Better Data. Better Decisions. Healthier Canadians.

Keith Denny

Canadian Institute for Health Information

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Outline

- **Canadian context**

- **Canadian Institute for Health Information**

- **Health data standards in Canada**

- **Challenges and opportunities**

- **Health classifications in Canada**

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Canada Facts

- 2nd largest country in the world (127 x larger than Czechia)

- 10 provinces, 3 territories

- 3 distinct Indigenous populations

- 37 million people

- 22% foreign born

- > 200 languages other than English and French

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What is CIHI?

- **Canadian Institute for Health Information**

  – Created 1994

  – to coordinate the gathering and dissemination of health data

- **Independent, not-for-profit**

- **Led by a 16-person Board of Directors, with representation from across the country**

"Canadian health information … is in a deplorable state…".
National Task Force on Health Information (1991)

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Funded by Health Canada and Ministries of Health

All P/T have bilateral agreements with CIHI:

- **Specific data sharing agreement (DSA)**

- **CIHI's pan-Canadian data:**

  – provide the foundation for measuring health system performance

  – supports Health Canada and the provinces and territories to develop evidence-based policies and programs

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CIHI hosts linkable 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

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

Health data standards in Canada

Key *national* players in health data standards

|		
Data content standards for health system use ICD-10-CA CCI	Data and exchange standards SNOMED CT release centre	Standards for data on vital statistics, population health, and social statistics

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CIHI: national standards for Canadian health care information

- **Classifications**: ICD-10-CA; Canadian Classifications of Health Interventions; financial data standards (MIS -Management Information Systems)

- **Data**: Acute and Ambulatory Care Data Content Standard, InterRAI (assessment standards e.g. in long term care, home care); Primary Health Care EMR data standard

- **Reference data** (Reference Data Model to support integration and interoperability)

- **Information standards** (Canadian version of DRGs; large inventory of health indicators)

- **Data and information quality standards** (Information Quality Framwork)

- **Privacy and security standards** (Privacy & Security Risk Management Framework)

