reviews and the environmental scan depending on the program. Then the various programs were designed and developed based on what was learned through the initial stage. At this point, the program's first cohort ran, and we then completed an evaluation following the RE-AIM framework (see below). Once the evaluation was completed, the process would begin again with the analysis of the evaluation and the necessary changes to the program would be made in the design/development stage. At this point, the second cohort would participate and then be evaluated, and the process would return to the analysis stage. This iterative development was present in the Healthcare Leaders and Clinician Champion programs. The specialty programs were also developed based on the three cohorts from the Clinician Champion Programs.

The programs were all developed under the same project, and therefore the overarching outcomes that the evaluation team aimed to see are present within each program. Therefore, the programs serve as a lesson for many short-, medium- and long-term outcomes to come to fruition. These outcomes were created using the RE-AIM educational evaluation framework that guided our multi-step evaluation process (Holtrop et al., 2021). This includes evaluating the Reach, Effectiveness, Adoption, Implementation and Maintenance in order to gauge the impact. Each cohort was evaluated against the E-AIM framework and iteratively updated and refined based on the results. Developing the programs with the RE-AIM framework in mind helped make the programs meaningful to leaders and HCPs as it was designed to be transferable and sustainable when taken to their places of work (Glasgow et al., 2019).

Healthcare Leaders

The Healthcare Leaders' program was developed for senior executives in healthcare and covered the strategic implications surrounding organizational readiness and planning for and implementing AI solutions. The program included expert speakers, discussions, and weekly assignments to empower leaders to ask critical questions, reflect on use cases and network with leaders and experts in the field.

The program was adapted in large and small ways after each cohort to ensure the program was designed best for learners. The program had three iterations which all took slightly different forms. The first cohort began in January of 2022 and ran on three consecutive Saturdays, with 18 participants registered, and 13 completed the course. The length of three weeks was chosen to consider the busy work and home lives of senior executives. However, based on the feedback of participants and course instructors, the design for the second cohort was adapted and extended to give leaders more time to immerse themselves in their learning. The second cohort ran for four consecutive Saturdays in the fall of 2022, with 17 participants registered and 12 completed the course. The results of lower numbers in the second offering of the AI for Healthcare Leaders Program prompted a restructuring of the program's format for the upcoming session. The winter session in 2023 was structured as a half-day virtual program.

“it gave a great overview of the things that you need to be thinking about in terms of the data in terms of the people in terms of the approaches. So it was it was just really well designed for four hours.” (ID 15)

“I thought it was a great sort of introductory four hours, you know, as advertised, I'm sure that there's components. You know ... If people don't come from a mathematics or a stats background, they could struggle with a bit more. But even still, I think those were presented at an appropriate introductory level, to just give people what they need to do a bit more homework on their own.” (ID 15)

The winter offering is considered a more accessible and less time-intensive program to engage leaders more broadly. This format was the most successful, as 67 healthcare leaders were registered, and 55 completed the course. It was important to the evaluation team to construct a program best aligned with senior executives' extremely busy lives. After two iterations, we were pleased with the results we achieved.

Not only was the course format changed, but with the aid of the program feedback, the evaluation and instructor team could highlight curriculum topics of interest and those to prioritize. Program feedback and project partners helped finalize key topics for leaders, including learning about the foundations of AI and machine learning in health and examples of how to accelerate the adoption of AI in their organizations. The program included a case study designed to demonstrate how these concepts are applied in the real world and videos to support learning.

Clinician Champions

The Clinical Champions program builds a strong mindset and a foundational skillset for healthcare professionals. The clinician champion program had three distinct iterations in which it aimed to enhance their understanding of AI and begin to prepare them for adopting AI into healthcare. Together, the three (3) cohorts had 116 clinicians complete the course in total, which resulted in a 73% completion rate. The feedback collected from semi-structured post-course interviews was considered during the next iteration's development stage. After completing the course, the clinicians reported an increase in their AI knowledge,

“I consider my knowledge in AI going into the course probably very basic, like very below basic, like very rudimentary. And I find coming out, I feel my knowledge base is much higher.” [Cohort 2]

This suggests that these courses successfully increased the motivation and confidence that HCP have regarding the topic of AI, and with such, they can actively engage in more conversations around the adoption of AI into healthcare.

As previously discussed, all the skillset programs are very similar, yet there are some important distinctions between the programs and within the cohorts. Importantly, this program was targeted towards general clinicians. The course material was constructed with the help of subject matter experts to align well with the knowledge level clinicians have with AI.

