

The foundation for semantic interoperability in Canada

Introducing the pan-Canadian Health Data Content Framework

May 6, 2024



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Outline

- Primary health care data landscape
- Achieving Connected Care in Canada
- Scope of the Data Content Standard
- Value Sets
- A close-up of the draft Data Architecture
- Consultation approach

Primary health care data landscape

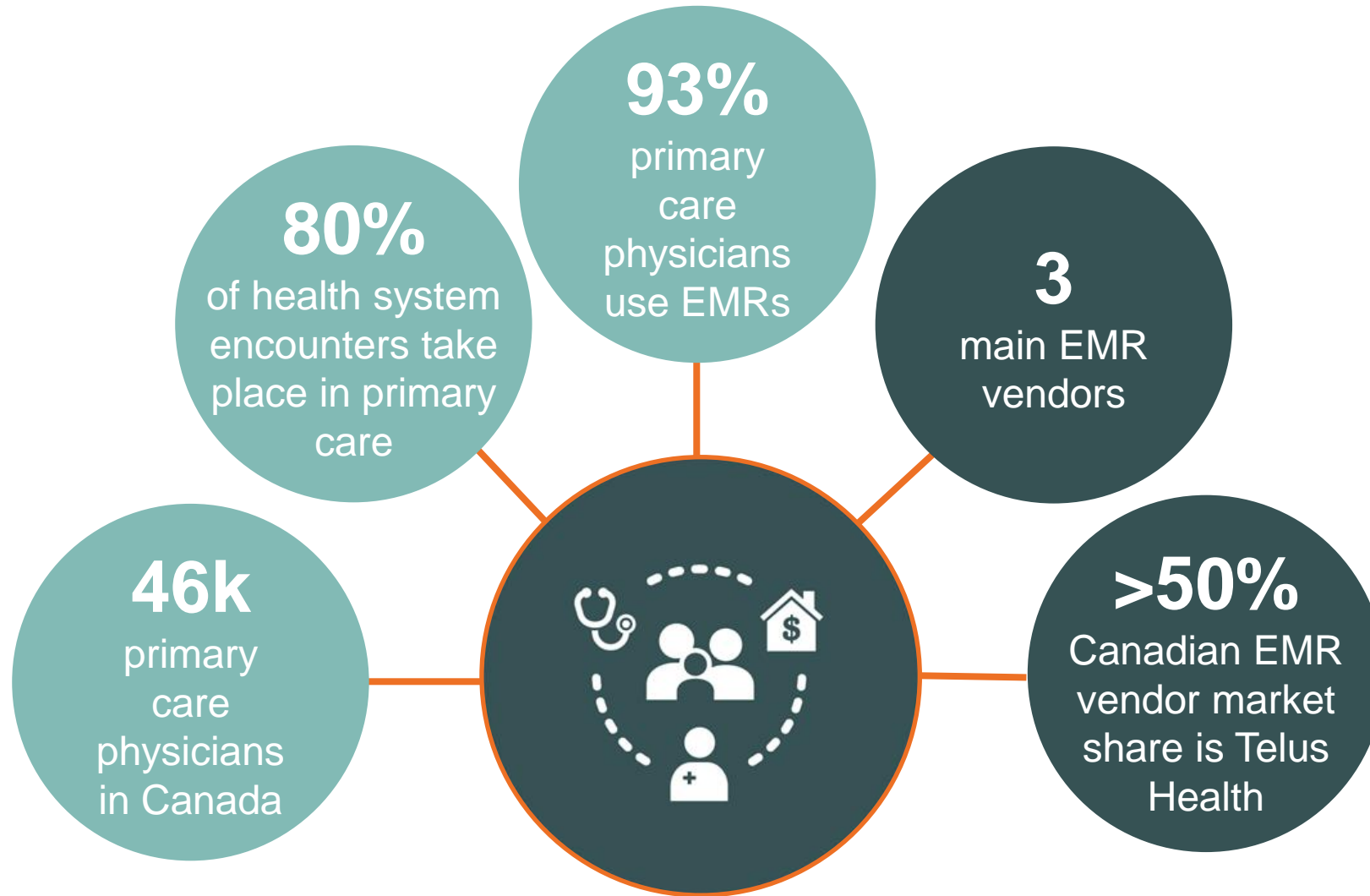


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Facts about primary health care EMR data in Canada



<1% of the Canadian population is represented in CIHI's EMR data

The Canadian landscape for primary health care EMRs is challenging

Primary health care is organized and delivered in various models across the country



Emerging data aggregators collect EMR data from vendors for health system use



EMR data in vendor systems may be structured or unstructured due to lack of standardization

Differences in content standards across aggregators and vendors make data integration difficult



Achieving Connected Care in Canada

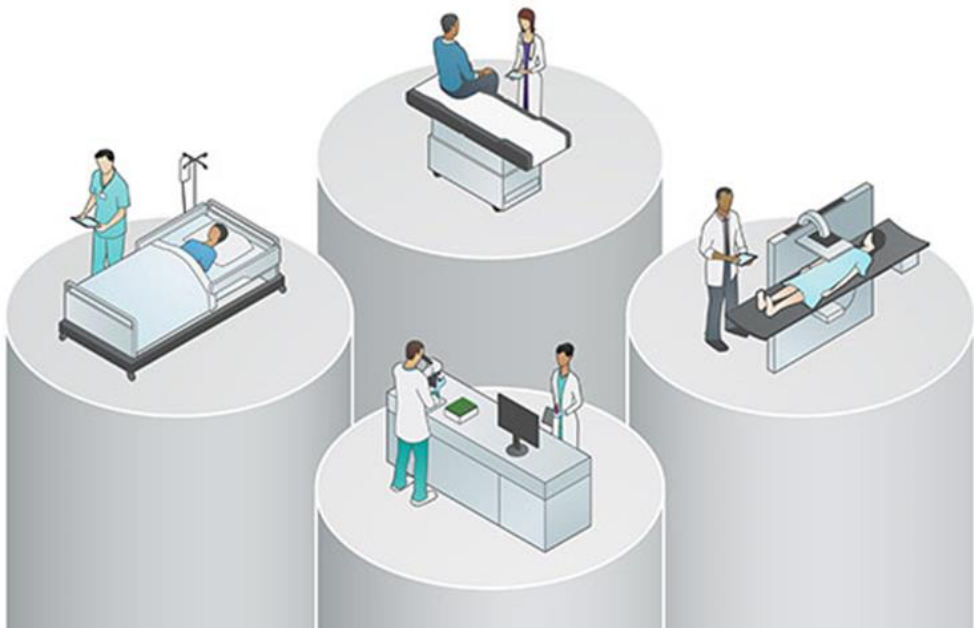


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Making care better for Canadians!



