Brief to the Senate Committee on Social Affairs, Science and Technology

Study on the Impact of Artificial Intelligence in Canada

Submitted by the Canadian Association of Radiologists
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Executive Summary

Canada stands at a pivotal moment. We have world-class AI researchers and a health system that urgently needs the efficiency, equity, and safety gains that responsible AI can deliver. Yet our ability to translate research into trusted, real-world impact is constrained by a missing piece of national infrastructure: independent, clinician-governed clinical validation and continuous post-market surveillance for health AI. Without a federally-led framework, provinces and institutions will continue to build duplicative, divergent processes that waste time and resources and erode public confidence. Establishing a pan-Canadian validation and monitoring network, such as the Health Artificial Intelligence Validation Network (HAIVN), would enable safe, scalable adoption, protect Canadians through ongoing oversight, and create the feedback loop between clinical practice and research that keeps Canadian AI globally competitive.

On behalf of HAIVN and its broad-based clinical membership, the Canadian Association of Radiologists strongly recommends that the Government invest **$50 million over five years to launch the Health Artificial Intelligence Validation Network** (HAIVN) for safe, effective AI integration in healthcare. For a full description of HAIVN including governance, reporting and accountability please visit our website: https://haivn.ca/about/.

About the Canadian Association of Radiologists

The Canadian Association of Radiologists (CAR) is the national voice of radiology in Canada, representing more than 3,000 radiologists who deliver essential medical imaging services to millions of patients each year. Radiology is a cornerstone of modern healthcare, underpinning diagnosis and treatment across nearly every clinical specialty. CAR advocates for high-quality, timely, and equitable access to imaging, and works to advance standards, training, research, and patient safety across the country. As founding members of the Health Artificial Intelligence Validation Network (HAIVN), radiologists are leading efforts to ensure that artificial intelligence tools used in medical imaging are rigorously validated, continuously monitored, and aligned with the realities of clinical practice. CAR's mandate reflects a commitment to safeguarding patient outcomes while supporting responsible, evidence-based innovation in Canadian healthcare.

1. Data Governance and Sovereignty

Artificial intelligence has made clear that Canada must establish data governance frameworks capable of protecting privacy, respecting jurisdictional authority, and enabling innovation. Nowhere are these challenges more apparent than in healthcare, where clinical data is both highly sensitive and indispensable for training and validating AI systems. The rapid emergence of adaptive and generative AI has intensified the pressure on institutions to manage data responsibly while ensuring models perform safely for the populations they serve.

Healthcare offers a uniquely instructive example of how Canada can strike this balance. Clinician-governed oversight frameworks demonstrate how **privacy-by-design approaches, role-based access controls, auditable data pipelines, and federated data models** can allow national-scale evaluation and safety monitoring without centralizing identifiable data or undermining provincial custodianship. These same design principles apply directly to other high-value sectors, including finance, transportation, and critical infrastructure, where data sovereignty is essential to both public trust and national resilience.

By establishing clear national expectations for data governance in healthcare AI, the federal government can define a model that is rigorous enough for the highest-stakes environment and flexible enough to adapt to other domains. Doing so would give Canada a coherent national approach to data stewardship: one that protects Canadians while supporting innovation.

2. Ethics, Privacy, and Safety

AI systems do not behave like traditional software. Their performance changes over time, they react to local conditions, and they can fail in ways that are difficult to predict from pre-market testing alone. This poses profound ethical and safety challenges across the economy, but those challenges appear first, and most clearly, in healthcare.

In clinical practice, models that appear accurate in trials can drift after deployment, behave differently in underserved or under-represented populations, or fail when workflows, equipment, or patient populations shift. Health regulators and clinicians have learned that **ethical deployment requires continuous oversight**, not one-time approval. It also requires **transparency, independent validation, and real-world performance monitoring**, with the ability to intervene when tools no longer meet expected standards.

This evolving oversight model in healthcare – continuous, evidence-based, and grounded in professional governance – offers an important lesson for federal policymakers: **AI requires regulatory structures that adapt as the technology changes**. The federal government does not need to replicate healthcare regulation across every sector, but it can draw from its principles: transparency, explainability, ongoing monitoring, bias and equity auditing, and meaningful human oversight. By establishing this model in healthcare, where AI risks and benefits for privacy and safety are among the most immediate and consequential, Canada can demonstrate how agile, adaptive regulation should work in the AI era.

3. Risks, Benefits, and Social Impact

The social impact of AI in healthcare illustrates both the extraordinary promise and the systemic risks of unregulated deployment. When rigorously validated and monitored, AI functions as a force multiplier: improving diagnostic accuracy,[1,2] supporting clinical decision-making,[3] and alleviating the workforce strain[4] currently paralyzing Canadian healthcare delivery. These are tangible benefits for patients and clinicians.