Infoway and CIHI: unique roles in the health data pipeline
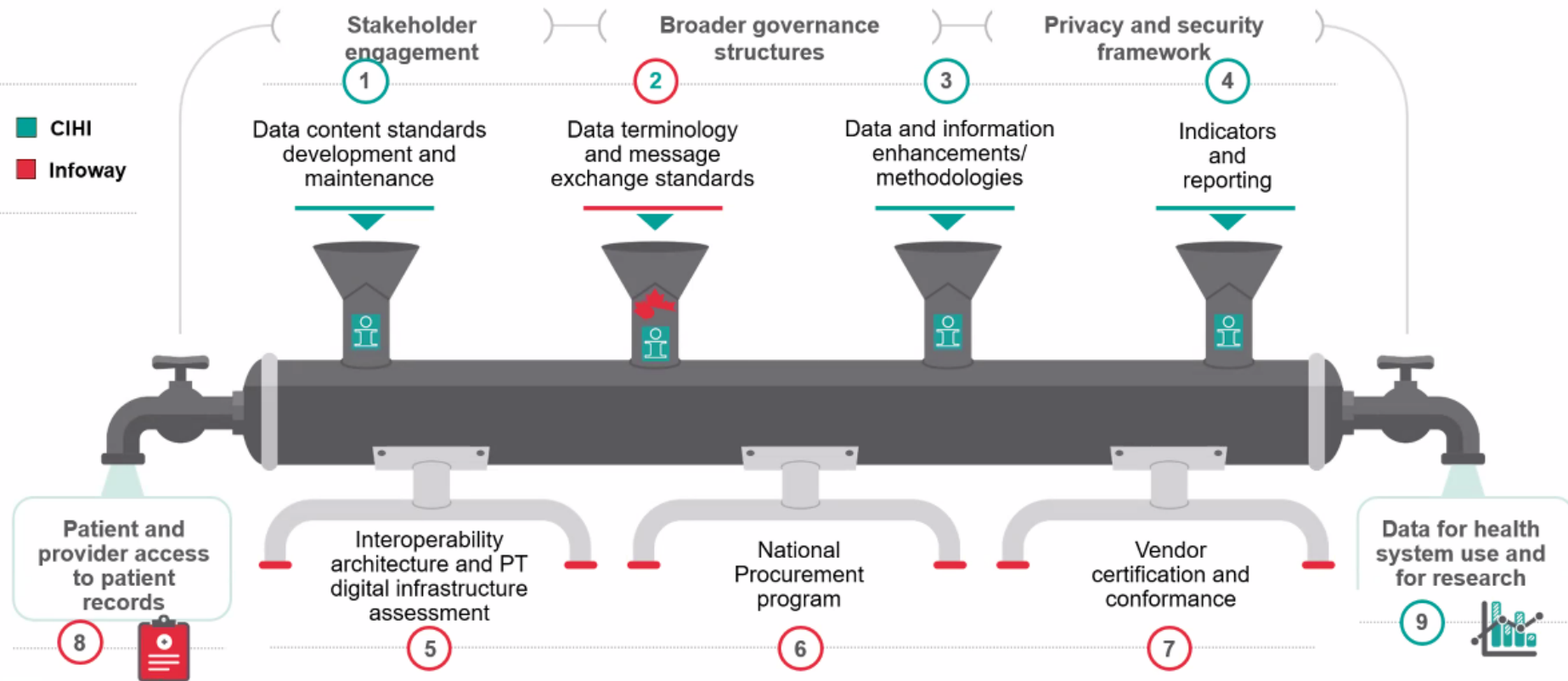
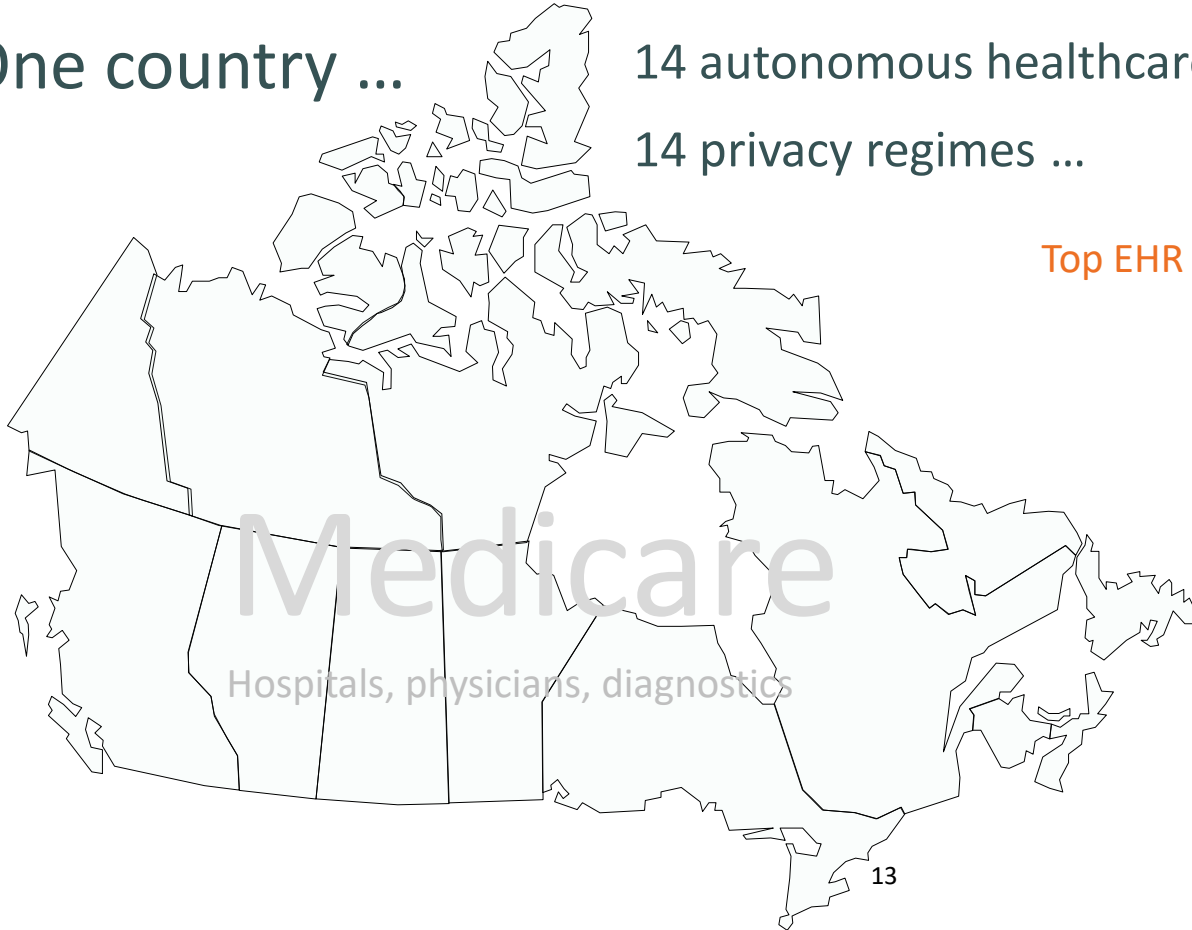# Canadian Health Care System: data challenges and opportunities

