Land Acknowledgment

Today we find ourselves connecting remotely from across the nation.

CIHI would like to collectively acknowledge the lands we all occupy, whether treaty or unceded.

About the Canadian Institute for Health Information (CIHI)

What is CIHI?

- **Independent, not-for-profit organization that provides essential information on Canada's health systems.**
- **Established in 1994, we work closely with federal, provincial and territorial partners and stakeholders throughout Canada to gather, package and disseminate information to inform policy, management, care and research, leading to better and more equitable health outcomes for all Canadians.**
- **Led by a 16-person Board of Directors, with representation from across the country.**

CIHI's mandate, vision and values

About CIHI

The Canadian Institute for Health Information (CIHI) is an independent, not-for-profit organization that provides essential information on Canada's health systems and the health of people living in Canada.

Mandate

Deliver comparable and actionable information to accelerate improvements in health care, health system performance and population health across the continuum of care.

Vision

Better data.
Better decisions.
Healthier Canadians.

Values

- Inclusion
- Integrity
- Collaboration
- Excellence
- Innovation

Inclusion is an updated value broadening the intent behind our previous value of respect

Our goals for 2022 to 2027

Strategic goals

A comprehensive and integrated approach to Canada's health system data
Collaborate with partners to continuously advance the creation, validation and accessibility of health system data

An expanded offering of analytics, indicators and tools to support health system decision-making
Provide the insight needed to drive better health outcomes across Canada's health systems

Health information users who are better equipped and enabled to do their jobs
Help build users' capacity by equipping them to make the best use of data, and by convening forums where they can explore solutions together and share best practices

CIHI hosts extensive linkable, pan-Canadian data across the health care continuum…

Types of care

- Hospital and emergency
- Mental health
- Home care
- Long-term care
- Rehabilitation
- Pharmaceuticals
- Clinical registries: organ transplant/ renal, hip and knee replacements; trauma
- More

Patient-reported data

- Patient-reported outcome measures (PROMs)
- Patient-reported experience measures (PREMs)

Health spending

- Patient costing data
- Hospital and regional health authority financial accounts
- Physician billing
- System-wide health expenditures

Health workforce

- Physicians
- Nurses
- Occupational therapists
- Pharmacists
- Physiotherapists
- Allied health professionals
- More

28 data holdings

- 10 billion records
- 3 terabytes of unique records
- Pan-Canadian coverage

Linkable data:

- Example: Population Grouper links 8 databases, 3 provinces, over 23 million patients

…from many different sources

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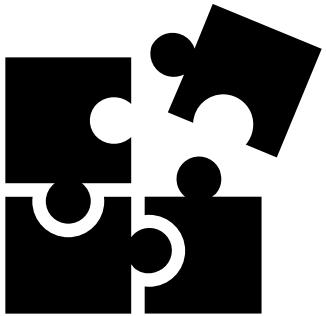
Data Standards 101

Outline

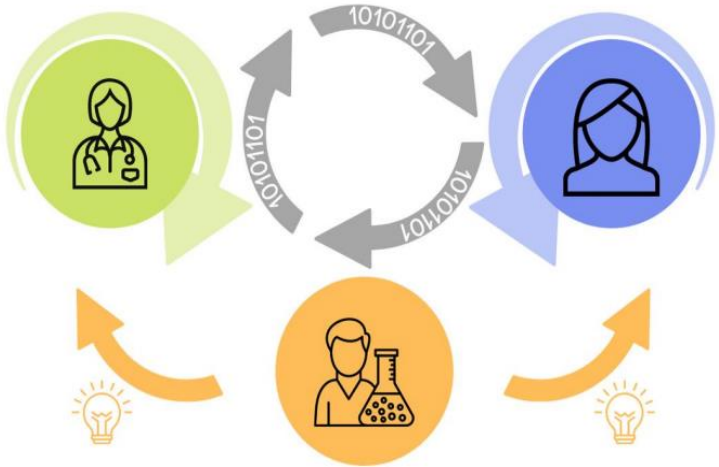
- **What are health data standards?**
- **What are the different types of health data standards?**
- **What is the development methodology lifecycle of health data standards?**
- **What is interoperability and how do health data standards relate to it?**
- **Interoperability and health data standards in action: *A case study***
- **What are barriers to standardizing health data and interoperability?**
- **Summary**



What are health data standards?