The clinician champion's program stayed relatively consistent through the three iterations. Notably, after the first cohort, due to feedback from participants and instructors, the length of the course was extended from 6 weeks to 8 weeks; this change was reflected in the second and third cohorts.

In addition, the clinician champion programs had final capstone projects engendered to increase their understanding of AI by forcing the participants to reflect on what they have learned and apply it to a project. Further, these projects allowed for collaboration with the teaching team and other participants, which aided in changing HCPs' attitudes towards the adoption of AI and generated conversation around the emergence of AI within their fields.

“Yeah, and the capstone project was also a great way for... me to think a little bit more about it. I wasn't sure about my idea. And so I think, guess the idea of just creating a[n] AI, project out of the blue is a bit daunting, but in the end, it worked out and the TAs helped me quite a bit.” [Cohort 1]

Specialty programs

After two years and three-course offerings, the Clinician Champions program received high endorsement, where actionable culture change occurs within participants' health organizations—building on robust and foundational knowledge from this incredible funding opportunity, an extension of the funding allowed for the evaluation team to customize further and enhance our Clinical Champions Certificate Program's significance and applicability to specialty-specific clinical environments that have unique operational or care-based problems that could be ameliorated with AI. Creating a pathway for specialized courses further enhanced the development of skillsets in specialized healthcare domains. It is the natural next step in building a national healthcare workforce capable of capitalizing on AI and augmented intelligence to create a healthier world for all Canadians.

Preliminary evaluation findings from the Clinical Champions Certificate Program reveal a desire for further specialty-specific education. This parallels findings from the needs assessment with mental health professionals. These professionals also voiced that AI education for their specialty should focus on the socialization of AI in their practice settings and maintaining their humanistic approach to care, in addition to concepts already in our program's curriculum. Similarly, for radiation medicine and medical imaging, there is aligned collaborative work at the national level to consider responsible harnessing of big data (including medical imaging data) to inform radiation treatment planning and preparation of engaged professions for the integration of machine learning algorithms to optimize care.

Both programs were virtual, instructor-led and open to any healthcare professional in medical imaging and radiation therapy/mental health and addiction care. The programs were disseminated weekly for four weeks. Learning objectives and curriculum were co-created with our project partners.

Medical Imaging and Radiation Therapy

The AI Foundations for Medical Imaging and Radiation Therapy course was offered in May and June of 2023. It was built to provide an entry point for those in related fields to consider artificial intelligence as it relates to their practice. As uniquely technology-reliant fields, medical imaging and radiation therapy have made significant strides in using artificial intelligence and big data in several capacities over the past dozen years. The course was developed in partnership with the AI Centre at Toronto's Joint Department of Medical Imaging (University Health Network, Sinai Health, Women's College Hospital) and the Canadian Artificial Intelligence and Big Data in Radiotherapy Alliance (CADRA), with contributions from the Radiation Medicine Program at the Princess Margaret Cancer Centre. Explicit effort was made

to cater the course curriculum and depth of content to be relevant to multiple groups – radiation oncologists, radiologists, medical physicists, medical radiation technologists, and associated trainee groups, with faculty representation across all groups.

The four-week curriculum included two foundational sessions that focused on principles unique to the use of medical images across radiology and radiation therapy, such as digital representation, computer vision, radiomics, and general development and implementation considerations. These sessions were followed by two weeks of more tailored sessions where participants could follow either medical imaging or radiation therapy pathway, with a concurrent weekly session for each. The specialty-specific sessions were framed as case study sessions, providing either vignette of large-scale research or implementation projects or national guidelines and governance initiatives.

The course provided participants with pre-readings, and students who attended the virtual two-hour lectures were given credit. Unlike many of the other certificate programs that have been run, this specialty program did not have weekly assignments or a final capstone project. This allowed the program development to focus on engaging more participants and connecting with guest lecturers rather than on developing the assignments. This allowed for fruitful guest lecturers, and we saw our highest number of registered participants, with 100 learners registered and 54 completing the course. The course served to provide participants with the foundational knowledge to appreciate the emerging AI-related solutions and considerations in their practice, to equip them to navigate future education opportunities better, and to foster novel networks and communities that will support future innovation, socialization, and standardization with respect to safe implementation of AI.

“It was a great lecture. The speaker is very knowledgeable, but he is also great at explaining complex concepts in layperson's terms. Thank you!” (Learner)

Mental Health and Addiction Care

The mental health and addiction care certificate program was co-designed with project partners, and data was gathered in the needs assessment. This education will provide healthcare professionals with basic AI knowledge, use cases and practice resources to self-assess and reflect upon their current care delivery and implement these learnings into their practice.