Canadian federalism

One country …

14 autonomous healthcare systems

14 privacy regimes …

Top EHR Vendors in Canadian Hospitals:

Meditech: 233

Epic: 134

Cerner: 102

Allscripts: 25

Limited interoperability

Medicare

Hospitals, physicians, diagnostics

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Pan-Canadian Health Data Strategy:
Toward a world-class health data system

Expert Advisory Group – Final Report
May 2022

Health data in Canada: current state

No common vision for health data across Canada:

- No systematic, principle-based approach to data use in the health sector;

- No strong and coherent governance model for data oversight in the health sector;

- No policy that articulates the duty to share data for the public good while also ensuring it is secure

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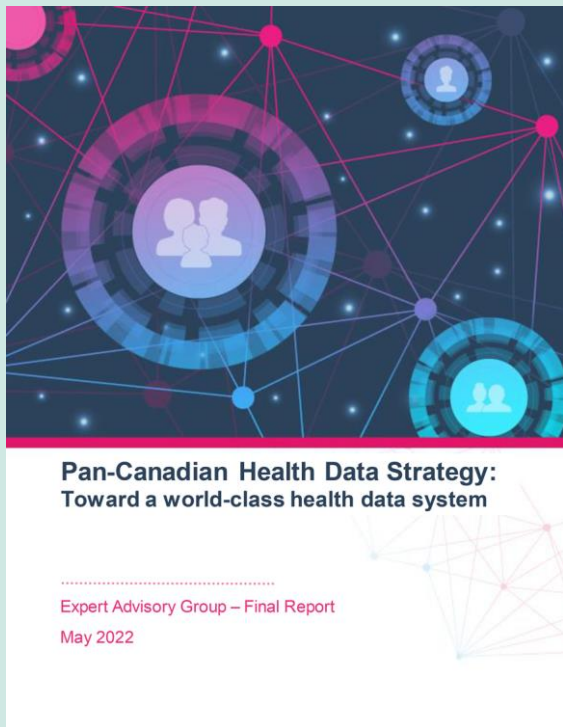
"Fax machines should be in museums, not a mainstay of 21st-century health care"
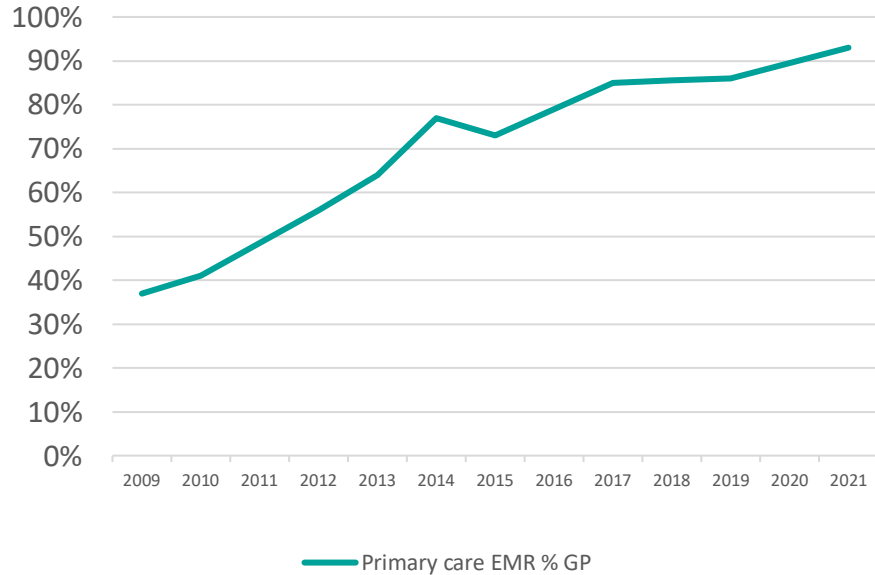

