Research and Knowledge Translation Newsletter

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HOW IS ARTIFICIAL INTELLIGENCE TRANSFORMING THE LANDSCAPE OF RESEARCH?

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By: Ramandeep Kaur, Coordinator Research & REDCap

According to ISO/IEC 22989:2022, Artificial Intelligence (AI) is a technical and scientific field devoted to the engineered system that generates outputs such as content, forecasts, recommendations or decisions for a given set of human-defined objectives (ISO, 2022). AI use various techniques such as genetic algorithms, neural networks, and machine learning to generate content or make decisions, recommendations, or predictions. The Digital Charter Implementation Act, 2022, introduced by the Canadian government, sets guidelines for strengthening Canada's private sector privacy law and establish new rules for the responsible development and deployment of AI systems.

POTENTIAL BENEFITS OF AI IN RESEARCH

AI can process and analyze large amounts of data quickly, which can potentially speed up research processes. Additionally, AI algorithms can automatize routine tasks, uncover patterns and insights from complex data sets that may be challenging for humans to discern, reduce the risk of human error, as well as the cost of research by automating repetitive processes, optimizing resource allocation, and reducing manual labor (Van Noordeen & Perkel, 2023; Burrows, 2021)

Furthermore, AI-driven tools that incorporate brainstorming and project organization features may help researchers to collaborate, manage workflows, and maintain communication among team members (Van Noordeen & Perkel, 2023).

AI USAGE AND ASSOCIATED RISKS

While AI based solutions have sparked enthusiasm in the recent years, various professionals across sectors such as law, medicine, research, and ethics acknowledge the necessity of strong ethical frameworks to tackle issues like patient data privacy, cybersecurity risks, and fair access to the ethical deployment of AI (Hasan et al., 2024). A few of these AI based challenges are:

- **Biased Outcomes**
  AI algorithms may perpetuate biases in training data or fabricate false results, leading to unfair outcomes. To reduce such biases, researchers may involve experts to identify, describe, and mitigate this

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identified and important issue (Resnik & Hosseini, 2024).

- **Data Protection and Privacy Concerns**
  Authorities worldwide recognize AI systems and their risks of handling sensitive data, raising privacy and security concerns. G7 data protection and privacy authorities, including Canada, have issued joint statements emphasizing the need for caution with generative AI technologies. Policymakers may collaborate with researchers to implement privacy laws that safeguard individuals' rights while utilizing AI applications (Office of the Privacy Commissioner of Canada, 2023).
- **Accountability and Transparency**
  AI decisions that lack transparency and confidentiality may make it challenging to hold systems accountable. Researchers, ethicists, lawyers, and policymakers are essential to navigate such ethical complexities of AI by creating regulations that address AI's legal implications. Hence, this kind of collaborative approach advocate for transparency, user-trust, and due diligence (Bill C-27, 2022).

EVENT REFLECTIONS: ARTIFICIAL INTELLIGENCE: NAVIGATING THE FUTURE IN HEALTH AND RESEARCH.

Five days in May, an annual event held by Island Health, health authorities and partner organizations brings together researchers and students, patients and healthcare providers, decision-makers, and members of the public to learn, share ideas and spark innovations. One of themes was **Artificial Intelligence: Navigating the Future in Health and Research** which held virtually via public Zoom session on May 9, 2024.

The panel was moderated by the University of Northern British Columbia and Centre for Technology Adoption for Aging in the North (CTAAN).

Here are brief summaries from each of the sessions:

ETHICAL RESEARCH AND DEVELOPMENT IN HEALTH AI

The first speaker, Dr. Anita Ho from the Centre for Applied Ethics at the University of British Columbia, discussed the ethical considerations in the research and development of health AI (Bavli et al., 2024). She emphasized the importance of maintaining patient privacy and ensuring that AI tools are used responsibly in a healthcare setting.

USING AI TO PREDICT PATIENT OUTCOMES

Next, John-Jose Nunez from BC Cancer presented his work on using AI to predict survival and mental illness in patients with cancer from their initial oncology consultation document. His research highlighted the potential of AI in improving patient care by providing accurate and timely predictions about patient outcomes (BC Cancer, 2022).

AI ADVANCEMENTS AND INNOVATION IN FRASER HEALTH

Finally, Sheazin Premji and Dr. Casper Shyr from Fraser Health shared their journey with AI advancements and innovation. They showcased how Fraser Health is charting new frontiers in healthcare with the help of AI. The integration of Virtual AI Assistant technology and the ongoing clinical transformation with MEDITECH Expanse exemplified Fraser Health' efforts to revolutionize health care through digital means (FHA, 2024).