In contrast to the medical imaging and radiation therapy specialty program, this program entailed two-hour weekly sessions, pre-readings and weekly assignments. The assignments provided participants with the space to reflect upon their learning and apply it directly to their professional settings. Learners must have completed 3 out of 4 assignments to receive a certificate; of the 36 participants registered, 30 completed the course at an 81% completion rate.

“I thank you for homework. That sounds really, But it the homework was, initially I felt, Oh, God, I don't have time for homework. And the homework was actually a wonderful way to just have us reflect on our learnings.” (ID 01)

Thus far, the feedback we have received about the program has been positive overall. Students seemed to have valued the ability to pause and consider what they have learned and how it related to themselves and their careers. We were thankful to have had the financial resources and time to be able to hire three teaching assistants to facilitate the marking of students' weekly assignments. This project effectively

cultivated reflective practice by employing it to facilitate participants in internalizing, understanding, and digesting AI content. This focus on reflection should be carried forward into future courses, specifically when catering to mental health professionals engaged in AI learning.

Phase III: Transforming Toolset

Innovation Hub Program

The Healthcare AI Innovation Hub built an exclusive space of knowledge sharing and networking with individualized support from a panel of healthcare AI experts across Canada. The program recruited 12 innovators and 11 experts, which were paired together as they worked on their learning plans, which tracked their AI knowledge and experience throughout the program.

The program development came from a few key sources. Firstly, the mentorship scoping review gave the evaluation team a strong background to start developing the program. It helped when understanding the relationship between mentors (experts) and mentees (innovators). This was extremely valuable in the success of the program. In addition, the Innovation Hub program aimed to support clinician champions and leaders in furthering their ideas and projects for AI-enabled care. During the post-evaluation interviews that took place in those programs, the participants were asked if they would be interested in continuing their learning through a mentorship program like the innovation hub.

A key takeaway from the program was the impact that the relationship between experts and innovators had on not only themselves but on their learning plans. The positive feedback on the program reinforces the findings of the scoping review. Specifically, the guiding principles outlined in the scoping review were very effective in the design and development of the program. In addition to the positive impact that the relationships had on the development of the innovator's AI understanding, it also facilitated a relationship that has the potential to extend outside of this course.

“Yeah, I mean at the end of the day, it's really hard for anyone to do work in AI by themselves. It's very much, you know, a team sport. You do need that clinical expertise. You also need some pretty technical expertise, you know, maybe some research methodology expertise. So, yeah, facilitating that connection and some networking opportunities I think is really key.” (ID 3)

The networking component of the Healthcare AI Innovation Hub was facilitated through an online platform that allowed participants to create a community of practice to stay connected and sustain relationships after the program. Through this platform, innovators, experts, and certificate program alumni could continue knowledge sharing, discuss ongoing AI projects, and seek advice from their mentors even after the formal program had concluded. The Circle platform enabled an extended network of healthcare AI professionals, fostering ongoing collaboration and furthering the conversation on AI development in the healthcare industry.

Confirmation of Key Findings: Key findings were confirmed through additional data gathering, employing independent evaluations, expert consultations, and peer reviews. Multiple data sources strengthened the credibility and reliability of the evaluation.

All the resources and inputs for the entire evaluation project were able to see substantial outcomes at the individual, institutional, and system levels.

Individual

The programs that aimed to develop the skillset and toolset of clinicians have led to several positive outcomes for the individuals participating in the project:

1. An increased number of healthcare providers and leaders across Canada have been exposed to AI programs, gaining valuable insights into their applications and potential. This exposure has been instrumental in initiating discussions at learners' organizations about optimizing processes and adopting AI within their practice (e.g., exploring AI-driven process improvements). It has also ignited a journey for further education and continuous professional learning about AI.
2. AI knowledge among these individuals has significantly increased, fostering a better understanding of its capabilities and implications in healthcare. This enhanced knowledge has increased motivation and confidence among healthcare providers, empowering them to utilize AI technologies effectively.
3. Attitudes towards adopting AI in healthcare have shifted positively, with individuals recognizing the benefits and embracing its integration into their practices. The project's impact extends beyond the certificate programs, as evidenced by continuing capstone projects and participation in the innovation hub program (e.g., ongoing projects in patient data analysis and AI-driven decision support). This participation demonstrates their commitment to adapting and thriving in an evolving healthcare landscape, potentially mitigating concerns about job security in the face of AI advancements.

Through defining AI competencies and offering education opportunities, the project has addressed gaps in knowledge and competency, ensuring healthcare professionals are well-equipped to leverage AI in their work. Overall, these outcomes reflect the empowerment and upskilling of individuals to harness the potential of AI in healthcare.