Two-thirds of Canadian physicians use the fax as their primary means of communication with other health care professionals
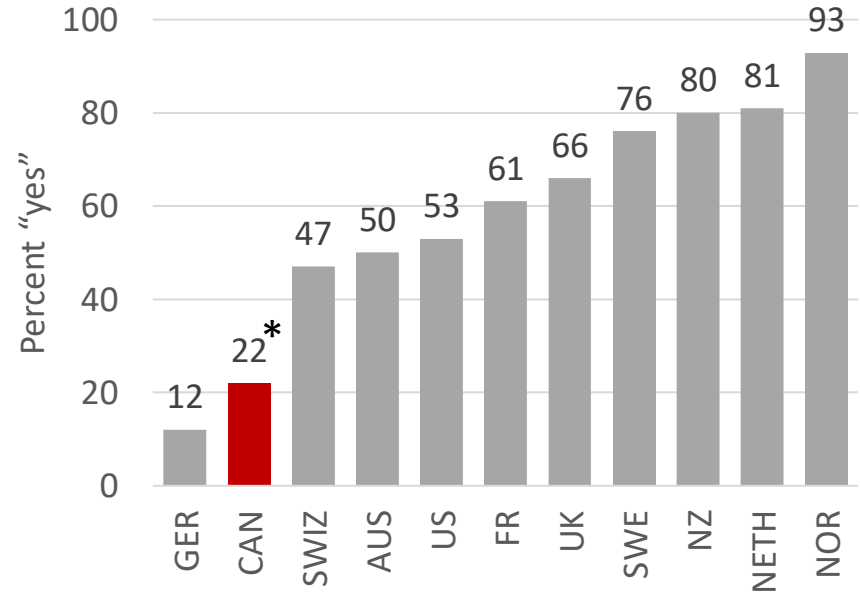
Hybrid use of paper and electronic records still common in Canadian healthcare