A final panelist discussion provided valuable insights into the current state of AI in healthcare and its future potential. It highlighted the importance of ethical considerations in AI research and development, the innovative applications of AI in predicting patient outcomes, and the ongoing advancements in AI within healthcare.

The session recording including the panel can be accessed here.

GENERATIVE AI AT NH

Copilot for Web tool is available to all NH Staff. This AI tool is ready to answer questions and assist with inquiries. It has been designed to foster collaboration, control content, and drive innovation within organizations.

For data protection, NH staff must ensure that Commercial Data Protection is activated before using Copilot for Web.

Web trainings are available to NH staff to promote safe and beneficial use of GenAI. Altogether, NH staff are expected to exercise prudent judgement and to act in a lawful, ethical, and culturally appropriate manner when employing AI.

REFERENCES:

Bavli, I., Ho, A., Mahal, R., et al. (2024). Ethical concerns around privacy and data security in AI health monitoring for Parkinson's disease: insights from patients, family members, and healthcare professionals. AI & Society. https://doi.org/10.1007/s00146-023-01843-6

BC Cancer. (2022). Using artificial intelligence to predict patient need for psychiatry and counselling. Retrieved from http://www.bccancer.bc.ca/about/news-stories/stories/using-artificial-intelligence-to-predict-patient-need-for-psychiatry-and-counselling

Bill C-27. (2022). Bill C-27: An Act to enact the Consumer Privacy Protection Act, the Personal Information and Data Protection Tribunal Act and the Artificial Intelligence and Data Act and to make consequential and related amendments to other Acts, 1st Session, 44th Parliament, 2021-2022. Retrieved from https://www.justice.gc.ca/eng/csj-sjc/pl/charter-charte/c27_1.html

Burrows, L. (2021). The present and future of AI. Harvard John A. Paulson School of Engineering and Applied Sciences. Retrieved from https://seas.harvard.edu/news/2021/10/present-and-future-ai

Fraser Health Authority. (2024). New Virtual Assistant uses artificial intelligence to improve staff and medical staff learning experience with MEDITECH Expanse. Retrieved from https://www.fraserhealth.ca/news/2024/Feb/new-virtual-assistant-uses-artificial-intelligence-to-improve-staff-and-medical-staff-learning#:~:text=Leveraging%20the%20power%20of%20Amazon,experience%20and%20providing%20accurate%20assistance.

Hasan, H. E., Jaber, D., Khabour, O. F., & Alzoubi, K. H. (2024). Ethical considerations and concerns in the implementation of AI in pharmacy practice: a cross-sectional study. *BMC Medical Ethics*, 25(1), 55. Ethical considerations and concerns in the implementation of AI in pharmacy practice: a cross-sectional study | BMC Medical Ethics | Full Text (biomedcentral.com)

ISO. (2022). *ISO/IEC 22989:2022. Information technology - Artificial intelligence - Artificial intelligence concepts and terminology.* Retrieved from https://www.iso.org/standard/74296.html

Office of the Privacy Commissioner of Canada. (2023). *Principles for responsible, trustworthy and privacy-protective generative AI technologies.* Retrieved from https://www.priv.gc.ca/en/privacy-topics/technology/artificial-intelligence/gd_principles_ai/

Resnik, D. B., & Hosseini, M. (2024). The ethics of using artificial intelligence in scientific research: new guidance needed for a new tool. *AI Ethics.* https://doi.org/10.1007/s43681-024-00493-8

Van Noorden, R., & Perkel, J. M. (2023). AI and science: What 1,600 researchers think. *Nature*. Retrieved from AI and science: what 1,600 researchers think (nature.com)

ENVIRONMENTAL SCANS: NAVIGATING THE HEALTH LANDSCAPE FOR BETTER PLANNING AND DECISION-MAKING

By: Junli Wei, Specialist - Evaluation Strategic Priorities

In the dynamic field of health care, staying informed about factors that could impact the organization is critical. Used as a systematic process to identify and analyze these factors, environmental scanning is an assessment and data collection tool that has been widely used in the healthcare sector.