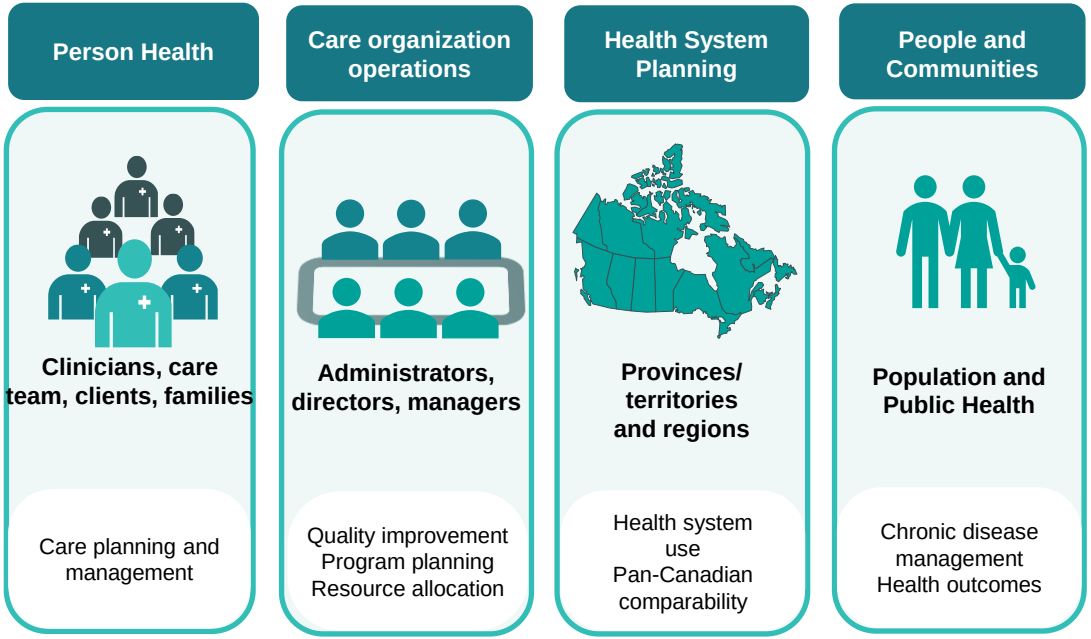
Health data standards are

- Agreed upon and documented ways of defining health-related concepts and patient in
- Computable
- Understandable
- Replicable
- Reusable
- Interoperable



They contain technical specifications or other precise criteria designed to be used consistently as a rule, guideline, or definition.

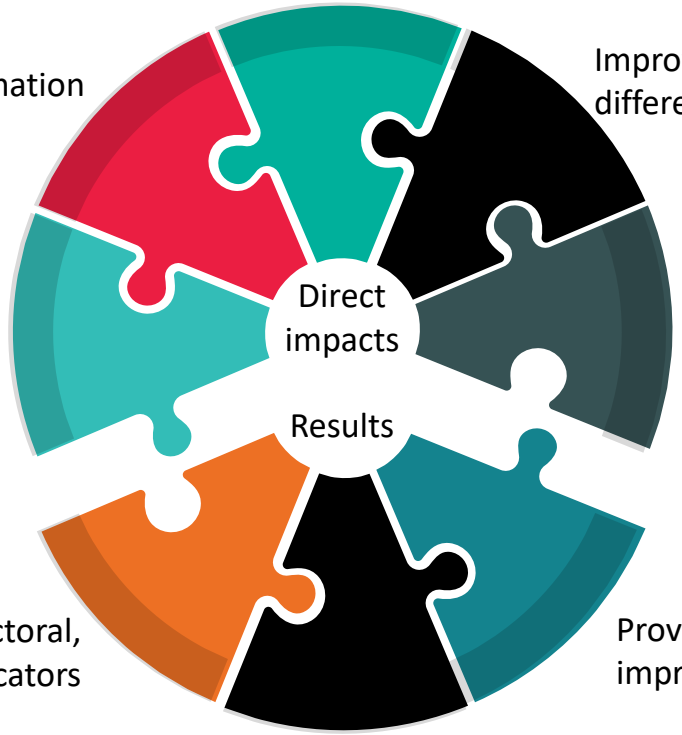
Health data standards are needed across the health system