Paper death certificates still routine
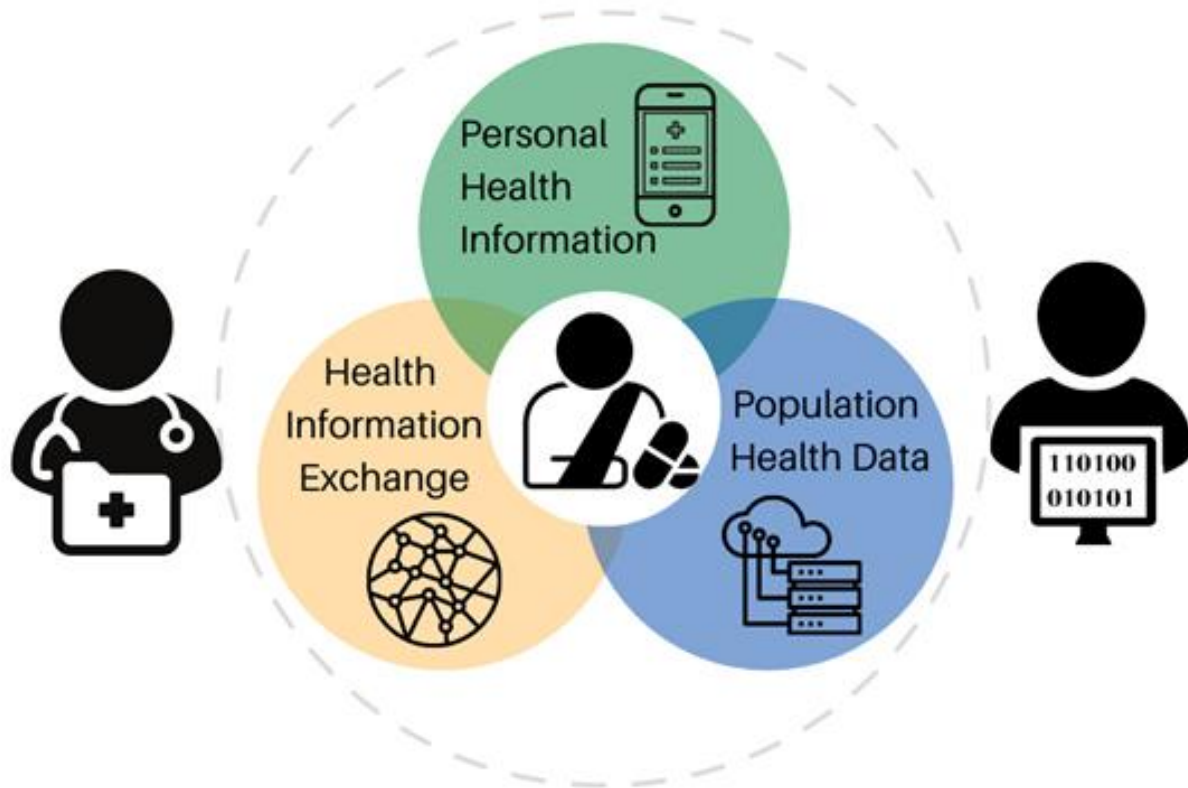
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Primary care EMR implementation

Primary care EMR % GP

Electronic communication by physicians
2019 International Comparison

GER	CAN	SWIZ	AUS	US	FR	UK	SWE	NZ	NETH	NOR
12	22*	47	50	53	61	66	76	80	81	93

Percent "yes"

*2021: 34%

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Health data standards: classifications

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International Classification of Disease

International
Statistical
Classification
of Diseases and
Related Health
Problems

Tenth Revision

Volume 1

World Health Organization
Geneva
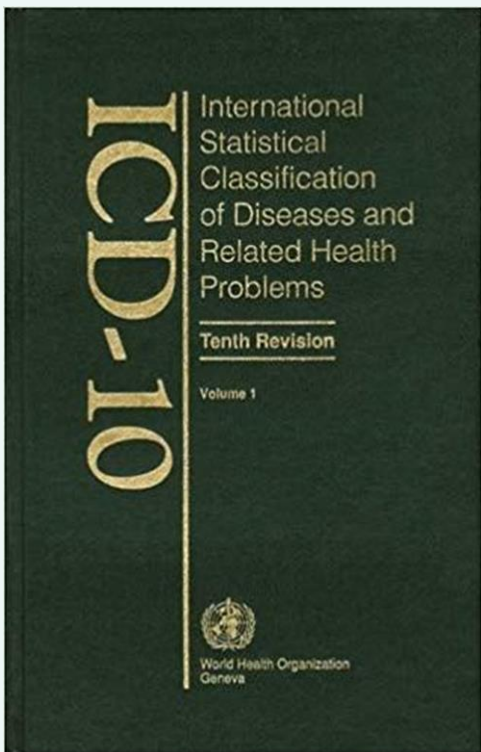
ICD-10 is still used in Canada

– For all acute hospital stays and many emergency department visits

– To classify cause of death (Statistics Canada)

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ICD-10-CA and CCI

- CIHI maintains, distributes and supports the application of ICD-10-CA, the Canadian modification

  – Modifications mostly involve additional subcategories and specifiers

- CCI Developed by CIHI to complement ICD-10-CA

  – Service provider and service-setting neutral

  – Comprehensive coverage of therapeutic, diagnostic and other associated healthcare interventions

  – Multi-axial

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Data Quality Documentation
Hospital Morbidity Database