Institutions

This project has also prompted notable changes within healthcare institutions and organizations. Key stakeholders have been thoroughly informed, organized, and mobilized, fostering a collaborative environment for the successful integration of AI. One significant change has been creating a culture of trust and transparency, both with stakeholders and patients, ensuring that the implementation of AI is carried out ethically and responsibly. This culture has fostered confidence in AI systems and promoted a patient-centric approach, strengthening the healthcare provider-patient relationship. Moreover, institutions have optimized and enabled AI to drive better patient outcomes. By leveraging AI technologies, healthcare organizations have enhanced diagnostic accuracy, streamlined workflows, and improved treatment plans, ultimately improving patient care and outcomes. These changes at the institutional level reflect the transformative impact of AI in reshaping organizational policies, practices, and approaches within the healthcare sector.

Systems

Integrating AI programs has resulted in more significant systemic changes in the surrounding healthcare context. Firstly, there has been an increased number of healthcare providers and leaders across Canada exposed to AI programs, ensuring widespread knowledge and understanding of AI's potential benefits. This has subsequently led to an increased demand for further AI education, indicating a shift in the healthcare system's readiness to embrace and leverage AI technologies. Furthermore, there has been increased involvement of clinicians in AI deployment, highlighting the integration of AI as a collaborative effort between healthcare professionals and technology experts. The engagement of a diverse profile of healthcare providers and leaders in AI reflects a more inclusive and representative approach to shaping the future of healthcare. The project has also played a crucial role in preparing healthcare providers for the future workforce, equipping them with the necessary skills and knowledge to navigate the evolving landscape of healthcare AI. Overall, these outcomes demonstrate the transformative influence of AI programs on the broader healthcare system, leading to policy changes, network development, and an overall shift towards embracing AI for better patient outcomes.

The intention to change the mindset of HCPs and leaders goes beyond the individual; this grant also aimed to affect institutions and systems. Although preliminary results suggest this was a success, changing an intuition or system is a prolonged process, and lasting change will not be apparent after three short years. The three (3) needs assessments completed informed the rest of the work the evaluation team completed throughout this grant. With this extensive background research completed, we provided different programs that increased the number of healthcare professionals exposed to AI education and ultimately increased their knowledge and confidence with AI technologies. Throughout, the evaluation team engaged with key stakeholders to inform, create and develop programs based on the completed preliminary research.

Factors Explaining Deviation from Anticipated Results: The deviation from anticipated factors can be attributed to the unexpected onset of the pandemic during the program planning phase. As the COVID-19 pandemic emerged, it became necessary to pivot and adapt the program to accommodate safety measures and adhere to social distancing guidelines. For instance, healthcare professionals' busy schedules posed challenges in finding an appropriate time for all participants to meet virtually, requiring careful planning and flexibility to ensure active involvement.

Additionally, technical barriers, resistance to change, and implementation complexities emerged as potential factors contributing to deviations from anticipated results. The shift to virtual learning necessitated addressing technical challenges and ensuring equitable and inclusive learning experiences for all participants learning needs. Overcoming resistance to change and addressing implementation complexities required proactive communication and tailored support to ensure participants were fully engaged with the program. In addition, we made significant changes to the leadership program to increase engagement and involvement. While there was a tradeoff in the scope of content and the level of skills development that could be delivered, the higher levels of engagement were considered an appropriate tradeoff for the reduction in session time.

Despite these unforeseen challenges, the pivot to a virtual format allowed for a larger reach and impact by transitioning the program from in-person to virtual formats. This approach not only ensured the safety of participants but also facilitated increased accessibility and engagement, ultimately enhancing the project's ability to achieve its objectives on a wider scale. By successfully adapting to the circumstances and

addressing the various challenges, the project was able to foster meaningful connections, share knowledge, and sustain relationships through the Networking component, the Circle platform, even after the program's conclusion.

Discussion and Implications

Evaluating our AI literacy adoption in healthcare projects has revealed significant insights and implications for future actions. The program evaluations were able to inform future directions and adoption of the program, develop new partnerships, and identify lessons for both service delivery and system-level changes.