Implementation of health data standards produces information that can be used:

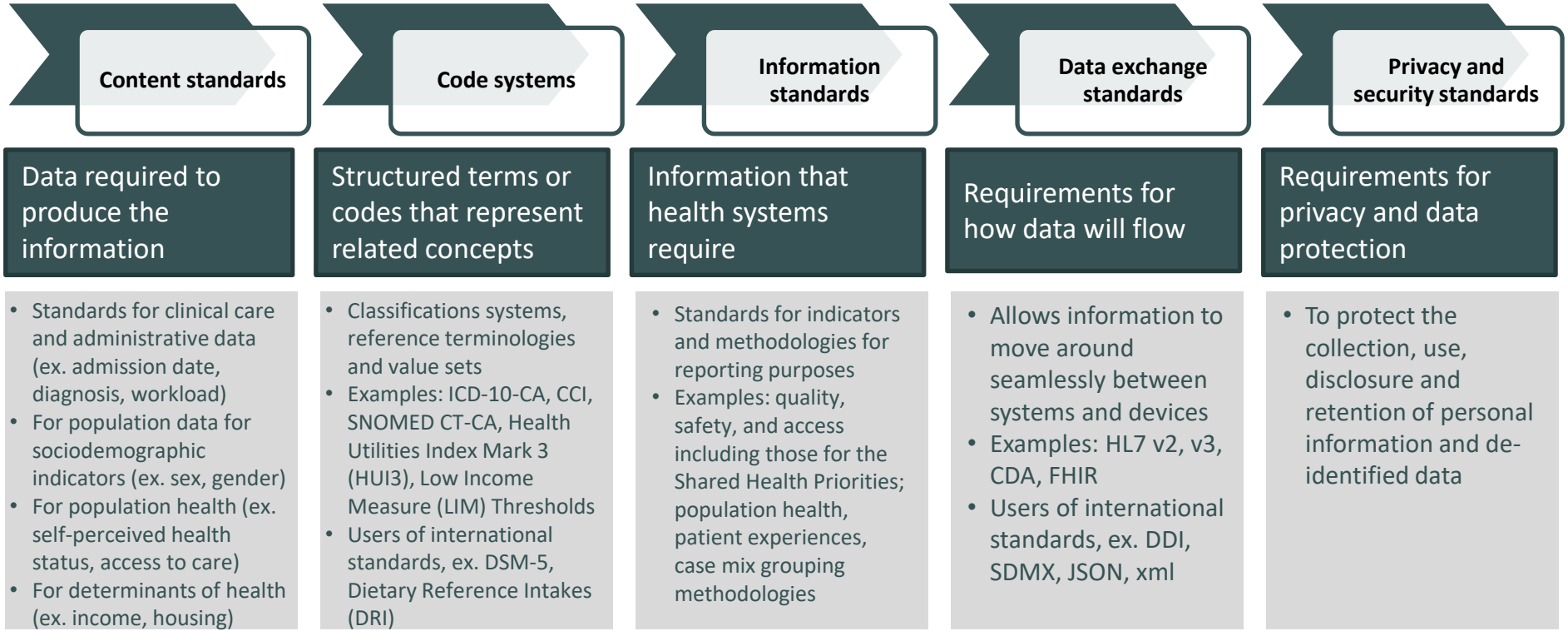
- ✓ By clients and families, to engage in care planning
- ✓ By clinicians and care teams, to inform and manage care provision
- ✓ By organizations, to inform quality initiatives and management of resources to drive continuous improvement efforts
- ✓ By the health system, to inform resource allocation, benchmarking and health outcomes by planners and policy-makers

Across these pillars, standards enable stakeholders to:



What are the different types of health data standards?