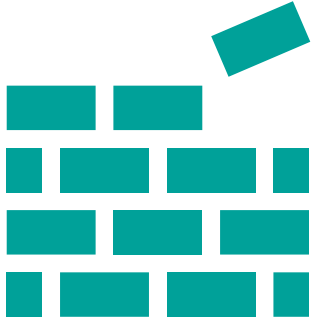
Health data that is **not standardized** and **not shared** across digital health systems leads to:

- Fragmented health information about a patient's journey
- Duplicate tests, leading to wasted resources
- Unnecessary administrative burden on care providers who want to more spend time connecting with their patients
- Care providers who do not have access to necessary patient information at the point of care
- Limited health system performance measurement within and across sectors of care
- Risk of patient harm! [Interoperability Saves Lives](#)

CIHI and Infoway are partnering to modernize health information flows to create a connected health system



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What

Health data content foundation:
CIHI is defining the underlying data content and data structure (i.e., data necessary for diagnosis and treatment)

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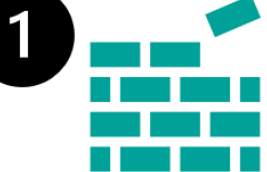
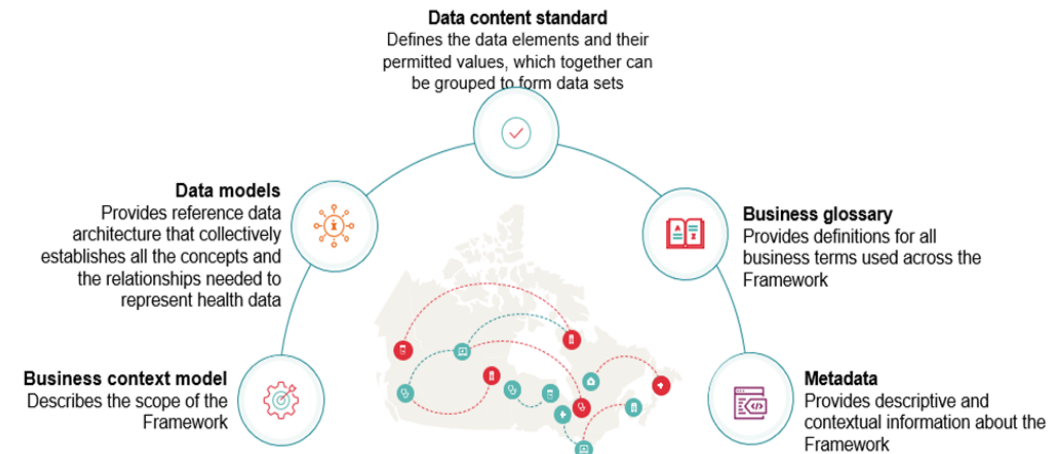


How

Data exchange “transport” standard:
Infoway is building the technical exchange standards that enable information to flow between systems

Introducing the Pan-Canadian Health Data Content Framework

- 1 Defines the **content** of health data
- 2 Provides the **format** to capture, understand and use the information
- 3 Enables the data to carry the **same meaning** for the sender and the recipient



Scope of the Data Content Standard



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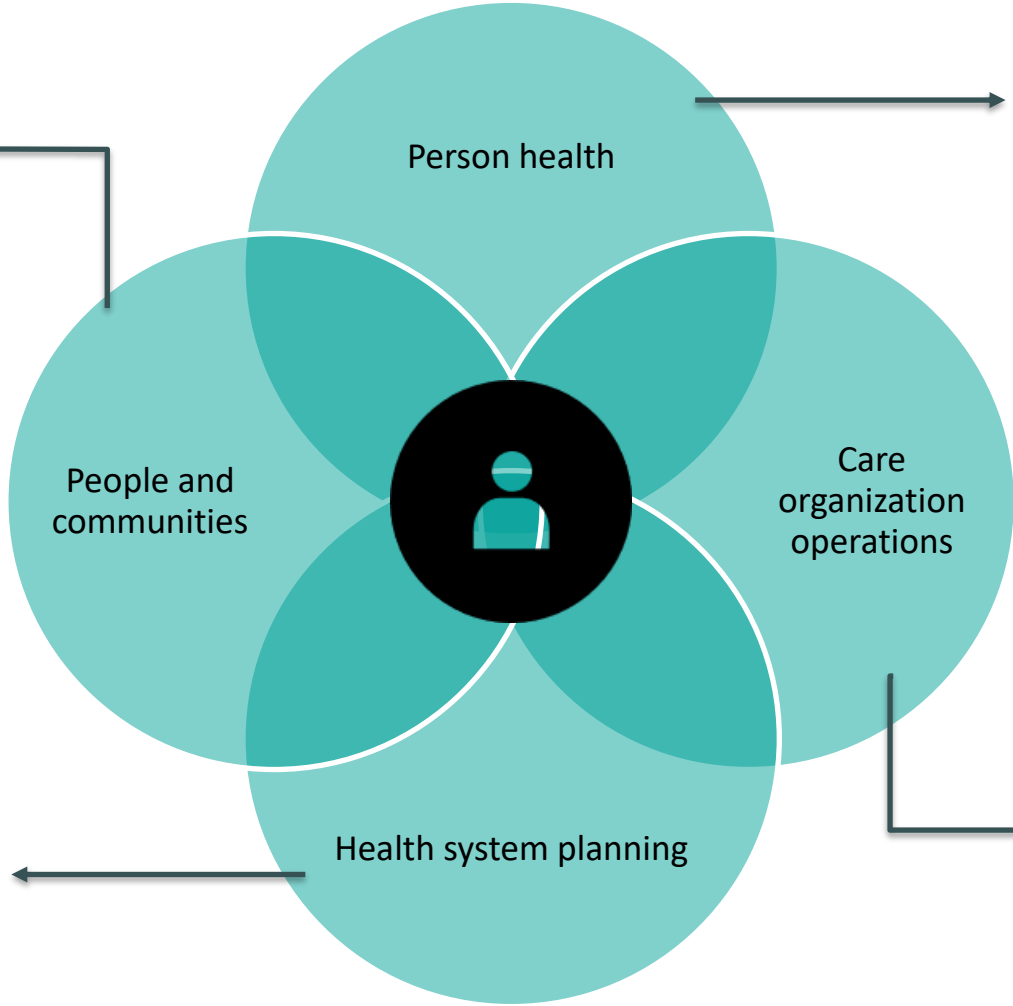


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Features of high-functioning primary health care systems

- Health promotion
- Disease surveillance
- Injury and violence prevention
- Health equity and anti-racism
- Emergency and disaster preparedness
- Innovation

- Governance and accountability
- Funding and incentive models
- Equity and access
- Health system spending
- System integration
- Distribution of HHR
- Performance measurement



- Person-centred
- Holistic
- Team-based care
- Individualized care planning
- Education and self-management
- Culturally safe
- Trauma-informed
- Informed by SDoH

- Priority population health
- Models of care
- Continuous and coordinated
- Accessible, effective, efficient
- Client safety
- Provider competencies
- Health human resources
- Facility organization

Core guiding principles

Person-centric with a multi-user design

Inclusive

Iteratively developed

Collaborative through broad stakeholder participation

Managed with strong data governance

Integrated with cohesive data stewardship for robust data quality

Driven for multiple uses and the re-use of data

Pan-Canadian and interoperable across systems

The scope of the health data content to enable connected care is very broad.