Expansion: As the program evolved over three years, the consistent feedback received from the evaluations indicated a need to expand the program's reach to new population groups and different geographies. Successful collaborations with organizations like Michener, Vector, CAMH, and JDMI have extended the program's impact in specialty disciplines. Continued outreach to organizations and partnerships will be crucial for expanding accessibility and ensuring diverse populations can benefit from the program. As this program ends, the program and partners involved aim to continue to expand on the foundations of accelerating AI adoption in healthcare through education in the following ways:

While the program received significant clinician and healthcare community engagement, most were from urban centers. It would be great to have targeted programming for those in rural, remote, or community-based organizations. Additionally, many multidisciplinary teams are involved in the adoption of AI technologies, so marketing to roles such as Data Scientists, IT leads, Integration leads, etc., may prove beneficial for organizational adoption.

This initiative has allowed us to address one of the most important areas in advancing AI in healthcare – education. A Harvard Review on building an AI organization stated that essential task was to educate everyone in the organization. The project could not include the scope of educating everyone, but we focused on building the mindset, skillset and toolset for clinicians and leaders in healthcare. The project has addressed key issues such as understanding educational needs, using experiential learning, involving patients and considering ethical issues in the appropriate implementation and adoption of AI in healthcare. This project has opened up several avenues for improving AI literacy in health care across Canada and supported innovators in putting that education into practice. The focus of the initiative has been to focus on key problems in healthcare and then to explore opportunities to enable solutions through machine learning and AI.

Adoption: This project has opened valuable opportunities for organizations that share our mission of accelerating the adoption of AI in healthcare. Continued collaboration with esteemed partners, such as AMS fellows and course directors, presents a pathway to seamlessly integrate our program elements into various projects, thereby expanding its reach and adoption. An exemplary instance of this collaborative effort is our concurrent project with AMS, focused on developing digital compassion tools for patients and providers, showcasing how AI can continue to provide compassionate care. This knowledge can be realized and disseminated through AI education as a topic or its own symposium.

In line with our goal of fostering broader adoption and knowledge dissemination, we are actively exploring additional funding avenues to create new opportunities for organizational engagement.

Moreover, given the increasing scope of required skills for clinicians, external organizations seeking to join in this mission are expected to drive the revision of curriculums and the provision of further education to teach fundamental AI concepts. The program evaluations have extensively examined and discussed appropriate course content and delivery design, which have proven instrumental in creating an optimal learning environment. These factors, identified as facilitators of a successful learning experience, can be embraced and implemented by other organizations beyond the current project partners. This will allow such organizations to offer a similarly enriching experience to their students.

Investment or Partnership: Over three years, our project has forged strong partnerships with several organizations, driving the development, delivery, and support of diverse program activities. The project offered healthcare professionals across all levels the chance to enhance their comprehension of AI's role in patient care, logistics, and planning. It provided exposure to AI solutions under development and furnished implementation and adoption strategies. The diverse and multidisciplinary stakeholders played a vital role throughout the project's development. Many were pre-established, and this project fostered further relationship exploration and strengthening. Among these valuable collaborations, we are proud to highlight our engagements with IVADO Labs, CIFAR, and UHN ICE. IVADO Labs, also a recipient of FSC grants, aligned its project deliverables with ours and co-hosted the "AI Enabled Care: Building Collaboration for Deeper Learning and Better Care" symposium on April 29, 2021. CIFAR Executive Leadership contributed significantly to this symposium by actively participating in our Steering committee, playing a pivotal role in assembling the panelist team and moderator, and effectively disseminating event information nationwide through their extensive partner network. Additionally, we established a strategic partnership with UHN International Center for Education, fostering the creation of a personalized learning program within our unique mentorship and coaching hub. These successful partnerships were built upon years of cultivating and maintaining professional networks, fueled by shared visions and objectives.

As with any ambitious project, managing a diverse array of stakeholders presented its own set of challenges, further exacerbated by external factors, most notably the COVID-19 pandemic. The unforeseen impact of the pandemic triggered considerable shifts in our advisory committees, team dynamics, and project priorities, leading to unforeseen delays beyond our initial expectations. Many of our team members and stakeholders within the healthcare domain grappled with urgent responsibilities and emergency tasks related to their patients and the COVID-19 pandemic. Consequently, research activities, including REB approval processes, needed to be timelier to accommodate organizational priorities. Throughout this period, we encountered challenges in clearly defining roles, maintaining robust engagement with our partners, and maturing our relationships with key stakeholders. Additionally, communication challenges arose due to differing preferred communication channels among participating organizations.

Nevertheless, similar to the process of building any new relationship, we recognized the importance of investing time to comprehend each other's organizational cultures, priorities, and optimal methods of collaboration and communication. These challenges prompted valuable lessons, emphasizing the significance of providing ample time and space for our partners and stakeholders as well as fostering meaningful and respectful engagement. Additionally, we learned the importance of flexibility and adaptability when facing changes and emerging needs in both internal and external environments. Acknowledging the pressures numerous teams face, we opted to hire additional team members and regularly check in with the Steering Committee to seek advice during challenging periods. The valuable

insights garnered from these experiences have equipped our project team with invaluable lessons in stakeholder management, which we intend to apply in future endeavours.