Current-Year Information
2020–2021
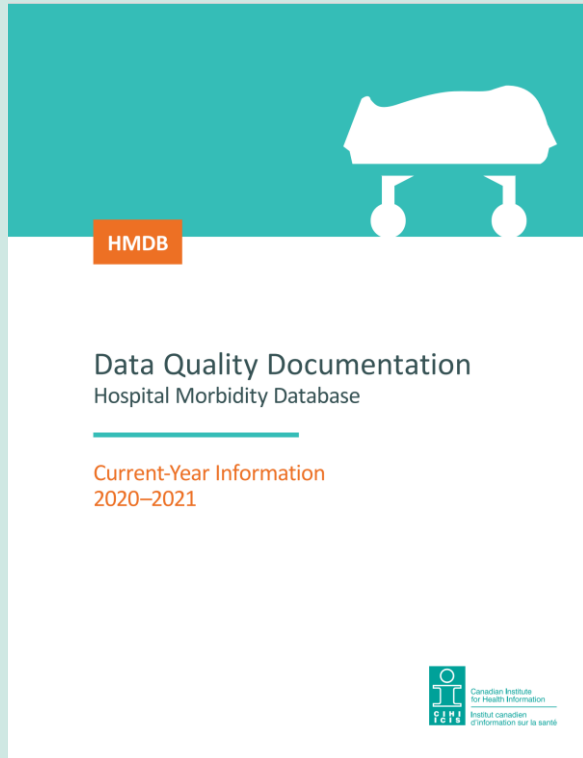
ICD-coded hospital data

- **DAD/HMDB** captures administrative, clinical and demographic information on **ALL** Canadian hospital discharges

- **NACRS** contains data for hospital-based ambulatory care:
  - Day surgery
  - Outpatient clinics
  - Emergency departments

Canadian Coding Standards

ICD-10-CA | CCI

Canadian Coding Standards
for Version 2018 ICD-10-CA and CCI

Apply to all data sets submitted to the hospital databases

Supplement classification (ICD-10-CA and CCI) rules and coding conventions

Provide direction:

To support national priorities for health data

For mandatory and optional code assignment

On application of diagnosis typing

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Physician payment databases: ICD-9's last stand

- Most physicians are paid by provincial ministries of health for services provided to patients

- Physician claims for payment must include a *billing code* for the service provided
    - billing code sets vary between provinces

- Claims must include **ICD-9** codes for the health conditions for which the service was provided

- Physician billing databases capture relatively complete and comprehensive information on physician services for all specialties

Uses of ICD-coded data

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Case mix

- Hospital inpatient (CMG+)
- Hospital inpatient (HIG)
- Hospital emergency department, clinics, and day surgery (CACS)
- Hospital inpatient mental health (SCIPP)
- Long term care (RUG-III)
- Home care (RUG-III HC)
- Inpatient rehabilitation (RPG)

Public health surveillance

CCDR | CANADA COMMUNICABLE DISEASE REPORT

canada.ca/ccdr

NOSOCOMIAL INFEC SURVEILLANCE

BEST PRACTICES
Canadian Public Health
Laboratory Network on
COVID-19

SURVEILLANCE
Health–associated infections in
Canada

NEXT ISSUE JUNE 4, 2020

Public Health   Agence de la santé
Agency of Canada   publique du Canada

THE CANADIAN CHRONIC DISEASE SURVEILLANCE SYSTEM

AN OVERVIEW

The Canadian Chronic Disease Surveillance System (CCDSS) is a collaborative network of provincial and territorial surveillance systems, supported by the Public Health Agency of Canada (PHAC). The CCDSS enhances the scope of data on chronic diseases in Canada and supports the planning of health resources and the development of health policies and programs. It collects data on all residents who are eligible for provincial or territorial health insurance and can generate national estimates and trends over time for over 20 chronic diseases (see the textbox "Chronic diseases included in the CCDSS").