Person health



Clinicians,
care team,
clients, families

Clinical care
planning and
management

Care organization operations



Administrators,
directors,
managers

Quality improvement
Program planning
Resource allocation

Health system planning



Provinces,
territories
and regions

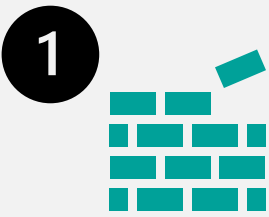
Health system use
Pan-Canadian
comparability

People and communities

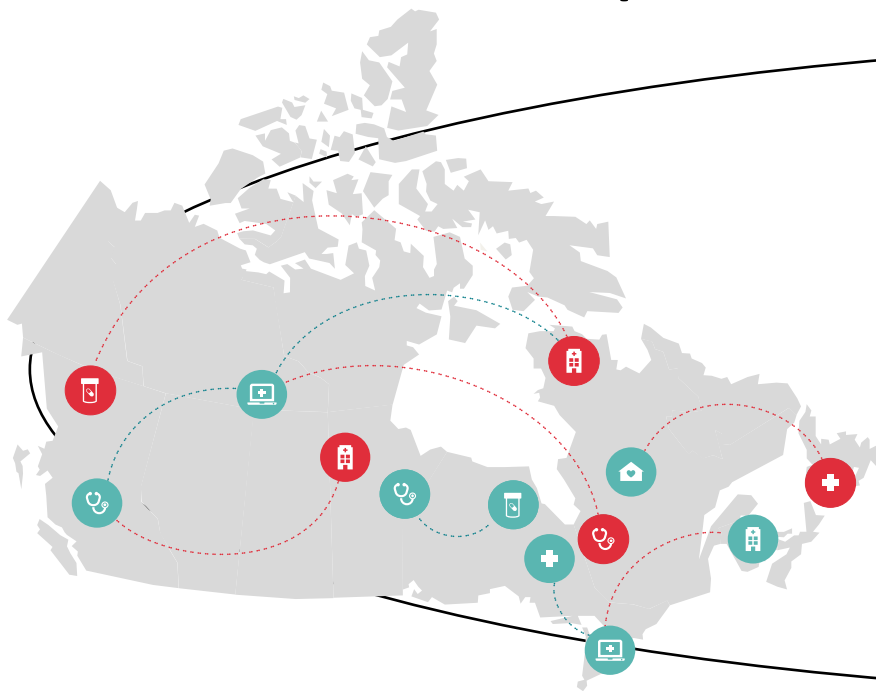


Population
and public
health

Chronic disease
management
Health outcomes

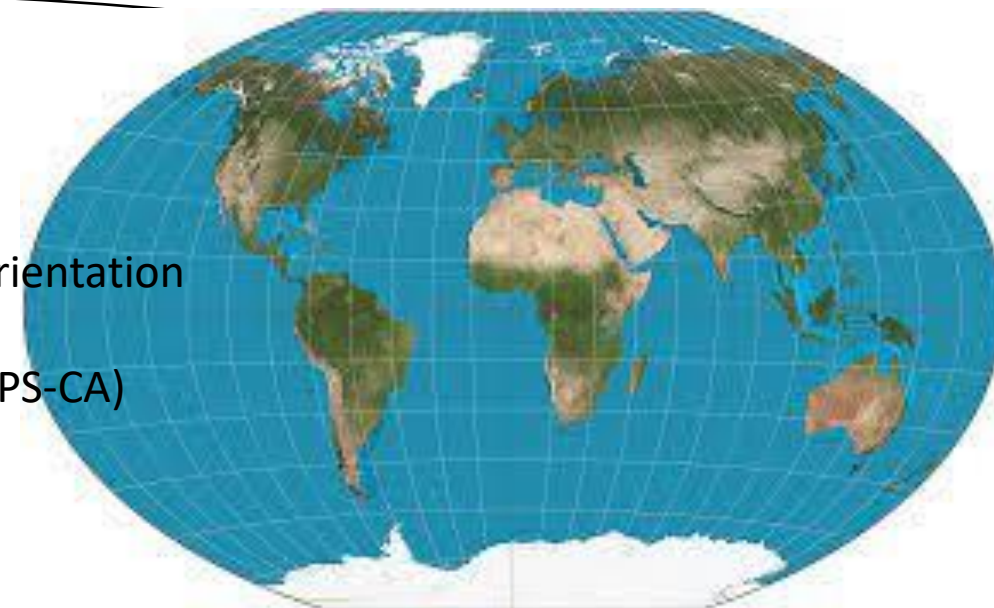


Defining the health data content and structure leverages lessons learned from international examples and builds on the progress made within Canada



Canadian Standards

- CIHI Data Content Standards
- BC Gender Sex and Sexual Orientation
- SPARK tool (UpStreamLab)
- Patient Summary – Canada (PS-CA)
- Ontario e-Referral/e-Consult
- OMD PHC EMR standard



Frameworks

- Quintuple Aim
- Model for Health and Wellbeing
- ISO Continuity of care (13940)
- First Nations Perspective on Health and Wellness

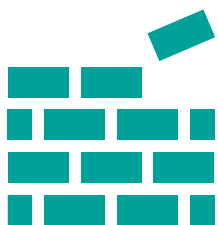
International Standards

- International Patient Summary

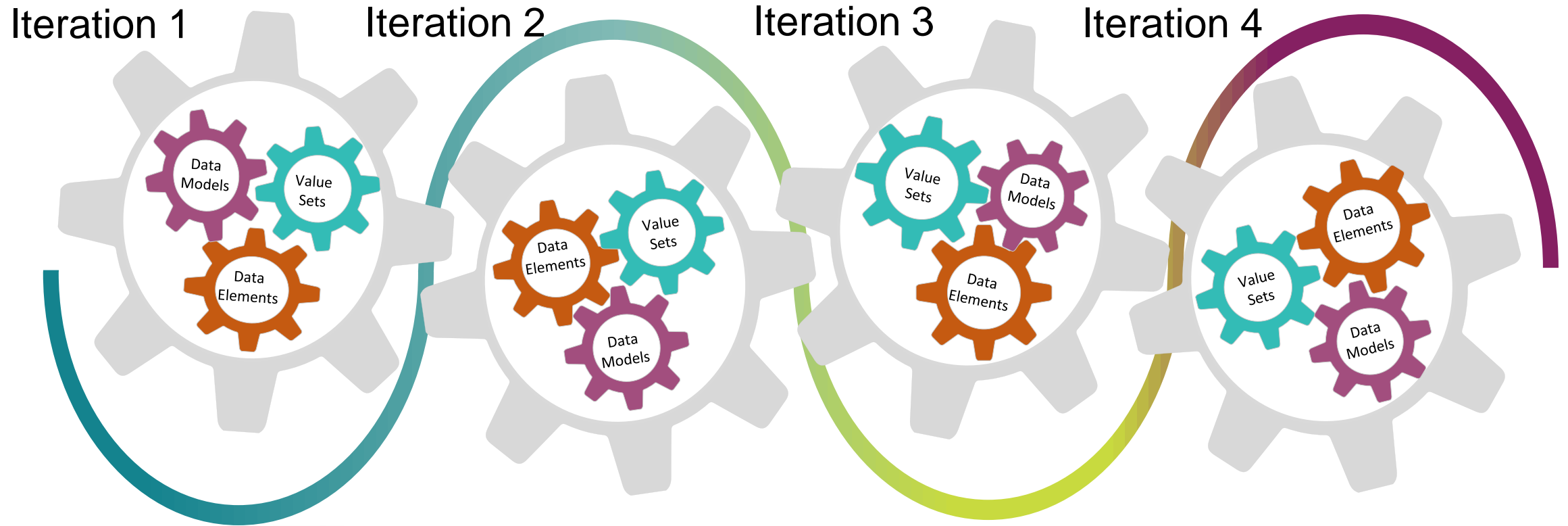
Other Jurisdictional Standards

- United States Core Data for Interoperability (USCDI)
- Professional Records Standards Body (PRSB)
- National Health Services (NHS)
- Australian Core Data for Interoperability

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Refining the Pan-Canadian Health Data Content Framework from multiple perspectives



We review the feedback, identify gaps and areas that are duplicated. We then iterate on changes to the data elements, value sets and data models to ensure relationships between the clinical and administrative concepts are kept in alignment.

