

pan-Canadian Interoperability Specifications

The Canadian health system has faced unprecedented strain during the global pandemic, which exacerbated existing systemic challenges and issues. Consequently, there has been accelerated urgency to alleviate underlying pain points to continue to build a health system that is connected, equitable and sustainable. Numerous issues continue to challenge our health system, including inequitable access to care; insatiable demand across the system, most acutely at emergency departments; the ongoing health human resources crisis and the notable exodus of many health care professionals along with a shortage of information technology/informatics/interoperability experts. It is more imperative than ever that we build a more efficient health system within the resources available to us.

There is growing recognition that timely exchange and access to consistent and reliable health information can significantly improve care and drive positive health outcomes. While there has been immense digitization of health information over the past two decades, the pandemic further catalyzed the adoption of virtual care solutions. We are at a critical inflection point to ensure a sustainable health system, in which we must focus our efforts on creating the world-class interoperable system that Canadians deserve — one which puts them in control of how they receive care and empowers them to access and use their health record as they deem appropriate. The quintessential characteristic of an interoperable health system is person-centric care, in which standardized data can follow the patient across all care settings and geographies to enable more informed care provision, leading to better health outcomes.

As we look ahead, we must continue to modernize our health system through the premise of, “Connected Care to Enable a Healthier Canada,” whereby all care sectors, organizations and providers are linked through health technology and standardized data. Digital health systems need to interact with each other across all care settings so that Canadians’ health information moves with them through the system, ensuring no patients fall through the cracks. For clinicians and care providers, technology must support effective and efficient communications, and improve care delivery and the patient experience. Beyond accessing information for the provision of care, health systems need to be able to access and analyze large data sets to inform health system planning and performance, analytics, research and population health management to protect and optimize a learning health system for the generations to come. Similarly, health data needs to continue to support Canada’s reputation of world-class research (e.g., biotechnology), medical breakthroughs (e.g., genomics) and innovation.

Canada Health Infoway (Infoway) is committed to achieving a more connected health system and will leverage more than two decades of progress and experience to guide this journey. Infoway’s commitment means assuming roles from convenor to standards developer to strategic investor in order to effectively support all stakeholders across the health system in making this goal a reality. To bring this goal to reality, Infoway is developing a pan-Canadian interoperability roadmap that will leverage related work that has been planned or already initiated within Canadian jurisdictions, unlock value and address immediate pain points.

The **Shared Pan-Canadian Interoperability Roadmap** can now be downloaded from [here](#).

Understanding Interoperability

Interoperability, within the context of the digital health, refers to the secure and timely exchange of health information between systems (e.g., health technology solutions, devices, consumer apps) and the common interpretation of that information devoid of additional action from users. While this sounds straightforward, there are many moving pieces that must fall into place across the health technology ecosystem for interoperability to be achieved. These pieces can range from consensus on the technical execution of sending, processing and rendering information; to the development, interpretation and representation of the policies and frameworks that allow these actions to take place.

Interoperability pertains to a wide array of data types, formats and uses. While we traditionally think about interoperability in the context of an individual’s care, it applies to a much broader array of use cases, which will only continue to expand as technology advances. For instance, as the availability of consumer-generated data (geolocation data, wearables data, etc.) continues to grow, interoperability will be required to enable use of the data effectively for care provisioning and secondary use (e.g., population health, research).

The Significance of Interoperability

When different parts of the health system are interoperable, they “speak the same language.” Effective information flow improves continuity of care and communication between health care providers and facilitates patient access to their health information.

Connection, collaboration and communication have never been more important for the health system. Increased use of virtual care has highlighted the need for secure and efficient electronic sharing of information across the circle of care. Continuing to improve Canadian health care will require sustained focus — connected systems are healthier systems.

How Interoperability Benefits Patients, Providers, Industry and the Health System



Patient Benefits

- Improved access and information flow from interoperability can:
 - Improve access to their health information, including their ability to manage and share it
 - Reduce time to diagnosis and treatment
 - Reduce medication errors that might lead to patient harm
 - Result in fewer emergency visits and shorter hospital stays (e.g., through more efficient and timely information and communication)
 - Facilitate better transitions of care



Industry Benefits

- Faster time to market by building toward a single pan-Canadian, service-oriented Reference Architecture representing building blocks that support programs and data exchange (e.g., PS-CA, CA:FeX, eReferral and eConsult)
- More rapid entrance for new market participants through clear and defined technology requirements that enable compliance with variation in legislative requirements across the country
- Time and expense savings through the requirement to build to a single codebase for implementation across multiple jurisdictions
- Diminished frustration as vendors seek to understand and respond to variable requirements, and the ability for more resource effort to be allocated to innovation, rather than base compliance



Provider Benefits

- Time savings as a result of having the ability to access more complete and comprehensive information in one place
- Improve communication with care teams across the health system
- Improve confidence in decision-making
- Increase available time that can be spent with patients and their families (e.g., on direct care)

Health System Benefits

- Increase system capacity and productivity (e.g., by reducing duplication of work, streamlining care pathways)
- More effective systems planning and evaluation by leveraging data
- Improve morale of health workers by reducing frustrations caused by inefficient workflows and lack of information
- Cost savings and greater value for money

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pan-Canadian Patient Summary (PS-CA)

In October 2022, the first iteration of the pan-Canadian Patient Summary Specification (PS-CA), based on the IHE International Patient Summary (IPS) specification and the HL7 IPS Implementation Guide, was reviewed and approved. This specification identifies the most relevant patient health information clinicians indicated they require for the continued provision and improvement of care, the common data standards to ensure the data is understood at each point and the method to exchange the data.