WHAT IS AN ENVIRONMENTAL SCAN

Environmental scanning is the process of collecting, analyzing, and distributing information about events, trends, and relationships to inform subsequent strategic planning and decision making. It involves examining various domains, such as political, economic, social, technological, environmental, and legal factors, often referred to by the acronym PESTEL for tactical and strategic purposes.

WHY ENVIRONMENTAL SCANS ARE IMPORTANT FOR HEALTH CARE

Environmental scans search the environment as a means of “information seeking”. This can help organizations understand and learn about a specific topic, assisting strategic planning, enabling effective resource utilization, informing decision-making, monitoring resources, formulating strategies, and identifying threats and opportunities. For health authorities, understanding these influences is paramount to maintaining a responsive and effective health system.

WHEN TO CONDUCT AN ENVIRONMENTAL SCAN

Environmental scans can be conducted reactively when a challenge has arisen that needs to be addressed, or proactively when a new program is being implemented and its success needs to be ensured. Typically, environmental scans are more frequent when an organization or program faces higher levels of perceived uncertainty, such as when taking a new direction or during its start up phase.

HOW TO CONDUCT AN ENVIRONMENTAL SCAN

The process of environmental scanning includes finding, gathering, interpreting, and using information from the internal and external environments of an organization to help direct future action. This method uses multiple strategies for information collection that includes focus groups, in-depth interviews, surveys, literature reviews, and reviewing personal communications, policy analyses, and internal documents.

Environmental scanning has two parts: internal analysis and external analysis. Internal analysis deals with micro-based factors that are mostly in control by the organization, reviewing resources, processes, and performance,

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and identifying major strengths and weaknesses in key functional elements like structure, human resource, finance, IT, and policies. External analysis covers factors that an organization cannot control and includes identifying opportunities and threats from relationships with external groups and stakeholders.

While there are no "one-size-fits-all" solutions to environmental scans, the seven steps below, developed by Wilburn, Vanderpool and Knight (2016), have been widely applied to health projects for conducting environmental scanning:

- Draw on experience to determine leadership and capacity for the target project or program
- Establish the focal area and purpose of the environmental scan
- Create and adhere to a timeline and set incremental goals
- Determine information to be collected for the environmental scan
- Identify and engage stakeholders
- Analyze and synthesize results from the environmental scan into a concise summary report
- Disseminate results and conclusions to key stakeholders

APPLICATION OF ENVIRONMENTAL SCANNING IN HEALTH CARE

Environmental scans are frequently reported in healthcare as a methodological approach to examine a particular topic and provide input into strategic thinking, decision making, and planning. Using key words "Canada health environmental scanning" in Google Scholar, 521,000 results show up.

Strategic Planning: Scanning the environment is an important part of strategic planning and has been linked to improved organizational performance. Widely conducted in health, environmental scans provide evidence about potential directions for the organization to help shape its goals and strategies. For instance, the National Collaborating Centre for Determinants of Health (NCCDH), as demonstrated from its website, has regularly engaged in environmental scanning since 2010, which directly informs NCCDH projects and larger strategic planning. Environmental scanning has been utilized at Northern Health, as shown in the Northern Health Strategic Plan 2023-2028, Northern Health Strategic Plan 2016-2021, and Northern Health Strategic Planning Process to collect, organize, and analyze information for the planning process, helping to identify relevant issues that could impact the delivery of quality health care.

Decision Making: Environmental scans can identify emerging trends and legislative changes, helping make decision more effectively. For example, Canada's Drug Agency conducts environmental scans of health care practices, processes, and protocols inside and outside of Canada to inform decision-makers about the use of health technologies across jurisdictions, particularly with respect to practice variation and policy gaps. Details are available on its website.

Community Healthcare Initiatives: The diversity of information sources gathered through environmental scans has helped healthcare systems adopt innovative practices that improve patient care and organizational efficiency. This also allows community healthcare to design initiatives that address specific local health challenges, which plays an essential role in reducing the burden of disease, improving quality of life, and reducing healthcare costs. A good example of this can be demonstrated by the Northern Health Virtual Clinic.

Evaluation: By gathering key sources of information, environmental scanning can be utilized for initiating evaluation, identifying similar evaluations, and collecting available resources, which is viewed as an integral part of evaluation competency by the Canadian Evaluation Society (CES). See details in CES evaluation competency. At Northern Health, environmental scanning has been frequently employed by the evaluation team. For example, the author has applied this methodology in regularly

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monitoring the literature and internal and experiential reports. On this basis, I developed the Key Acute Care Access and Flow Measures for further discussion with health clinicians to address the ongoing challenges in the Acute Care. The Evaluation team also engaged in a rapid review to support the identification of potential service recommendations on the increasing "no-show" appointments at the Northern Health Virtual Substance Use Clinic.