The project has attracted additional investment and partnership support, including securing the AMS fellowship and applying for grants like the Digital Compassion Grant. The continued collaboration with partners like AMS and our reflections on the lessons learned from the Vector partnership will contribute to the sustainability and enhancement of our program.

Lessons for Service Delivery: The program's valuable insights have underscored the need to extend AI-related training beyond the initial target audience to encompass other health professionals.

Incorporating French translation for Symposium 1 positively impacted Quebec's participation. However, engagement from Quebec residents in other program components could have been improved. This experience underscores the importance of proactively fostering French Canadian participation in national projects. To address this, future initiatives will prioritize French language options and collaborate more closely with Quebec partners to enhance regional engagement.

Moreover, the IDEA scoping review has highlighted effective training strategies that could support advancing equity principles in AI education. Mentorship or hands-on training were identified as effective methods of demonstrating equitable practices in AI utilization while role-modelling and positive reinforcement were more appropriate for delivering compassionate care. Lastly, the IDEA scoping review discussed how co-designed curriculums from a multidisciplinary team are the most beneficial method for addressing concerns of biases and trust among end users. In addition to the mode of delivery, seven competencies that clinicians should be educated on were identified.

1. Understand the application and impact of AI
2. Communicate AI function and output to colleagues and patients
3. Appraise AI outputs and potential biases
4. Cultivate transparency and trust with patients
5. Understand the ethical and privacy guidelines of AI
6. Demonstrate compassionate care delivery when using AI
7. Demonstrate a continuous learning mindset.

These competencies can be used to develop and guide future programs to help maximize the benefits and adoption of AI in clinical practice and lower its potential risks.

The initial phase of the grant focused on two programs aiming to provide all healthcare providers with a general understanding of AI. Following a successful evaluation of the Clinical Champions Program targeting all healthcare providers, it became evident that participants desired specialty-specific education due to the varying impacts of AI on different specialties. The project findings underscore the inherent difficulty in maintaining participant engagement consistently over extended durations of 6-8 weeks (about two months). This challenge is further exacerbated when courses are scheduled during weekends, particularly when participation is not mandated or lacks associated costs. These observations highlight the need for strategic planning and incentives to ensure sustained engagement in service delivery initiatives of this nature. To address this need, the project received a grant extension and developed two specialty programs tailored to mental health and medical imaging/radiation therapy. These programs adhered to the competencies identified in the IDEA scoping review but tailored their case studies and discussions to each

specialty. Participant feedback revealed that the tailored approach improved understanding of course content. However, it was observed that participants came from diverse backgrounds, some having more substantial knowledge of workflows while others were more proficient in technical aspects. Moving forward, the development of future programs should prioritize discussing fundamental AI concepts before delving into application and AI implementation models/algorithms.

Participant feedback provided valuable insights into program content and delivery. Participants expressed appreciation for the ability to specialize in specific streams, finding the course syllabus comprehensive and beneficial for making informed choices. The focused nature of the specialty programs, such as medical imaging/radiation therapy, resonated with participants, providing a more targeted learning experience. Additionally, the flexibility offered by virtual learning was well-received, enabling participants to manage their coursework alongside their work schedules. Engaging elements such as Q&A sessions, reflections, and breakout rooms fostered deeper learning and enhanced participant engagement, creating an inclusive and empowering learning environment where each person's voice was valued. Quotes from participants further validated the effectiveness of the specialized streams and virtual learning experience, reflecting positive reception and satisfaction with the program content and delivery.

In conclusion, the project has garnered essential insights for service delivery, emphasizing the need to extend AI-related training to other health professionals and to tailor programs to meet the specific needs of various specialties. The competencies identified through the IDEA scoping review will continue to serve as a guiding framework for future programs, ensuring AI adoption aligns with equity principles and fosters compassionate care. As the project is adopted in various settings, continuous reflection and adaptation based on participant feedback will remain central to informing program content and delivery, ultimately maximizing the benefits of AI implementation in clinical practice.