Value Sets



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The data content standard includes data elements and value sets – both are critical for semantic interoperability

Data Content Standard (fictional example)

Data element	Data element definition	Value set
Health concern	Represents relevant conditions, diagnoses and major past medical history. Often captured in a “problem list.”	HealthConcernCode

data element: unit of data for which the definition, identification, representation and permissible values are specified

value set: The set of permitted values (codes) defined by one or more code systems which a data element can use. Can also be referred to as subsets or reference sets (refsets). Example - HealthConcernCode

code system: defines concepts and give them meaning through formal definitions and assigns codes that represent the concepts. Example – SNOMED CT CA

coded concept: A clinical idea to which a unique concept identifier (code) has been assigned. Example – Meningitis

Value set	Code system	Coded Concept	Concept Name
	SNOMED CT CA	49111001	Adrenal hemorrhage (disorder)
	SNOMED CT CA	7180009	Meningitis (disorder)
	HL7 DataAbsentReason	unknown	Unknown



Use of value sets

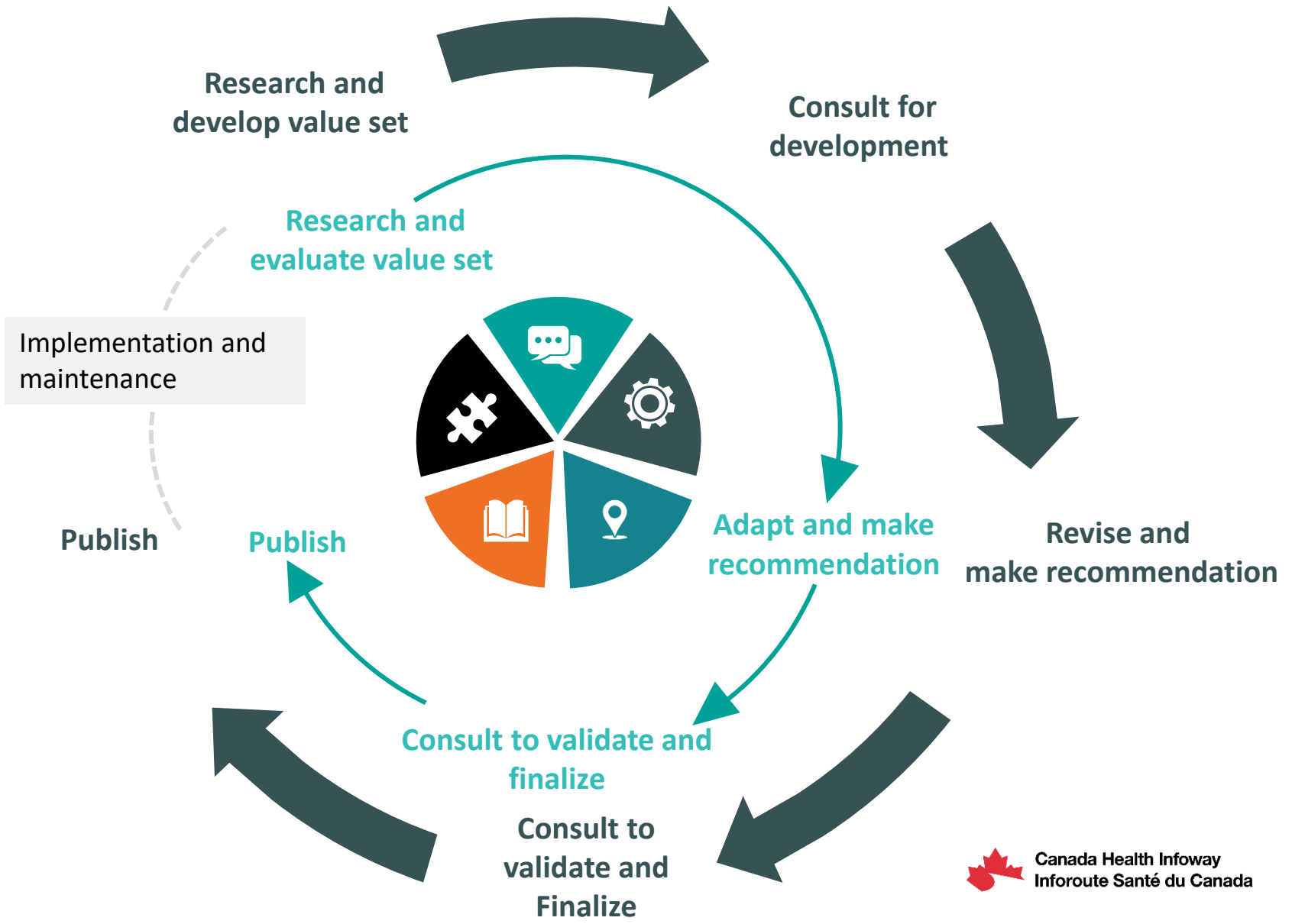
- Ensure that the same set of valid values is used across different systems, which reduces the risk of misinterpretation, enables information to be meaningfully exchanged across different systems and improves the quality and opportunity for reuse of exchanged data.
- Value sets support both clinical data collection and data exchange
- Aligned with other key source standards and conformant to interoperability standards such as HL7 FHIR
- Preference for existing pan-Canadian and international code systems and value sets, notably SNOMED CT CA, Canadian Clinical Drug Data Set (CCDD), ICD-10-CA, LOINC and HL7 code systems

Evaluating and developing value sets is a collaborative process where Infoway and CIHI partner closely

In many cases, established value sets are reused as is (e.g., required HL7 FHIR value sets)

Moderate level of effort approach (inner ring) where existing value sets are reused

High level of effort approach (outer ring) where new value set content is developed



Publication of Pan-Canadian Value Sets



- Canada Health Infoway's [Terminology Gateway](#) is a centralized source for pan-Canadian terminology content
- In collaboration with Infoway, [Primary Health Care Value Sets](#) were developed to provide a list of permissible values and the recommended code system(s) for use within EMRs in primary health care
- For additional information and assistance, please contact infocentral@infoway-inforoute.ca

Example of a primary health care value set

EncounterTypeCode

Overview **Concepts** Change Logs

Subset Name EncounterTypeCode
Subset ID 2.16.840.1.113883.2.20.3.207
Subset Description A description of the type of contact between the Provider and the Client for a registered Encounter or visit.
Subset Status Active
Subset Version 20210331
Subset Type Extensional
Subset Domain Primary Health Care
Subset Maintaining Organization Canada Health Infoway
Subset Defining URL <https://gateway.infoway-inforoute.ca/vs/encountertypecode>
Canonical ValueSet FHIR URI <https://fhir.infoway-inforoute.ca/ValueSet/encountertypecode>