Types of health data standards



Pan-Canadian organizations' roles in health data standards

Canadian Institute for Health Information	Canada Health Infoway	Statistics Canada
Primary role: Data content standards for health system use Data collection using these standards for 28 data holdings	Primary role: Data and exchange standards for clinical and patient access	Primary role: Standards for data on vital statistics, population health, patient experiences, populations, social determinants and other subjects

Many collaborators across Canada and internationally

Canada Health Infoway

Statistics Canada / Statistique Canada
Health Canada
Public Health Agency of Canada / Agence de la santé publique du Canada

Federal Government:
StatCan, HC, PHAC, Others

Jurisdictions and Regions

ITAC health
ACTI santé
HIMSS

Vendors

CIHI ICIS

Canadian Institute for Health Information

IHE International – Making Healthcare Interoperable
HL7 International
SNOMED International – Leading healthcare terminology, worldwide
WHO
DICOM – Digital Imaging and Communications in Medicine
GS1
ISC
ISO HEALTH INFORMATICS TC215
interRAI

International Standards Bodies

Canadian Partnership Against Cancer / Partenariat canadien contre le cancer
The College of Family Physicians of Canada

Regulatory Bodies, Associations, Clinicians

Patients and Communities

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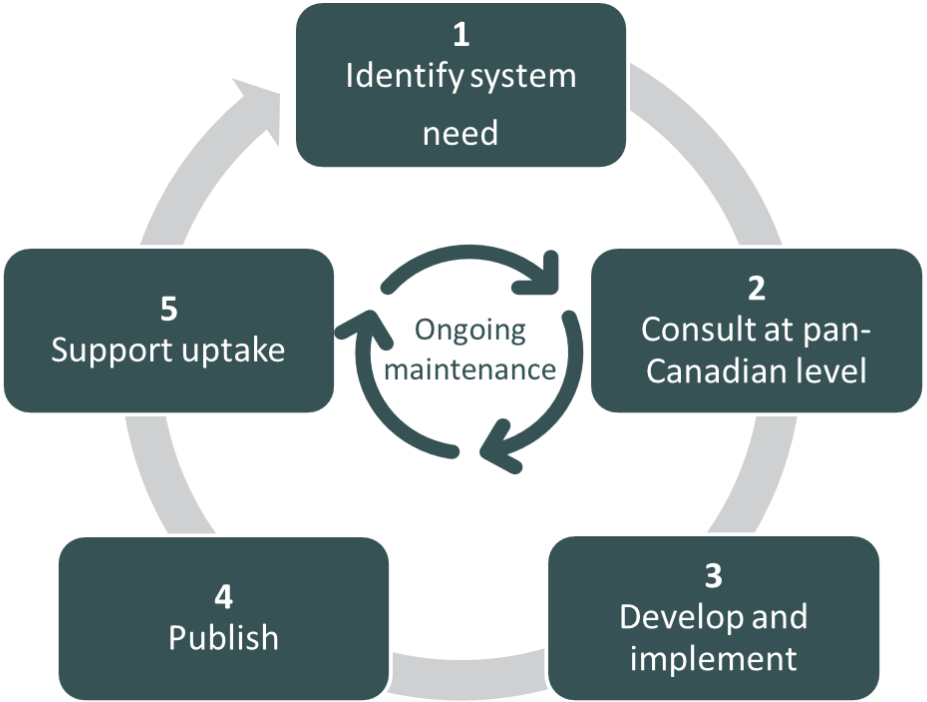
What is the development methodology lifecycle of health data standards?

A rigorous approach is applied to develop, implement and maintain standards



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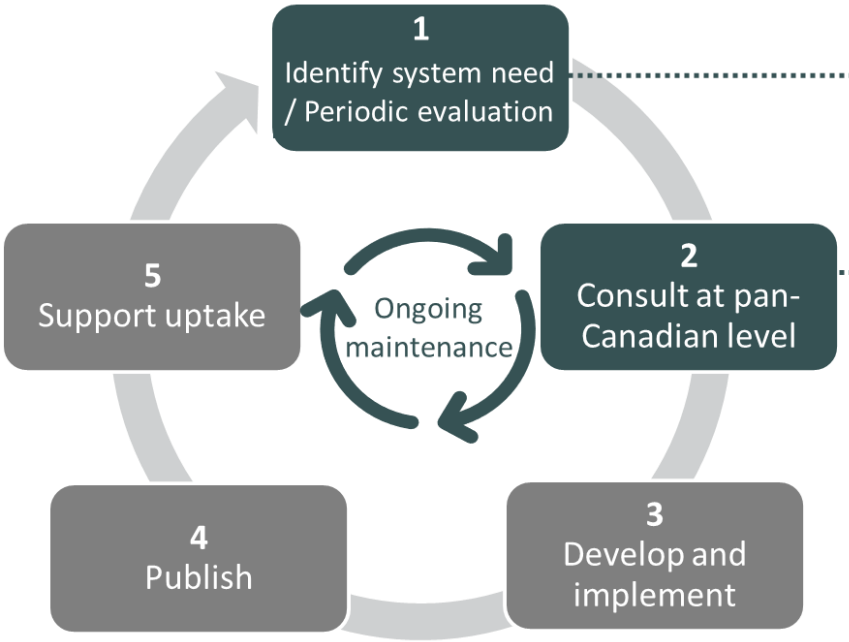
Step 1: Identify system need / Periodic evaluation
Step 2: Consult at pan-Canadian level