CHRONIC DISEASES INCLUDED IN THE CCDSS

Cardiovascular diseases
- heart failure
- hypertension
- ischemic heart disease, including acute myocardial infarction
- stroke

Chronic respiratory diseases
- asthma
- chronic obstructive pulmonary disease

Mental illnesses
- mental illness
- mood and anxiety disorders
- schizophrenia

Diabetes

Musculoskeletal disorders
- osteoarthritis
- gout and crystal arthropathies
- rheumatoid arthritis
- juvenile idiopathic arthritis
- osteoporosis
- osteoporosis related fractures

Neurological conditions
- dementia, including Alzheimer's disease
- epilepsy
- multiple sclerosis
- parkinsonism, including Parkinson's disease

More information on these diseases is available at: www.canada.ca/en/public-health/services/chronic-diseases.html.

i   In this document, the term 'chronic diseases' is also used to refer to chronic conditions, disorders, or health related consequences or events.

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Agency of Canada   publique du Canada

Canada

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Publicly accessible open data
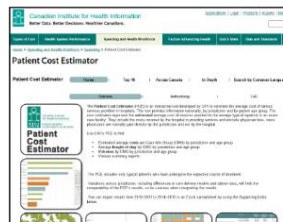
Examples

Interactive analytical tools

Your Health System

Patient Cost Estimator

Quick Stats

Interactive data
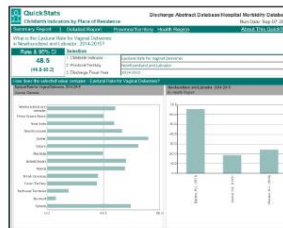
Pre-formatted data tables

Analytical publications

National Health Expenditure Trends 2020

Annual Statistics on Organ Replacement in Canada

Dialysis, Transplantation and Donation, 2010 to 2019

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ICD-11: preparing for implementation

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ICD-11 implementation decision

- **As a decentralized federal state Canada is reliant on intergovernmental instruments to facilitate and coordinate pan-Canadian policy and program areas**

- **Multiple health information organizations with separate governance structures, *but no single organization that is responsible for all aspects of health information in Canada***

- **Conference of Federal/Provincial/Territorial Deputy Ministers of Health (CDM)**

  - 14 members

  - Made the decision regarding implementation of ICD-10

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Considerations for Canada

Data Collection & Standardization

- More codes required in ICD-11 to capture same diagnostic concept in ICD-10-CA

- Determination of level of specificity required for Canada & assess the need for a Canadian linearization

- Coding standards & sanctioning rules

- Structure change - Stem codes and extension codes

- Implications for Coding Workforce

- Translations - French

Applications & Systems

- Any system, database, and reporting tools that capture and utilize ICD-10-CA codes will be impacted

- Case Mix, population risk adjustment grouper, intensity weight measure

- Methodology changes for decision support, indicator development, Data Warehouses & Reporting tools (Your Health System: Insight & Portal)