CONCLUSION

Environmental scans are essential for healthcare to navigate the complex healthcare landscape with constant decision making and foresight requirements. By examining internal and external factors, they can make informed decisions, develop strategies, manage risks, and seize opportunities for innovation. Conducting environmental scans regularly fosters organizational learning in a constantly changing environment. Overall, environmental scanning is a crucial process that guides policy and health service decisions, as well as aligns strategic plans with current and anticipated changes, ensuring adaptability and improved outcomes.

REFERENCES AND RESOURCES

Canada's Drug Agency (2024) *About Environmental Scanning*. Retrieved from https://www.cda-amc.ca/about-environmental-scanning.

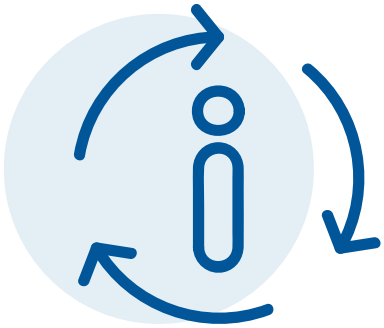
Canadian Evaluation Society (2018) Competencies for Canadian Evaluation Practice. Retrieved from CES evaluation competency

Choo C.W. (2001). Environmental scanning as information seeking and organizational learning. *Inf Res* No.1–26. Retrieved from: https://informationr.net/ir/7-1/paper112.html

Choo C.W. (2003). The art of scanning the environment. In: Voros J, ed. Reframing environmental scanning: a reader on the art of scanning the environment. monograph series. Hawthorn, Australia: Australian Foresight Institute, Swinburne University of Technology. No. 4. 7–18. Retrieved from: https://wfsf.org/wp-content/uploads/2023/01/AFI_Monograph_04.pdf.

NCCDH (2024). National Collaborating Centre for Determinants of Health (NCCDH) Environmental Scans website Retrieved from https://nccdh.ca/our-work/nccdh-environmental-scans/

Wilburn A., Vanderpool R.C. & Knight J.R (2016) Environmental Scanning as a Public Health Tool: Kentucky's Human Papillomavirus Vaccination Project. *Preventing Chronic Disease* No:13:160165. DOI: http://dx.doi.org/10.5888/pcd13.160165



NEW RESEARCH STUDIES IN THE NORTH JULY – AUGUST 2024

NH continues to expand its research supports that contribute to relevant research and scientific discoveries strengthening Northern and provincial research capacity that informs healthcare policy and practice.

The following list includes the latest authorized research studies from July to August 2024.

#	Principal Investigator	Institution	NH Affiliated Team Member	Study Title	HDSA/ Area	Facility
1	Karen Dahri	UBC	Robert Pammett	A Survey on British Columbian Pharmacists' Knowledge and Perspectives on Climate Change and Environmental Sustainability	N/A	None (NH staff affiliation involved)
2	Kristin Campbell	UBC	N/A	EXCEL; EXercise for Cancer to Enhance Living Well study	All	All NH facilities
3	Karen Dahri	UBC	Robert Pammett	Evaluating Patients' Perception of Pharmacist Prescribing in British Columbia	N/A	None (NH staff affiliation involved)
4	Joanna Cheek	UBC	N/A	Physician Confidence Working with Patients Experiencing Human Trafficking: A Canadian Perspective	All	All NH facilities (virtual survey)
5	Susan Burke	UNBC	Alex Childerhose	Exploring the Perceptions of Professional Staff on the Role of the Physical Environment in Inpatient Psychiatric Units in Northern British Columbia	All	Dawson Creek District Hospital, University Hospital of Northern British Columbia, Mills Memorial Hospital
6	Hugh W. Davies	UBC	Tarn Sandhu	Hazardous Drug Exposure Prevention Program: A Pilot Study (HazDEPP)	All	Prince Rupert, Quesnel, and Smithers
7	Jonathan Cooper	NH	Jonathan Cooper	Understanding Internal and External Stakeholder Experiences during Engagement in the Planning Phase of a Construction & Development Project for a Small Long Term Care Home.	NW	Kitimat

NEW TO THE NORTH: NH JOINS THE KNOWLEDGE TRANSLATION CHALLENGE

The Knowledge Translation (KT) Challenge is designed to support teams of clinicians (nursing, allied health, or medical staff) who are responsible for moving evidence into practice, however, may not have KT expertise. There must be a minimum of two people per team. Teams can be interprofessional.