Terminologies Used in this Subset

Name	Code System URI / ID	Version
SNOMED CT International	http://snomed.info/sct	20210131
SNOMED CT CA Edition	https://fhir.infoway-inforoute.ca/CodeSystem/snomedctcaextension	20210331

Release Notes [here](#)

Subset Versions

- March 31, 2021
- September 30, 2021

See all versions

Subset Download

- JSON
- XML
- Excel

Concept Filters

Show inactive concepts

Subscription

Subscribe for notifications

Example of a primary health care value set

Overview **Concepts** Change Logs

Q Search Refresh

Concept Code	English Display Name	French Display Name	Concept Name <small>↓^A</small>
140182721000087101	Direct encounter with client alone		Direct encounter with client alone (procedure)
979296831000087107	Email with client alone		Email with client alone (procedure)
783447471000087101	Help line with client alone		Help line with client alone (procedure)
690545391000087106	Mobile messaging with client alone		Mobile messaging with client alone (procedure)
856451561000087102	Online call with client alone		Online call with client alone (procedure)
804607021000087102	Online call with video with client alone		Online call with video with client alone (proced...
607437961000087101	Online chat with client alone		Online chat with client alone (procedure)
334935761000087109	Provider portal with client alone		Provider portal with client alone (procedure)
448337001	Telemedicine consultation with patient		Telemedicine consultation with patient (proced...
185317003	Telephone encounter	rencontre téléphonique	Telephone encounter (procedure)

Supporting Products for Canadian Terminology

- Canadian Institute for Health Information: ICD-10-CA, CCI standards
 - Morbidity reporting (ICD) and health-related interventions (CCI)
 - Pan-Canadian Health Concern Value Set (PHCVS), and SNOMED CT CA to ICD-10-CA Map
- Canadian provinces and territories: ICD-9 standards and other local code systems
 - ICD- 9 typically used for physician billing in EMR systems
- Canada Health Infoway: SNOMED CT, LOINC/pCLOCD, UCUM, HL7 standards
 - SNOMED CT CA – standardized clinical terminology
 - LOINC - standard for identifying tests, as well as laboratory and clinical observations and documents, pCLOCD is Canadian version of LOINC
 - UCUM - units of measure
 - HL7 – data exchange framework
- Health Canada and Infoway – Canadian Clinical Drug Data Set