1. **Identify system need / Periodic evaluation:**
   Determine new standards or modifications to existing standards that are needed to support emerging priority health system areas. Examples: equity, COVID-19.

   Periodically evaluate standards for relevance.

2. **Consult at pan-Canadian level:**
   Pan-Canadian level consultations with federal organizations, provinces and territories, clinicians, researchers, health delivery organizations, expert working groups, professional associations, patients, communities and international groups to understand information needs that inform the development of new standards or modifications to existing standards.

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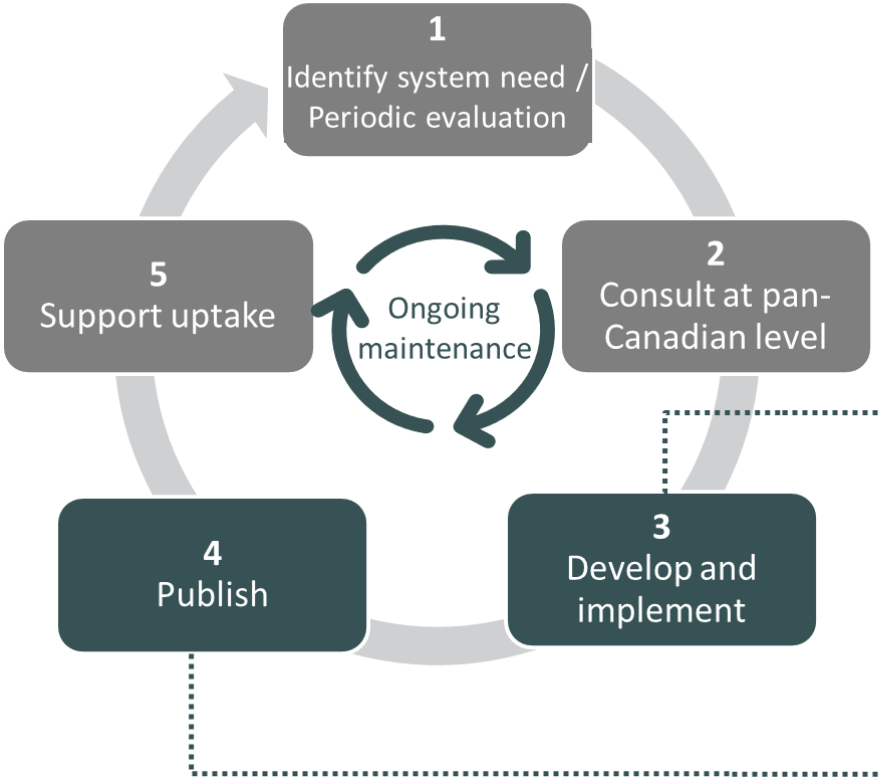
Step 3: Develop and implement
Step 4: Publish