PS-CA will allow care solutions to contribute pertinent patient health information into clinical repositories, such as provincial/regional electronic health records (EHRs), clinical data repositories (CDRs), personal health record (PHRs), to improve health outcomes and reduce administrative burden for clinicians.

Access to the pan-Canadian Patient Summary Specification is available [here](#).

eReferral / eConsult (CA:eReC)

The published shared pan-Canadian Interoperability Roadmap was endorsed by the Conference of Deputy Ministers (CDM) on March 30, 2023. Since the endorsement, Infoway has been working with Canadian jurisdictions to validate near-term priorities that will propel the maturation of interoperability across Canada.

Through this collaboration, establishing pan-Canadian specifications for eReferral / eConsult has been identified as a key near-term initiative. While eReferral / eConsult initiatives have been a priority in some jurisdictions for some time, the solutions are often localized and unable to provide cross-border care. Infoway will publish the pan-Canadian eReferral and eConsult specifications to create a national standard, modernizing the healthcare system towards connected care for all Canadians.

Infoway will do this in collaboration with the Province/Territories/Indigenous groups (PTIs), as well as vendor and standards communities, via Working Groups that have been established in InfoCentral with shared content that has been published in InfoScribe.

Access to the CA:eReC Working Group is available [here](#).

Canadian FHIR Exchange (CA:FeX)

In January 2022, Infoway released the first draft of the Canadian FHIR Exchange (CA:FeX) Interoperability Specification. CA:FeX Release 1 (R1) was born out of the need to support a simple FHIR®-based exchange of an International Patient Summary-aligned document. While the first release only focused on this simple document exchange pattern, Infoway's vision was always for CA:FeX to evolve into a full-fledged, system-wide protocol guiding the exchange of primary and complex health data structures.

This early version of CA:FeX focuses on a RESTful exchange of documents, a document pattern that FHIR offers multiple choices for. It aims to provide clarity to implementers by identifying some of the choices currently available, ranging from simple to a higher level of sophistication. As the specification development continues, the intent is to evolve CA:FeX into a more formal Integration Profile (similar to existing international profiles reviewed throughout this paper) that provides more comprehensive guidance on RESTful FHIR exchange patterns than what currently exists today.

Access to the pan-Canadian FHIR Exchange Specification is available [here](#).

pan-Canadian Core FHIR Profile Set (CA Core+)

The Canadian Institute for Health Information (CIHI) is developing a pan-Canadian Health Data Content Framework (pCHDCF) to lay the foundation that will enable interoperability across health systems. The Framework, supported by and aligned with jurisdictional projects, will establish the data standards, business glossary, data models (business context, information, conceptual and logical) and other metadata.

The pan-Canadian Core FHIR Profile Set (CA Core+) will provide FHIR profiles based on the business, conceptual, and logical models in the pCHDCF. This includes data exchange formats common across domains, as well as domain-specific data exchange.

As the pCHDCF is still undergoing collaborative development, content in this early draft of the CA Core+ is expected to evolve.

For more information, please refer to the [CA Core+ Interoperability Specifications](#).

Projectathons

In collaboration with the provinces and territories, Canada Health Infoway (Infoway) invited vendors to participate in the March 2023 Projectathon. Projectathons are an important step and best practice approach in testing and validation of a specification package, wherein implementers demonstrate live interoperability of solutions (actors) in conformance with pan-Canadian specifications.

The March 2023 Projectathon was dedicated to supporting Patient Summary implementation projects across Canada. The expansion of patient summary adoption is a key initiative within the Shared Pan-Canadian Interoperability Roadmap; the March 2023 Projectathon convened vendors to test and collaborate on the specific use cases within the pan-Canadian Patient Summary Specification (PS-CA). Among other objectives, the event sought to:

- Enable vendors to demonstrate the ability to implement the IPS-aligned PS-CA and pan-Canadian FHIR Exchange (CA:FeX) specifications for the secure exchange of well-formed patient summaries
- Communicate next steps and future planning for the Shared Pan-Canadian Interoperability Roadmap, especially regarding PS-CA and CA:FeX specifications

The 2023 Projectathon represented a significant milestone in our journey toward pan-Canadian interoperability. Read the [Infoway Projectathon March 2023 - Final Report](#) for a summary of our 2023 event and to learn more about the ongoing collaboration with our jurisdictional and vendor stakeholders to achieve this shared vision.

Learn more about Projectathons [here](#).