A close-up of the draft Data Architecture

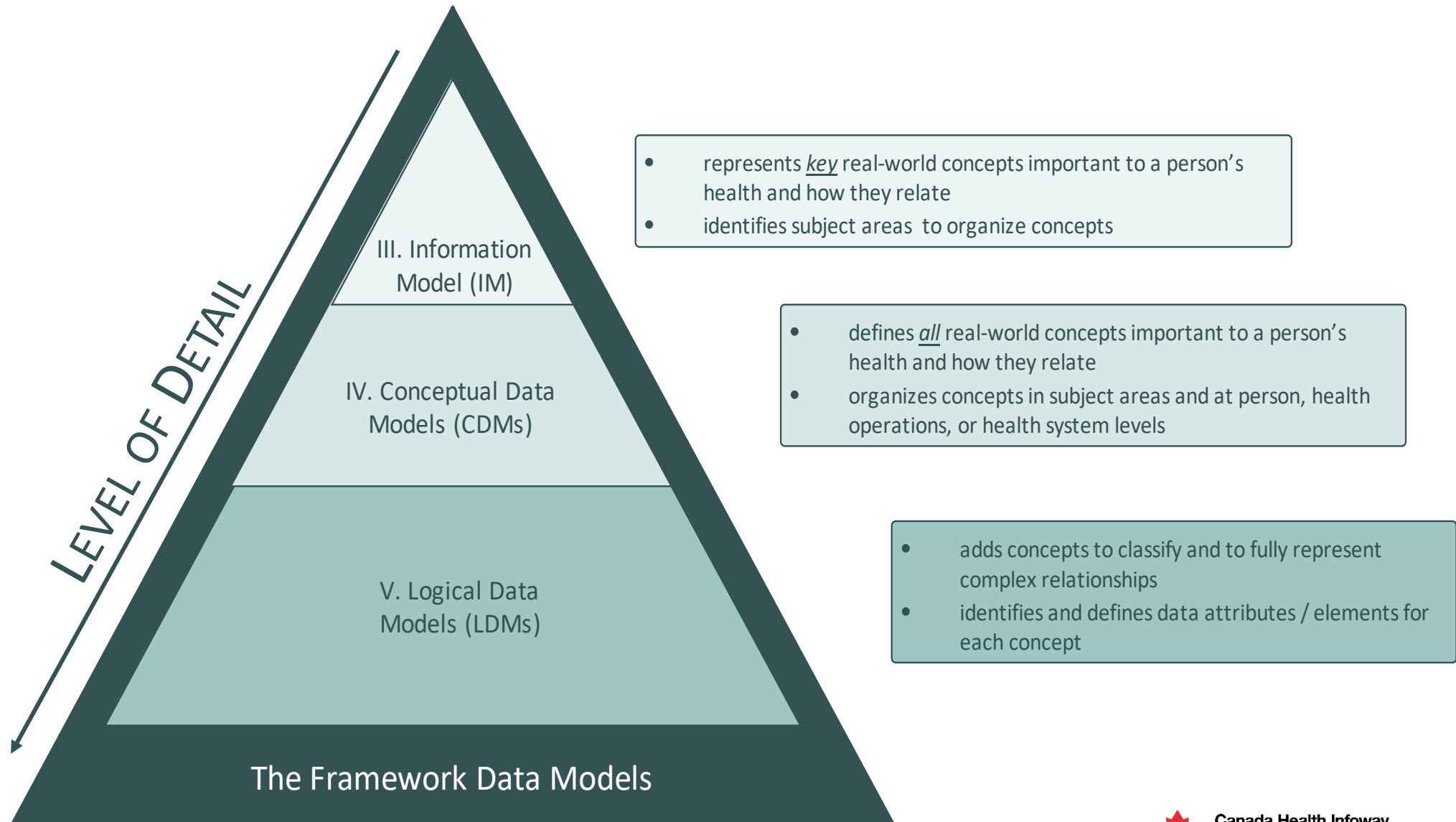


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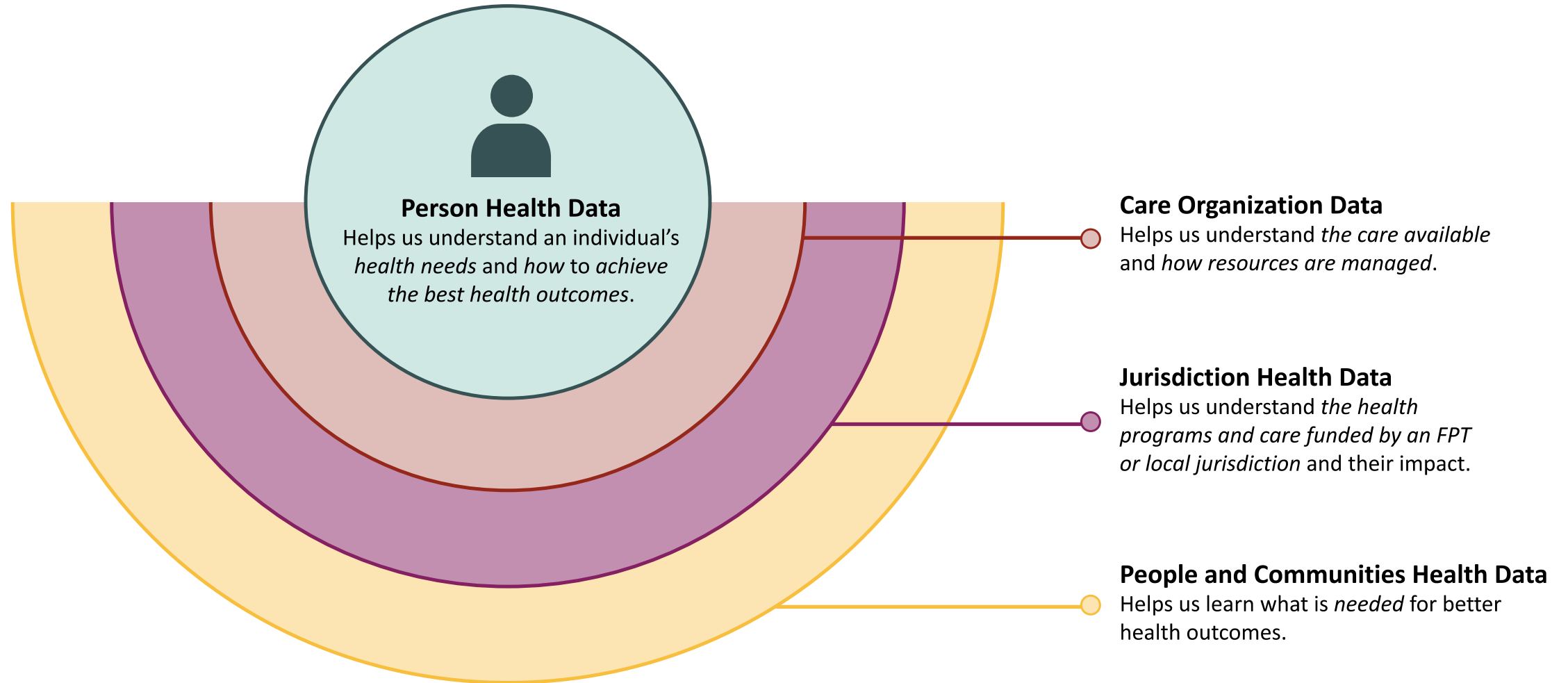


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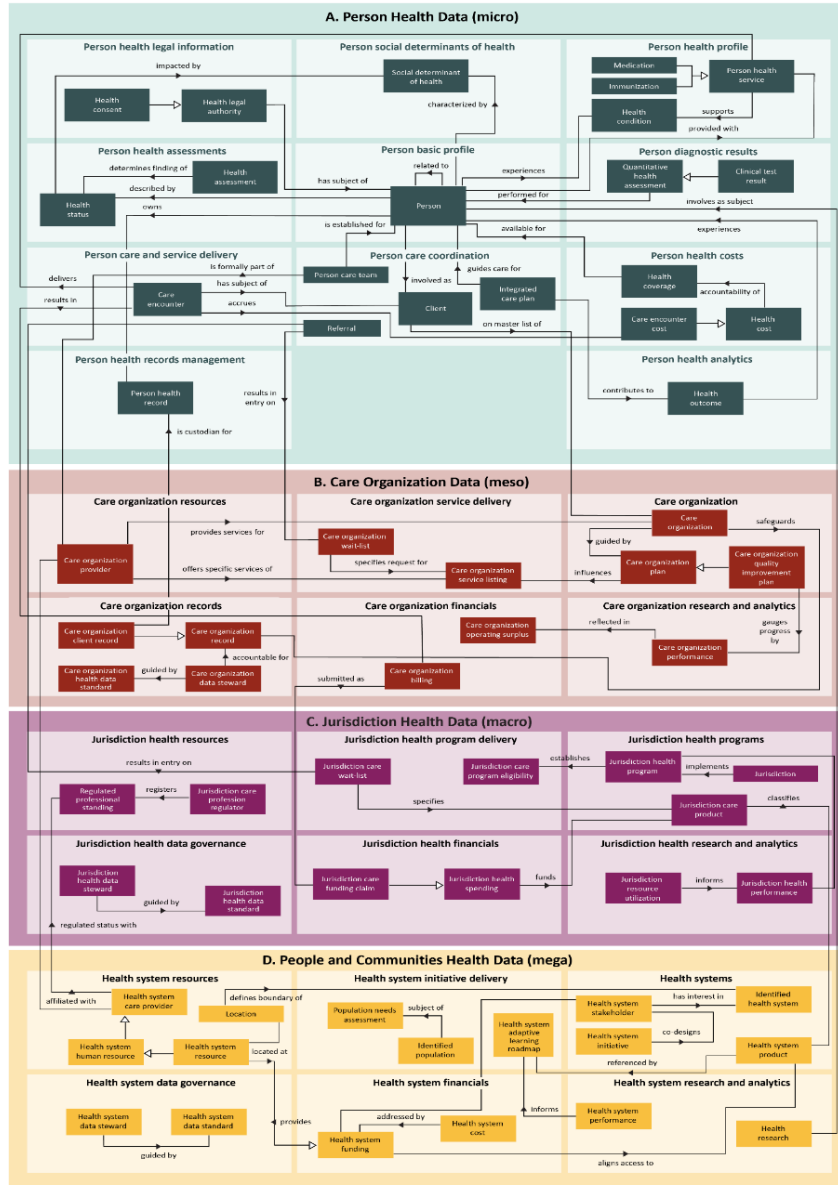
Three data models will be delivered