However, healthcare also provides a consequential warning and cautionary example for AI across other industries. When deployed without independent oversight, AI can quietly amplify inequities,[5] suffer performance drift,[1] or introduce subtle harms that undermine trust.[6]

Benefits

Validated AI tools are not merely incremental improvements; they have the capacity to improve system sustainability. By identifying disease at earlier, more treatable stages and streamlining administrative backlogs, responsible AI adoption can materially improve access to care. This yields both individual health outcomes and broader economic benefits by reducing downstream costs associated with late-stage diagnoses and clinician burnout.

Risks

The risks of poorly governed AI are not hypothetical; they are documented extensively in clinical literature. Without continuous oversight, algorithms can "fail silently" – maintaining high confidence while providing inaccurate outputs – or embed demographic biases that disadvantage marginalized populations. Furthermore, the anticipated economic gains of the "AI revolution" are predicated on successful, sustainable implementations; these are far from guaranteed in the absence of a robust regulatory floor.

Social Impact: Trust as a Prerequisite

Public trust is the currency of successful AI integration. In healthcare, a patient's willingness to accept AI-supported care hinges on the visible assurance that these tools are independently validated and monitored for real-world safety. This dynamic is universal: across all sectors, from finance to transportation, trust cannot be assumed; it must be earned through transparency and a clear "human-in-the-loop" accountability framework.

4. Diffusion, Valorization, and Protection of Canadian AI Discoveries

Canada cannot retain ownership of strategic IP, or build globally competitive companies, without a unified domestic market that offers a predictable path from development to deployment. When each province or institution sets its own bar, startups burn capital continually proving themselves in dozens of fragmented processes, often turning abroad to scale up. A pan-Canadian validation network creates a single, credible pathway that reduces uncertainty, accelerates procurement, and provides the performance data that investors and health systems need to back Canadian firms. It also establishes a home-field advantage: Canadian companies can iterate on real-world evidence generated in Canada, for Canadians, under Canadian data governance.

The same infrastructure that de-risks adoption also protects public trust and data sovereignty. By anchoring validation and monitoring in Canada with privacy-by-design pipelines, role-based access, and transparent reporting, we signal that Canadian standards govern Canadian deployments, and that equity and safety are non-negotiable. This is how we diffuse Canadian discoveries responsibly, valorize them at home, and protect the confidence that is essential to sustained innovation.

Recommendations for Action

- Invest in HAIVN to place clinical validation and continuous post-market surveillance at the centre of Canada's health AI strategy.
- Set pan-Canadian expectations for data governance and sovereignty: Canadian custody and governance, privacy-by-design, auditable pipelines, and transparent data-sharing frameworks compatible with provincial laws.
- Mandate ethics, privacy, and equity audits across the AI lifecycle; public reporting of real-world performance, model updates, and known limitations.
- Align Health Canada's pre-market processes with continuous, post-market clinical monitoring; trigger re-certification for major model or context changes.
- Support clinician training and implementation guidance through national specialty societies to ensure safe, efficient use and effective human-AI collaboration.
- Use federal procurement and contribution agreements to avoid provincial duplication and fragmentation, creating a unified domestic market that accelerates safe diffusion and commercialization.

A five-year $50 federal investment in HAIVN enables startup, scale-up, and transition to cost recovery via risk-adjusted certification fees, monitoring subscriptions, and value-added services, with full transparency through a published rate card. This is a pragmatic path to operational maturity that lowers implementation risk and cost.

Benefits to Patients, Clinicians, and the Economy

This approach delivers concrete benefits where Canadians will feel them most.

For patients, it means safer AI, fewer avoidable errors, and faster access to care – particularly in imaging-dependent pathways where backlogs are severe. Real-world oversight reduces the risk that tools work well in trials but fail for specific communities or equipment types, protecting equity across regions.

For clinicians, it means trusted tools and reduced burden. Instead of each department attempting its own validation and quality assurance, which is an impractical ask in overstretched settings, clinicians gain a national evidentiary foundation and ongoing monitoring that reflects real practice. Oversight is clinician-governed, ensuring that performance thresholds and use recommendations align with professional standards and current medical guidance.

For innovators and Canada's economy, it creates a single, predictable pathway to a national market and the feedback loop required to build better products. It de-risks investment, strengthens domestic firms, and signals internationally that Canada is the place to develop and validate responsible health AI. The result is faster, safer adoption, reduced duplication, and better return on public and private investment.

Conclusion

Canada can lead in responsible health AI, but only if the federal government anchors deployment in clinical validation, continuous post-market surveillance, and principled data governance. A national, clinician-governed validation network transforms fragmented risk into coordinated safety, accelerates diffusion, and strengthens public trust. With decisive federal leadership now, Canada can ensure that AI delivers measurable, equitable benefits for patients, clinicians, and the economy by the end of 2026 and beyond.

The Canadian Association of Radiologists stands ready to support the Senate's work in this critical policy area and respectfully requests the opportunity to appear before the Committee to provide expert evidence.

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