



Commentary

Indigenous-led governance and technological advancement as synergistic pathways for responsible AI in Canadian health care

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Introduction — why defining responsible AI use in health care matters now

We are no longer in the early stages of artificial intelligence (AI) use in health care. For clinicians, health system leaders, and policymakers, the central question is how AI should be governed once incorporated into clinical care. Without clear governance, AI risks amplifying inequities, introducing clinical risks, and eroding trust. Here, AI refers to computational systems that use data-driven models to generate predictions, recommendations, classifications, or other outputs that can inform health-related decisions. Unlike conventional digital technologies, AI can generate decision-relevant outputs, raising concerns about bias, transparency and accountability. Responsible AI therefore requires governance responsive to how data are used, outputs are interpreted, and responsibility assigned. In this Commentary, we argue that Indigenous-led governance can complement existing technological, regulatory, and professional approaches to responsible AI. Through a “win-win” lens grounded in health for all, we consider how these approaches can work synergistically across the Canadian health system. While grounded in Indigenous rights contexts, the governance principles discussed here may inform broader health policy where technology introduces new forms of risk, complexity, and inequity.

The need for a national strategy for responsible AI implementation in Canadian health care

Canada has an opportunity to advance responsible AI governance by moving from abstract principles toward implementation in health systems. Health systems can function as “living laboratories”, co-developing innovations with clinicians, patients, and communities. In Saskatchewan, the Virtual Health Hub (VHH) [1] offers an example of digitally enabled care in rural, remote, and Indigenous settings and a foundation for considering governance of emerging AI-enabled care. Established VHH programs such as telerobotic ultrasound and virtual pediatric care are not AI themselves. Emerging AI-enabled healthcare initiatives within the broader VHH program are at different stages of development and evaluation. For example, a digital wound-imaging project is collecting real-world patient data to evaluate AI-assisted wound assessment [2]. We use the broader VHH experience to illustrate technology implementation within healthcare relationships, community contexts, and accountability structures. As AI-enabled functions are introduced, governance must extend beyond the technology itself to address how data are used, how AI-generated outputs inform decisions, who exercises oversight, and how accountability is sustained throughout implementation [3]. The VHH therefore illustrates an implementation environment in which technology and governance evolve together. At the national level, the Pan-Canadian AI for Health (AI4H) Guiding Principles provide a shared policy foundation for responsible AI

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adoption and explicitly recognize Indigenous-led governance and data sovereignty [4]. However, national guiding principles do not themselves constitute a binding or uniformly implemented governance framework. A key policy challenge is translating these principles into operational approaches to oversight, evaluation, and accountability across Canadian health systems.

Why compliance-based AI governance is insufficient

Responsible AI governance in Canada operates across distinct legal, policy, and governance domains. Applicable federal and provincial laws establish obligations related to privacy, data protection, and healthcare delivery, while additional policy guidance informs responsible AI development and use. The Artificial Intelligence and Data Act (AIDA), proposed as part of Bill C-27, was intended to establish a federal regulatory framework for certain AI systems but was not enacted. Indigenous data-governance principles constitute a distinct governance domain: for example, the First Nations principles of OCAP®—Ownership, Control, Access, and Possession—guide the collection, protection, use, and sharing of First Nations data and support First Nations data sovereignty. These mechanisms should therefore not be treated as equivalent or interchangeable.

Legality alone does not guarantee trustworthiness. The European Union's AI Act reflects a regulatory approach intended to establish clearer risk-based requirements [5], although its longer-term effects on responsible innovation and health-system implementation remain to be established. The World Health Organization similarly emphasizes participatory oversight and cultural context in trustworthy AI governance [6]. Together they reinforce accountability, transparency, and stakeholder engagement throughout the technology lifecycle.

Indigenous-led governance as a synergistic approach to responsible AI

Responsible AI use in Canadian health care may benefit from rights-based frameworks, including the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) [7] and the Truth and Reconciliation Commission Calls to Action (18–24) [8]. UNDRIP specifically establishes Free, Prior, and Informed Consent (FPIC) as a key consideration where Indigenous rights, communities, and collective data interests are implicated. Indigenous data governance must be distinctions-based and responsive to the rights, governance structures, and priorities of First Nations, Inuit, and Métis Peoples and communities. Within First Nations contexts, the principles of OCAP®—Ownership, Control, Access, and Possession—provide a framework for First Nations data sovereignty [9], while Inuit and Métis governance should be guided by their respective governance structures, principles, and community priorities. Across these contexts, health data may carry collective rights, relationships, and responsibilities.