Lessons Learned

The project's findings emphasize the importance of educational interventions in supporting AI adoption in healthcare. It offers valuable insights into training program curriculum development, emphasizing the importance of integrating AI education into core curricula for healthcare professionals. Practical examples from the certificate programs such as Google CoLab assignments for hands-on learning, a cumulative capstone assignment involving creating AI solutions for real-world practice challenges, and case-use studies illustrate how AI education can be effectively woven into the curriculum. This approach can serve as a model for addressing emerging technologies in healthcare education and holds potential implications for other domains seeking to incorporate similar advancements into their curricula.

Key lessons also include addressing literacy gaps, ensuring ethical considerations, and fostering comprehensive and inclusive programs for responsible and equitable AI integration. Consideration of the audience's time commitments is crucial, influencing the program's delivery style and duration. Moreover, ensuring accessibility is paramount. These lessons should guide program development and governance practices at various levels. The IDEA scoping review highlighted the opportunities and challenges of advancing health equity in AI through education and responsible implementation. The findings of this review highlight policy-related themes that can inform the development of training programs and policies to support AI integration.

The first finding was that organizations must commit to the ethical practice and use of AI principles such as fairness, accountability, transparency, privacy, and promotion of human values.

Fairness: the responsibility of institutions to use and implement AI systems in a way that does not emulate unfair bias or reflect discriminatory decision-making.

Accountability: adhering to ethical principles and being accountable for the actions and decisions of their AI devices

Transparency: accurately disclose necessary information about AI to its users and provide clear, easy-to-understand communication

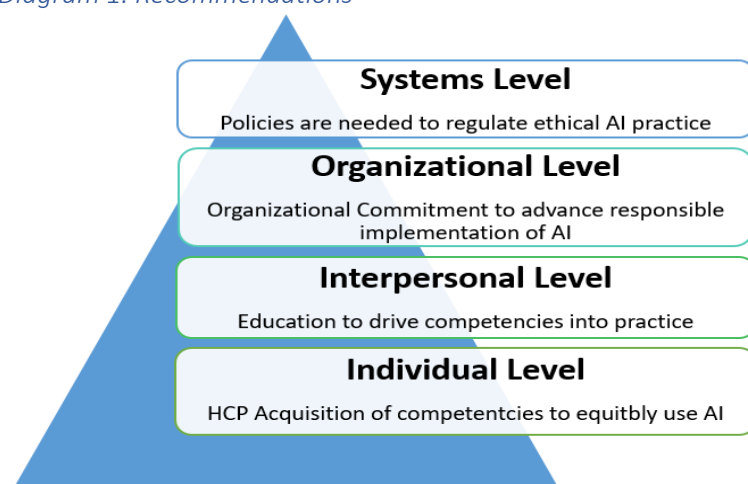
Privacy: Ensure personal data was not breached in the use and implementation of AI

Promotion of human values: need for organizations to respect individuals' human rights and values throughout the use and implementation of AI.

The project underscores the potential policy implications for skills training in healthcare. It highlights the need for policy initiatives that encourage the integration of AI education into medical education, ensuring that healthcare professionals are equipped to harness AI's benefits effectively and contribute to enhanced patient care and healthcare outcomes. Furthermore, supporting continuing professional education and skillset development is essential to prepare healthcare professionals for the evolving adoption of AI in their respective fields.

During this review, training and educational programs did not discuss these ethical principles within their curriculums, but it is highly encouraged. Teaching ethical principles will facilitate transparency and trust among clinicians. The discussion on policy implications should encompass the certification of devices and the establishment of a framework for general access to Personal Health Information (PHI) for the purpose of AI research. These considerations are critical to shaping comprehensive governance structures that ensure the efficacy and security of AI technologies within the healthcare domain. Moving forward, we must also address the barriers that prevent the integration of equity principles in AI education and implementation. The first factor identified includes the high cost of education. This factor impacts the number of individuals willing to invest in educational initiatives and lowers the demand for educational programs. On a systems level, it was noted that clear guidance and policy on addressing equity in AI education and implementation practices need to be created. Currently, the ethical implications of AI are varied, and no standard practice is set in place to address these principles appropriately in healthcare. The lessons learned from the overall project provide four-fold recommendations [Diagram 1]. To integrate equity principles within education and training for the healthcare workforce, change must occur at the individual, interpersonal, organizational, and societal (systems)-levels.