Consistent data is needed across all layers for better health outcomes



Snapshot on data architecture



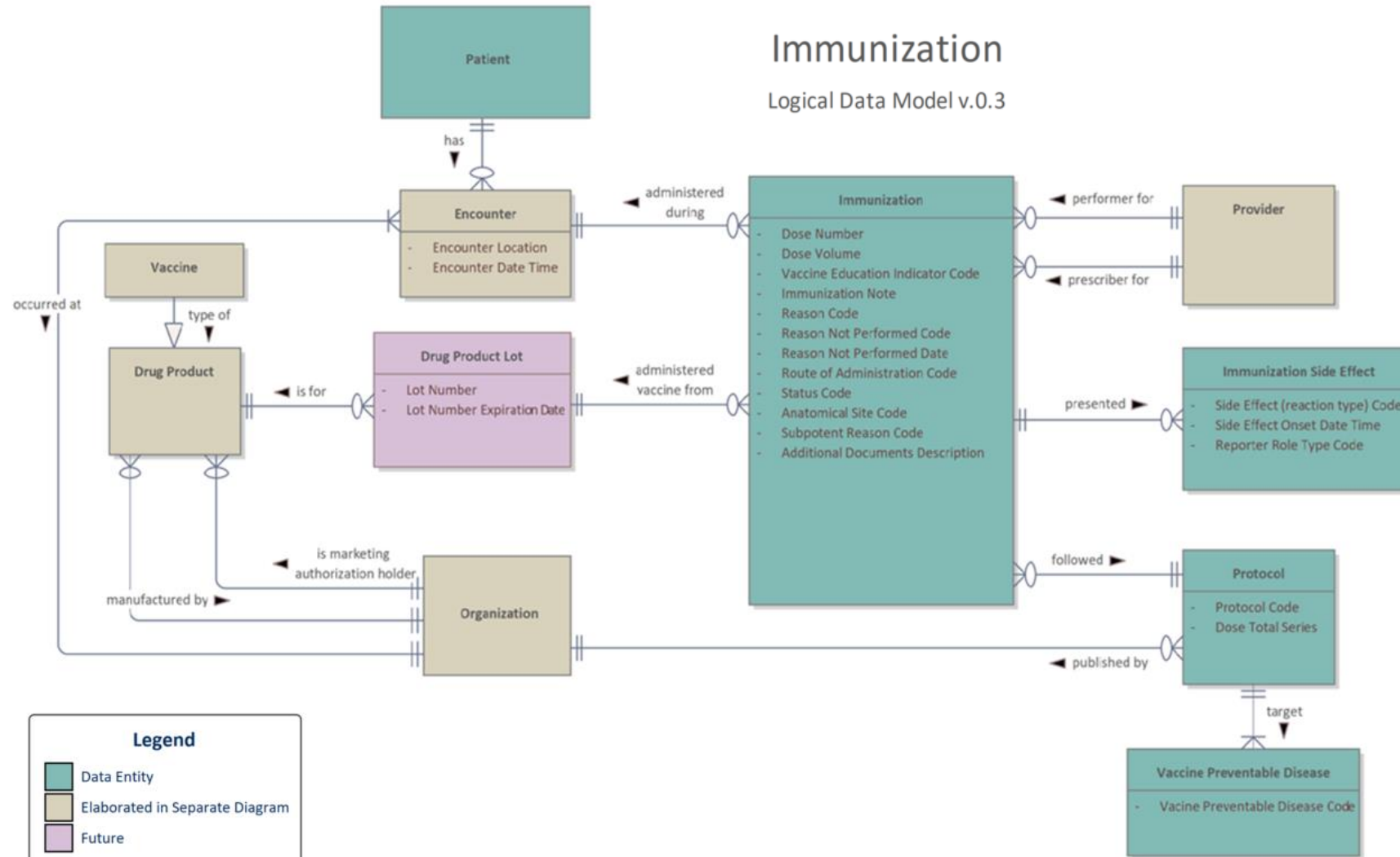
The Information model defines 4 layers and key concepts important to person health:

- Person Health Data (micro)
- Care Organization Data (meso)
- Jurisdiction Health Data (macro)
- People and Communities Health Data (mega)

Within 29 subject areas (at this time)

<https://www.cihi.ca/sites/default/files/document/pan-canadian-health-data-content-framework-information-model-en.pdf>

Snapshot on data architecture



Consultation approach



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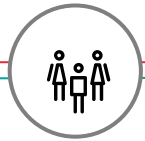
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We're Better Together

Collaboration from stakeholders spanning the healthcare system is necessary for Interoperability advancement and adoption