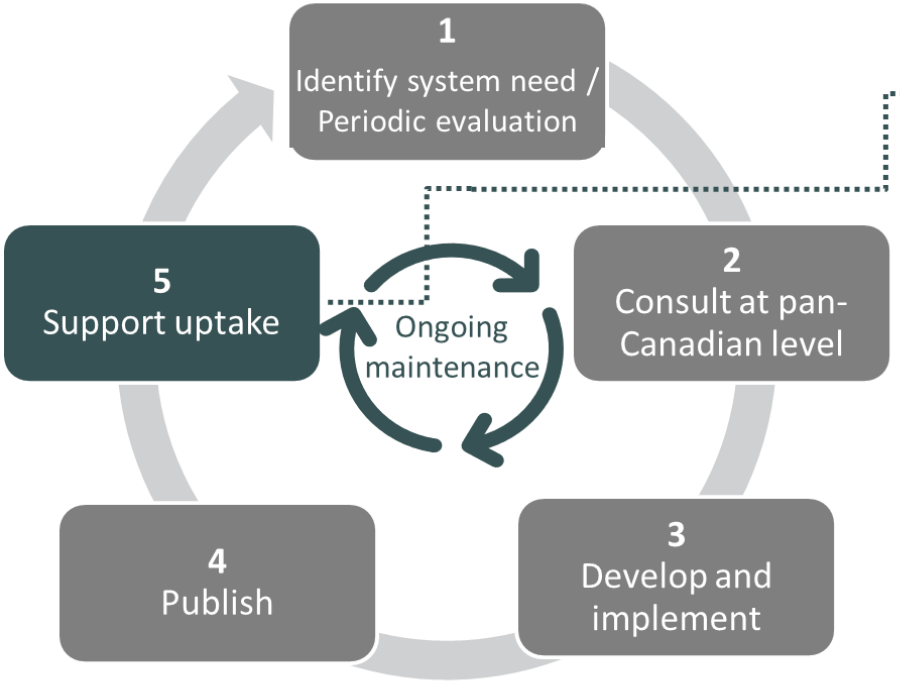
3. Develop and implement

In collaboration with key partners and based on the input gathered through the consultations, a standard is developed and implemented with defined core data elements, value sets and code systems, which may vary based on care setting.

4. Publish

The new or modified standard is published with supporting documentation. This may include user manuals, data dictionaries and coding resources such as training guides, specific coding directions, FAQs, infographics/data visualizations and job aids.

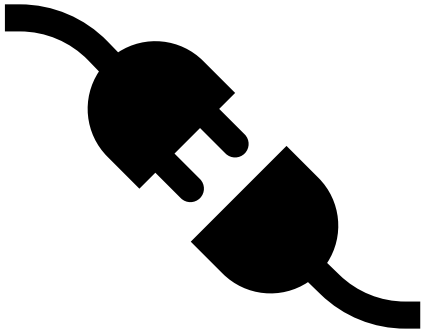
Step 5: Support uptake



5. Support uptake

Provincial/territorial jurisdictions, other health-related organizations, and vendors are provided with ongoing support for the implementation of the standard in their systems and vendor solutions.

Provinces/territories and service providers are provided with the tools to build capacity through training, including on data literacy, to troubleshoot data submissions and the support for conformance testing.



What is interoperability and how do health data standards relate to it?

Interoperability defined

Interoperability refers to the basic ability of systems and devices to exchange data and interpret that shared data.

For two systems to be interoperable, they must be able to exchange data and subsequently present that data so it can be understood by a user.

Patient care is a continuum

Patients see more than one provider, and often return for multiple visits.

It’s important that providers have an accurate picture of a patient’s journey across the care continuum.

This requires unambiguous communication.

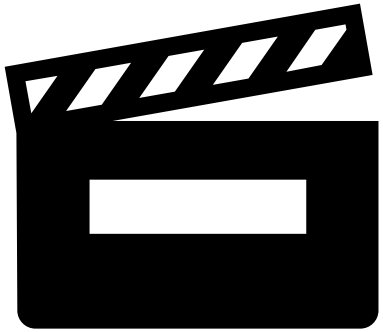
Information follows the patient. Available at the right time, at the right place and to the right people.

There is no interoperability without standards

Clinical and administrative healthcare data standards provide the technical framework and clinical language that enables thousands of healthcare providers to communicate and share health information that is contextual and unambiguous in meaning.

Pan-Canadian standards support the safe and secure exchange of healthcare information across the continuum of care, clinical decision support, data analytics, and population health management.

They are an important part of interoperability, which is the ability for information to flow seamlessly between different health systems, workflows and solutions.



Interoperability and standards in action

Case Study: Clinical and Administrative Healthcare Data Standards

Interoperability in action

An injured football player goes to the hospital, is identified in or entered into the system with their sociodemographic identifiers, is examined by a physician, and has x-rays confirming a torn meniscus. The physician provides a treatment plan and prescribes medication. The prescription is sent electronically to the pharmacy.