Diagram 1. Recommendations



Appendix A

List of Publications

1. Accelerating the Appropriate Adoption of Artificial Intelligence in Health Care: Protocol for a Multisteped Approach.
Wiljer, D., Salhia, M., Dolatabadi, E., Dhalla, A., Gillan, C., Al-Mouaswas, D., Jackson, E., Waldorf, J., Mattson, J., Clare, M., Lalani, N., Charow, R., Balakumar, S., Younus, S., Jeyakumar, T., Peteanu, W., & Tavares, W. (2021). Accelerating the Appropriate Adoption of Artificial Intelligence in Health Care: Protocol for a Multisteped Approach. *JMIR research protocols*, 10(10), e30940. <https://doi.org/10.2196/30940>
2. Artificial Intelligence Education Programs for Health Care Professionals: Scoping Review
Charow, R., Jeyakumar, T., Younus, S., Dolatabadi, E., Salhia, M., Al-Mouaswas, D., Anderson, M., Balakumar, S., Clare, M., Dhalla, A., Gillan, C., Haghzare, S., Jackson, E., Lalani, N., Mattson, J., Peteanu, W., Tripp, T., Waldorf, J., Williams, S., Tavares, W., ... Wiljer, D. (2021). Artificial Intelligence Education Programs for Health Care Professionals: Scoping Review. *JMIR medical education*, 7(4), e31043. <https://doi.org/10.2196/31043>
3. Preparing for an Artificial Intelligence–Enabled Future: Patient Perspectives on Engagement and Health Care Professional Training for Adopting Artificial Intelligence Technologies in Health Care Settings.
Jeyakumar, T., Younus, S., Zhang, M., Clare, M., Charow, R., Karsan, I., Dhalla, A., Al-Mouaswas, D., Scandiffio, J., Aling, J., Salhia, M., Lalani, N., Overholt, S., & Wiljer, D. (2023). Preparing for an artificial intelligence–enabled future: Patient perspectives on engagement and health care professional training for adopting artificial intelligence technologies in Health Care Settings. *JMIR AI*, 2. <https://doi.org/10.2196/40973>
4. Instructor/Learner Needs Assessment—Journal of Medical Internet Research (JMIR), Medical Education
 - Revisions submitted to journal editors

5. Mental Health Needs Assessment—Journal of Medical Internet Research (JMIR) Formative Research
 - Undergoing journal review – revisions in progress
6. Mentorship Scoping Review – Digital Health
 - Undergoing journal review – revisions in progress
7. Clinician Champions Evaluation – Education Sciences
 - Accepted to journal special issue – submitted for revisions
8. Accelerating AI Innovation Through Mentorship – Studies in Health Technology and Informatics
 - Accepted by journal – under press
9. IDEA Scoping Review (in draft form)
10. Leaders Program Evaluation (in draft form)
11. Mental Health Program Evaluation (in draft form)

Table 4: Knowledge Dissemination to date

Workstream	Manuscript	Type of Submission
Needs Assessment	Instructor/Learner Qualitative Findings	Original Research
	Patient Partner Qualitative Findings	Original Research
	Mental Health Qualitative Findings	Original Research
Clinician Champions Program	Evaluation Results	Original Research
Leadership Program	Evaluation Results	Original Research
Mental Health Program	Evaluation Results	Original Research
Medical Imaging and Radiation Medicine Course	Evaluation Results	Short Report/ Commentary
Mentorship/ Innovation Hub	Scoping Review	Original Research
	Evaluation Results	Original Research
IDEA	Scoping Review & Document Analysis	Original Research
Symposium	AI for Collaboration 2021	Short Report/ Commentary
	Mental Health 2022	Short Report/ Commentary

Appendix B

Conference Presentations & Submissions

National Conferences

1. The Michener Institute at UHN Convergence Conference
 - a. Mental Health Needs Assessment—2023
 - b. Clinician Champions Certificate Program Evaluation—2023
2. The Richard K. Reznick Wilson Centre Virtual Research Week
 - a. Clinician Champions Certificate Program Evaluation—2023
3. e-Health Conference & Tradeshow
 - a. Mental Health Needs Assessment—2023
 - b. Clinician Champions Certificate Program Evaluation—2023

International Conferences

1. Society for Academic Continuing Medical Education (SACME) Conference
 - a. Building an Equity Lens in AI Education: Scoping Review—2023
 - b. Mental Health Needs Assessment—2023
 - c. Clinician Champions Certificate Program Evaluation—2023
 - d. Leaders Certificate Program Evaluation—2024
 - e. Mental Health Certificate Program Evaluation—2024
2. International Congress on Academic Medicine (ICAM)
 - a. Building an Equity Lens in AI Education: Scoping Review—2023
 - b. Clinician Champions Certificate Program Evaluation—2023
 - c. Leaders Certificate Program Evaluation—2024
 - d. Mental Health Certificate Program Evaluation—2024
 - e. Accelerate the Appropriate Adoption of Artificial Intelligence in Health Care: A Knowledge Mobilization Project—2024

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