Principles such as transparency, accountability, consent, and co-development are not exclusive to Indigenous governance. Our previous work [3] synthesized ethical considerations into a six-domain conceptual framework for AI-enabled digital health involving Indigenous populations. Building on that foundation, this Commentary advances a distinct Canadian health-policy proposition: Indigenous-led governance and technological and regulatory approaches should be operationalized as complementary, synergistic components of responsible AI governance, not separate or competing pathways. We therefore propose a lifecycle mechanism that moves beyond consultation by allocating decision rights across implementation. Before deployment, health-system authorities and the relevant Indigenous governing or community-designated governance body should jointly define decisions concerning data access, model training, procurement and deployment, and secondary data use, consistent with applicable Indigenous rights and governance structures. Health-system institutions retain responsibility for clinical safety and regulatory and professional

obligations, while Indigenous governance partners exercise authority over community data governance, culturally grounded priorities, and community-defined conditions for implementation. After deployment, accountability is sustained through documented audits, feedback and reporting mechanisms, community oversight, and defined escalation pathways. Where disagreements arise, the parties should use a pre-agreed joint governance process to document the dispute, seek resolution, and, where unresolved concerns involve rights, data governance, or safety, pause the affected use until an agreed resolution is reached.

While neither Indigenous nor Western governance approaches are uniform, their orientations may differ. Conventional Western health governance has emphasized individual consent, institutional accountability, regulatory compliance, and technical performance, whereas Indigenous-led approaches may place greater emphasis on collective rights, relational accountability, reciprocity, community authority, and intergenerational responsibilities. For AI governance, this broadens consideration beyond technical effectiveness and compliance to authority over data and deployment, risks and benefits, and sustained community accountability throughout the technology lifecycle. These approaches need not compete; their strengths can be combined to support more technically robust, relationally accountable, and context-responsive AI governance. Co-designing AI systems that draw on both Indigenous and Western knowledge systems may create conditions conducive to cultural safety and public trust, with potential to support scalable innovation.

It is essential to avoid pan-Indigenous generalizations. Each Nation has distinct governance traditions that guide how health technologies are designed and governed. The Two-Eyed Seeing approach, articulated by Mi'kmaq Elder Albert Marshall [10], offers a foundation for bringing scientific rigour and relational ethics together. Building on Two-Eyed Seeing, we propose its application as a governance lens that brings technical evaluation and relational accountability together in practical decisions about AI. Our proposed applications include defining who has authority over data and technology procurement, incorporating community-defined priorities alongside technical performance in evaluation standards, establishing community oversight and participation in ongoing audits, and providing accessible mechanisms to raise concerns and seek redress. In this way, scientific and technological capabilities can advance alongside—not independently of—the relationships, rights, and accountability structures governing their use.

Moving from compliance to accountability in practice

Governance must remain an ongoing responsibility, not a one-time approval. Feedback loops, periodic audits, ethics reviews, and end-user reporting allow systems to adapt as contexts evolve. Indigenous-led digital health initiatives illustrate how co-design and community oversight can inform technology implementation. Similar mechanisms in provincial and national AI programs could clarify expectations for oversight, escalation, and ethical accountability. Health systems therefore require clear responsibility assignments, reporting mechanisms, guardrails for identifying and addressing harm, and stakeholder input into ongoing evaluation. Human-in-the-loop governance remains essential because AI systems reflect their creators' assumptions and limitations.

Conclusion — What does health for all require from AI governance

If Canada is to advance equitable health outcomes, AI governance must be attentive to populations that have historically experienced disproportionate health inequities. Indigenous-led governance models do not supplant existing regulatory systems; they provide important methodological guidance for responsibly integrating AI within health care. Drawing on practical experience with virtual care and emerging

AI-enabled initiatives, including the VHH implementation environment in Saskatchewan, this commentary proposes that Indigenous-led governance can inform an anticipatory and equity-oriented approach to AI adoption. For health policymakers, AI integration requires intentional, participatory, and transparent governance throughout the technology lifecycle, with regulatory compliance as a starting point. For clinicians and health-system leaders, we anticipate that this approach carries great potential to create conditions that support accountability, public trust, and durable innovation, although these outcomes require empirical evaluation. Canada therefore has an opportunity to demonstrate how ethical stewardship and technological advancement can operate as synergistic goals within an inclusive and equitable digital health system that benefits *all* Canadians.

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Ethical approval

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Declaration of competing interest

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