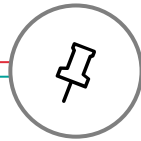
Indigenous Peoples



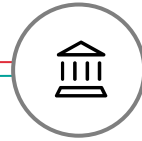
Persons with lived experience



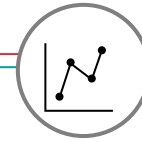
Care Providers



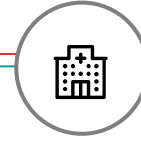
Provinces / Territories



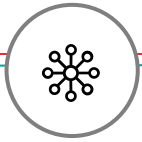
Federal government



Researchers

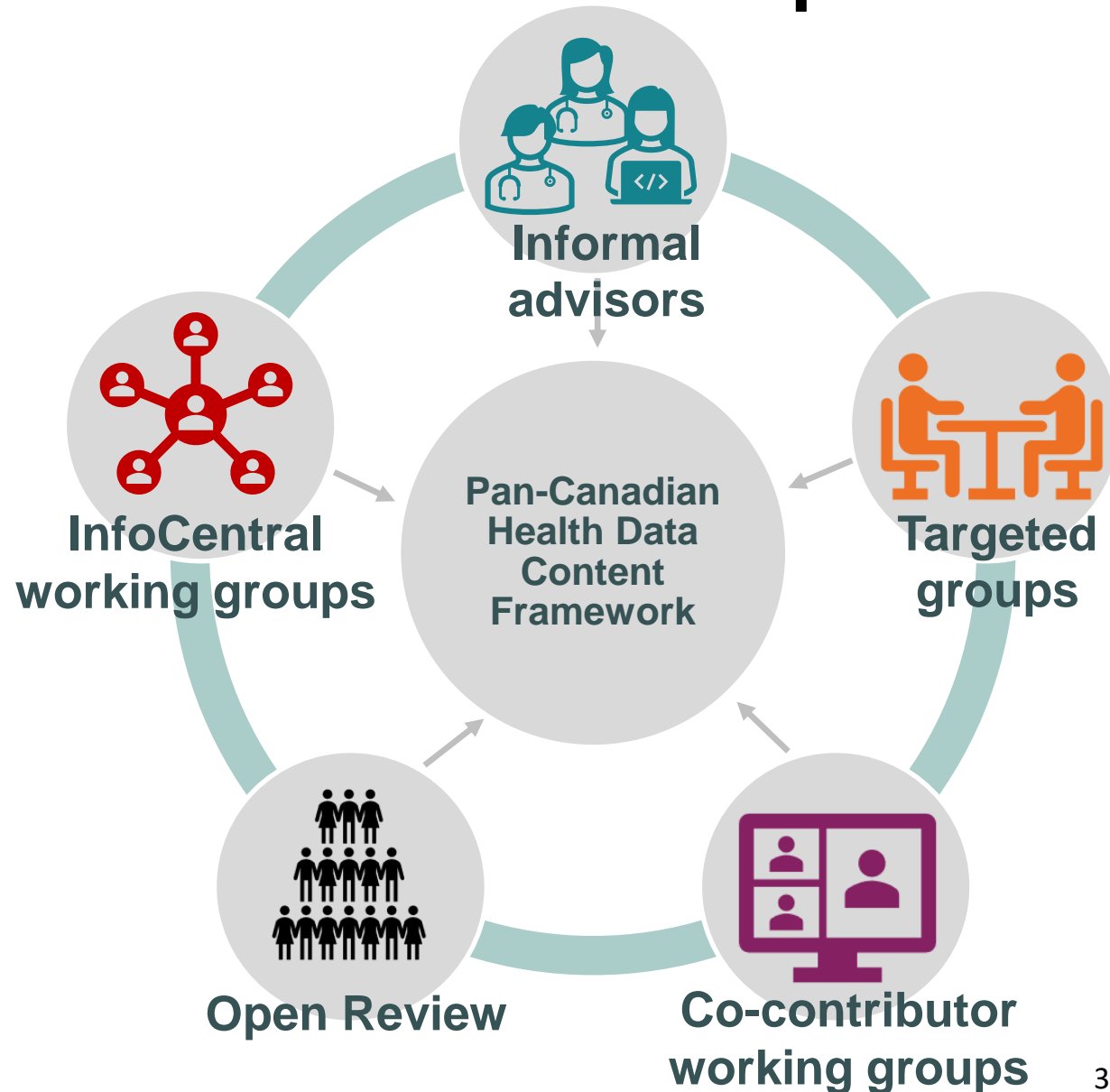


**Hospitals/
health
authorities**



Industry

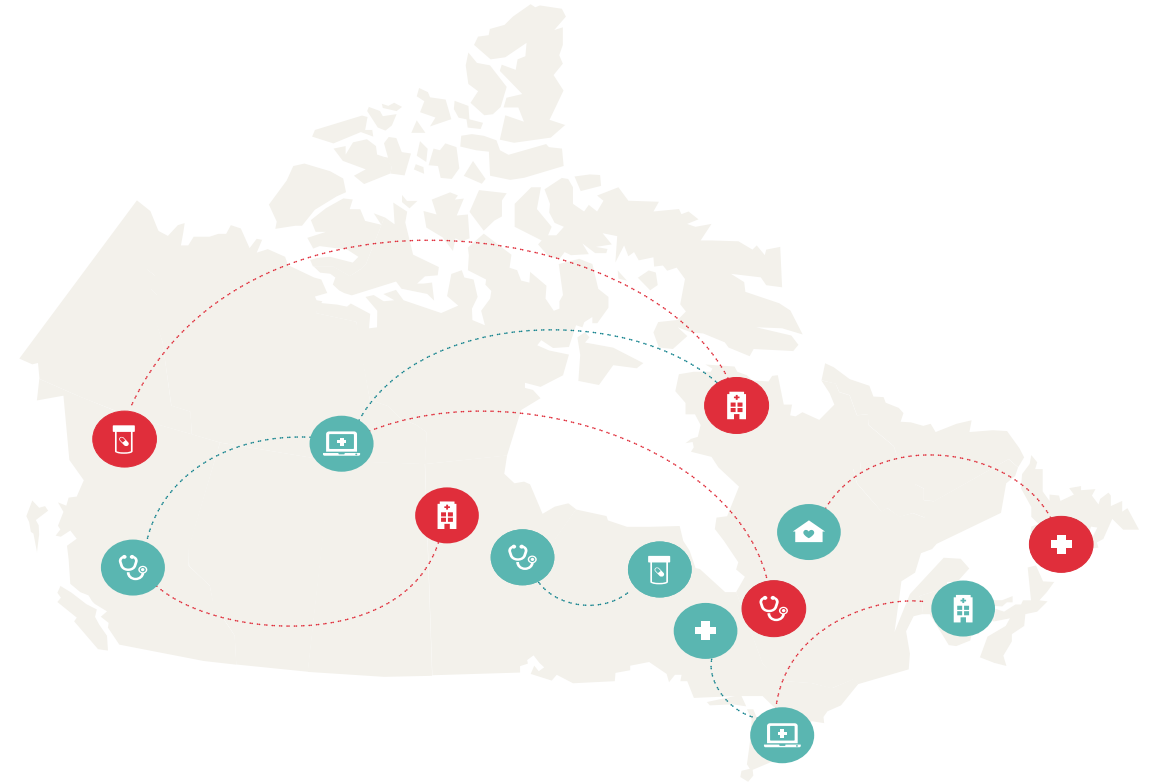
Multi-pronged iterative approach to engage stakeholders, the public and experts



- Validate the approach to develop Framework
- Provide expertise and input to refine the content of the Framework
- Collaborate with partners on digital health products
- Work with change management champions in the digital health ecosystem

Open review launched on March 7 to May 6, 2024

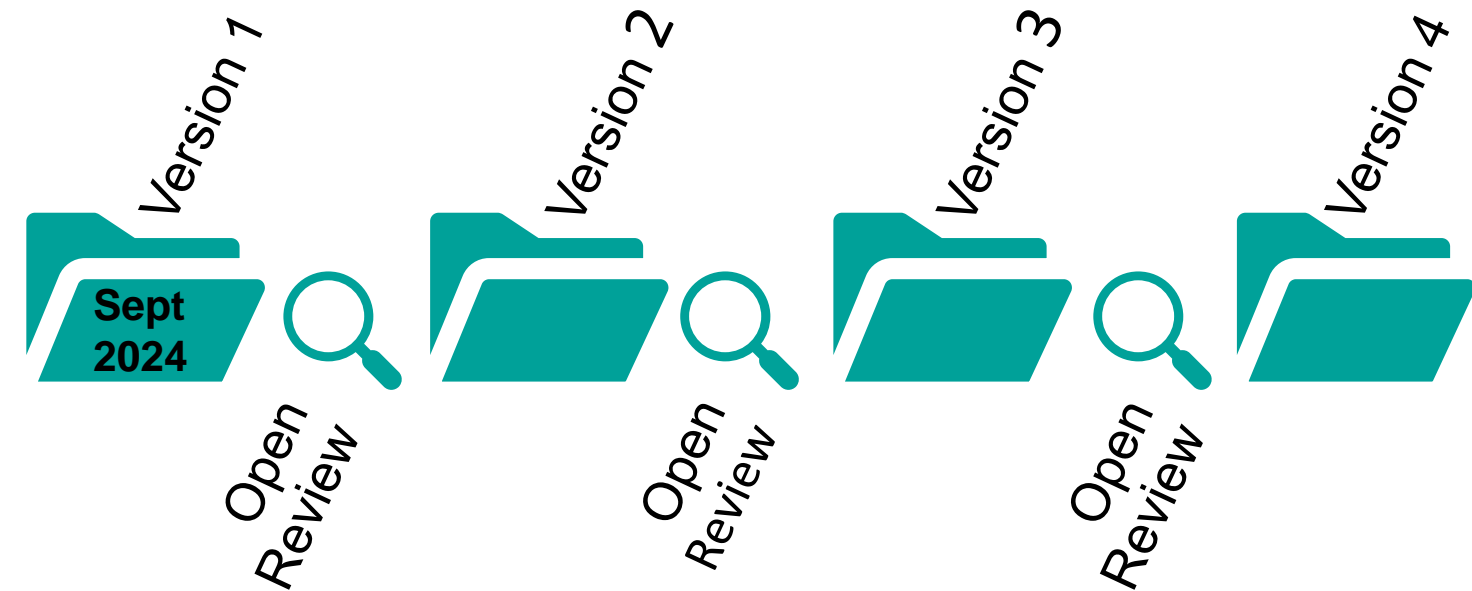
- Stakeholders were invited to CIHI's website to consume and provide feedback on the data elements, value sets and information model of the pan-Canadian Health Data Content Framework
- Increase awareness of this work
- Providing transparency in the development and feedback process of the Pan-Canadian Health Data Content Framework



<https://www.cihi.ca/en/connected-care/pan-canadian-health-data-content-framework>

Version 1 of the Pan-Canadian Health Data Content Framework

September 2024



- First of many versions. Requires maturity before expectation of adoption and implementation
- Focus on primary health care
- Cohesion between data elements, value sets and data models is required
- Content is based on comprehensive consultation
- Ongoing feedback will be sought through working groups and open reviews

Thank you!



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