The pharmacist electronically receives the prescription for the patient, checks for allergies and fills the prescription.

The patient has a follow-up with their primary healthcare provider. The *primary healthcare provider accesses the patient's x-ray results,* sees what *medication was prescribed* and *e-refers* the patient *to a physiotherapist*.

The *physiotherapist can access the patient's x-ray results* and begins therapy on the patient.

When the same language (i.e. SNOMED CT) is used to describe the health concepts captured for the patient, such as 'find tear meniscus' or 'analgesic', these health concepts can be shared using interoperable data exchange standards across different systems. Their information thus follows the patient across the continuum of care. This enables providers to deliver high quality of care.

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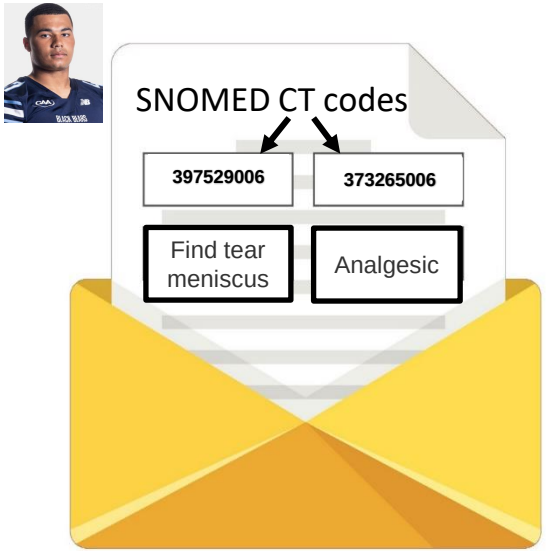
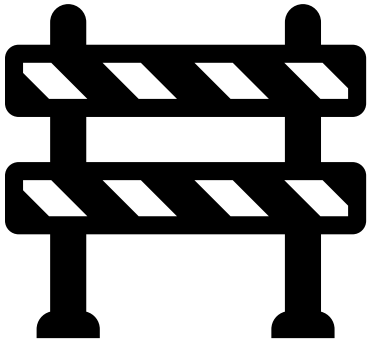
Breaking it down: interoperability and standards in action



Clinical information and diagnostic imaging results are sent electronically using secure HL7 messages, which we can think of as electronic envelops with the codes (i.e., SNOMED CT) inside. The envelop contains a well-structured message that maintains the integrity of the data.

These messages are sent electronically to other clinical systems, where the information is unpacked, sorted and stored; conveying the exact clinical information to all the other care providers involved in the patient's care.



What are barriers to standardizing health data and interoperability?

Current barriers to standardizing health data

Jurisdictional readiness and funding models vary across the country: funding is not managed the same way across Canada, therefore when a new standard is released, business and clinical process changes may be required for a jurisdiction to adopt it.

Infrastructure: the digital infrastructure to collect information may not be in place; ongoing technology investments are required.

Standards have been customized over time across and within jurisdictions to meet specific information needs; similar standards might exist in Canada, but not all of Canada is on the same standard.

Lack of incentives for vendors to adopt and implement standards.

Overcoming barriers through an Infoway-CIHI collaboration

Foundational Layer

Pan-Canadian Interoperability Roadmap

- A shared digital health vision through a jurisdictionally aligned interoperability vision.

Interoperability Governance

- Advance pan-Canadian digital health and data interoperability

Data Content and Exchange Standards

- Standardize the data and the way it is exchanged

Implementation Layer

Trusted Exchange Framework

- Build trust through privacy, security and legal frameworks

Vendor Activation Program

- Mobilize vendors through conformance and certification programs

Common Procurement Requirements

- A national procurement program for PTs

Summary

Key messages

- **Standards are the foundation for high-performing patient-centric connected health systems**
- **Standards are necessary for data sharing: for clinical information to flow with the patient across care sites and settings for access by patients and care providers; and for data linkage and comparison across a wide variety of data sources to support performance evaluation, research, innovation and the delivery of better care, leading to improved health systems and better patient outcomes**
- **The ability to share health information consistently and efficiently:**
  - Improves safety and quality
  - Strengthens care coordination; anticipates health systems needs
  - Increases efficiency; reduces costs
  - Empowers patients and families; improves population health
  - Enables robust public health registries
  - Enables and supports best practices