BENEFITS OF PARTICIPATION

- Support for staff who do not have KT experience
- Help in designing a team-based KT project
- Access to KT resources, mentorship, and funding

WHAT WILL BE EXPECTED OF PARTICIPANTS?

Applicants will find team members and complete a short Letter of Intent (LOI) form before the deadline of October 18, 2024. If the team application is accepted, participants are expected to attend three KT skills workshops, participate in an online community of learners, and write a five page proposal for funding, with support from a KT mentor. Proposals are due April 14, 2025. Selected teams will be supported with funds (up to $5,000) and a mentor to conduct their projects over a two year period. Team leaders and members will be required to complete evaluation surveys at the end of the project.

Interested in discussing this opportunity? Reach out to Marcelo Bravo: research@northernhealth.ca or marcelo.bravo@northernhealth.ca

> "Want to learn how to use evidence to improve health care in real life? The KT Challenge is for you!"

NH'S LIBRARY NEWS

In recognition of the upcoming National Day for Truth and Reconciliation on September 30th, there are many books in the library's collection that can guide and support culturally safe practices and learning. Check out these titles and search our online catalogue for more essential readings:

- Kaa-wiichihitoyaahk – We take care of each other : Métis perspectives on cultural wellness
- Indigenous health equity and wellness
- My conversations with Canadians

To register for a library borrowing account, email library@northernhealth.ca

EVENTS, GRANTS AND MORE

NH Research Seminar and UNBC HRI Seminar Series presents: Linking strategic health research development to informing evidence-based practice: Experiences of a rural healthcare organization in the United Kingdom by Dr. Bonnie Teague, Visiting Scholar

Date: Sept. 26, 2024
Time: 12:30 pm – 2:00 pm
Format: UNBC in person and online via Zoom webinar. More info here.

Lunch and Learns I National Centre for Truth and Reconciliation – University of Manitoba

Join daily 'Lunch and Learn' webinars, an immersive experience to un-learn the myths of colonial history in Canada. Expert matter speakers will present for 40-50 minutes followed by a Q&A between the moderator and guests.

Date: Sep 23 – 27, 2024
Time: 10:00 am
Format: Online via Zoom. More information and registration here.

Canadian Primary Care Research Network Panel: Meeting the Needs of Unattached Patients

Date: Oct 1, 2024
Time: 9:00 am
Format: Online via Zoom. Register here.

British Columbia Office of Patient-Centred Measurement

Hear about the British Columbia Office of Patient-Centred Measurement who provincially coordinate scientifically rigorous approaches for collecting and reporting patient and family perspectives about their satisfaction, experiences,

and outcomes of the care and services they receive. Lena Cuthbertson, Provincial Executive Director of the Office, will share about patient centred measurement data that is available to Northern Health and how it can be used in planning and improvement at the local and regional level.

Date: Oct 29, 2024
(NH internal event)

Stay tuned to more information about this learning opportunity via NH's Sharepoint here.

The Rural Voices Gathering 2024. Conversations on community driven solutions for rural health and wellness

The Rural Voices Gathering is an open and inclusive event welcoming everyone who lives, works or provides health services in rural, remote, First Nations, and Métis communities across British Columbia. Co-hosted by the Rural Coordination Centre of BC (RCCbc), First Nations Health Authority, and Health Quality BC, this province-wide gathering is an opportunity to contribute to conversations and build connections that will shape the future of health and wellness in rural BC.

Date: Nov 20 & Nov 27, 2024
Registration and more information here.

Putting Patients First Conference: Registration open

Join the BC SUPPORT Unit annual conference and learn from keynote speaker and global expert in learning health systems, Dr. Robert Reid.

Date: Nov 14, 2024
Format: In person and online.
Full program and registration here.

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WOULD YOU LIKE TO WRITE AND PUBLISH A SHORT HEALTH RESEARCH ARTICLE?

The Research & Knowledge Translation Newsletter is accepting articles for future editions. We are open to all areas of health research and knowledge translation as well as evaluation, data analytics, quality improvement or innovation projects.

If interested to include an article or to share information about an upcoming event, email: research@northernhealth.ca