- Edits and Submissions systems – Vendor and CIHI

- Registries e.g.,
    - Cancer Registries
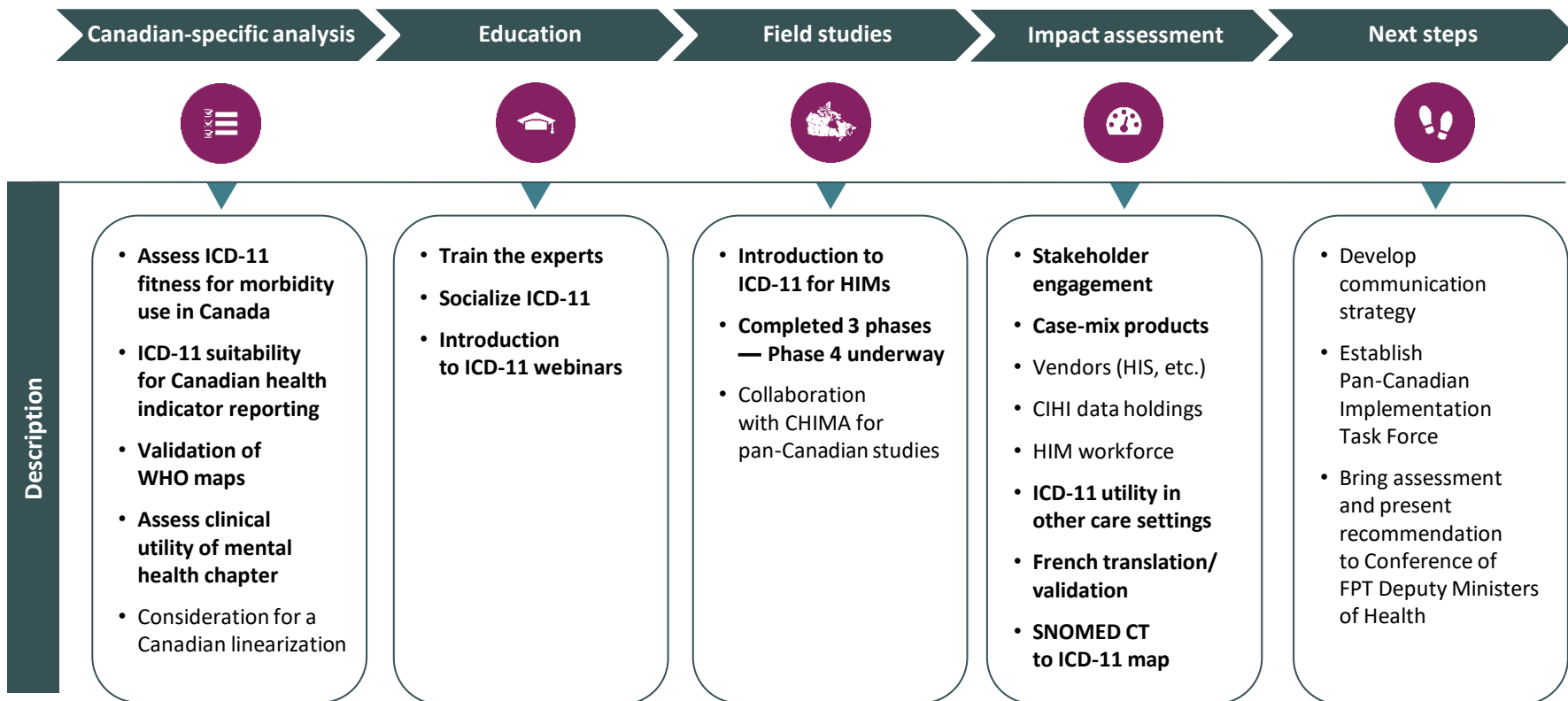   - Rare Diseases

Other Support

- Conversions and crosswalk maps

- Client support for coders and analysts

Education

- Development of ICD-11 education & consideration of existing education

- For use in other settings (non-acute)

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Implementation preparation activities

Canadian-specific analysis	Education	Field studies	Impact assessment	Next steps

Description

- **Assess ICD-11 fitness for morbidity use in Canada**
- **ICD-11 suitability for Canadian health indicator reporting**
- **Validation of WHO maps**
- **Assess clinical utility of mental health chapter**
- Consideration for a Canadian linearization

- **Train the experts**
- **Socialize ICD-11**
- **Introduction to ICD-11 webinars**

- **Introduction to ICD-11 for HIMs**
- **Completed 3 phases — Phase 4 underway**
- Collaboration with CHIMA for pan-Canadian studies

- **Stakeholder engagement**
- **Case-mix products**
- Vendors (HIS, etc.)
- CIHI data holdings
- HIM workforce
- **ICD-11 utility in other care settings**
- **French translation/ validation**
- **SNOMED CT to ICD-11 map**

- Develop communication strategy
- Establish Pan-Canadian Implementation Task Force
- Bring assessment and present recommendation to Conference of FPT Deputy Ministers of Health

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Comparing population density

YUKON 0.1

N.W.T. 0

NUNAVUT 0

N.L. 1.4

B.C. 4.8

ALTA. 5.7

SASK. 1.8

MAN. 2.2

ONT. 14.1

QUE. 5.8

N.B. 10.5

N.S. 17.4

P.E.I. 24.7 PEOPLE PER SQ. KM.

Land area, KM² 1,900,000

Land area, KM² 5,700

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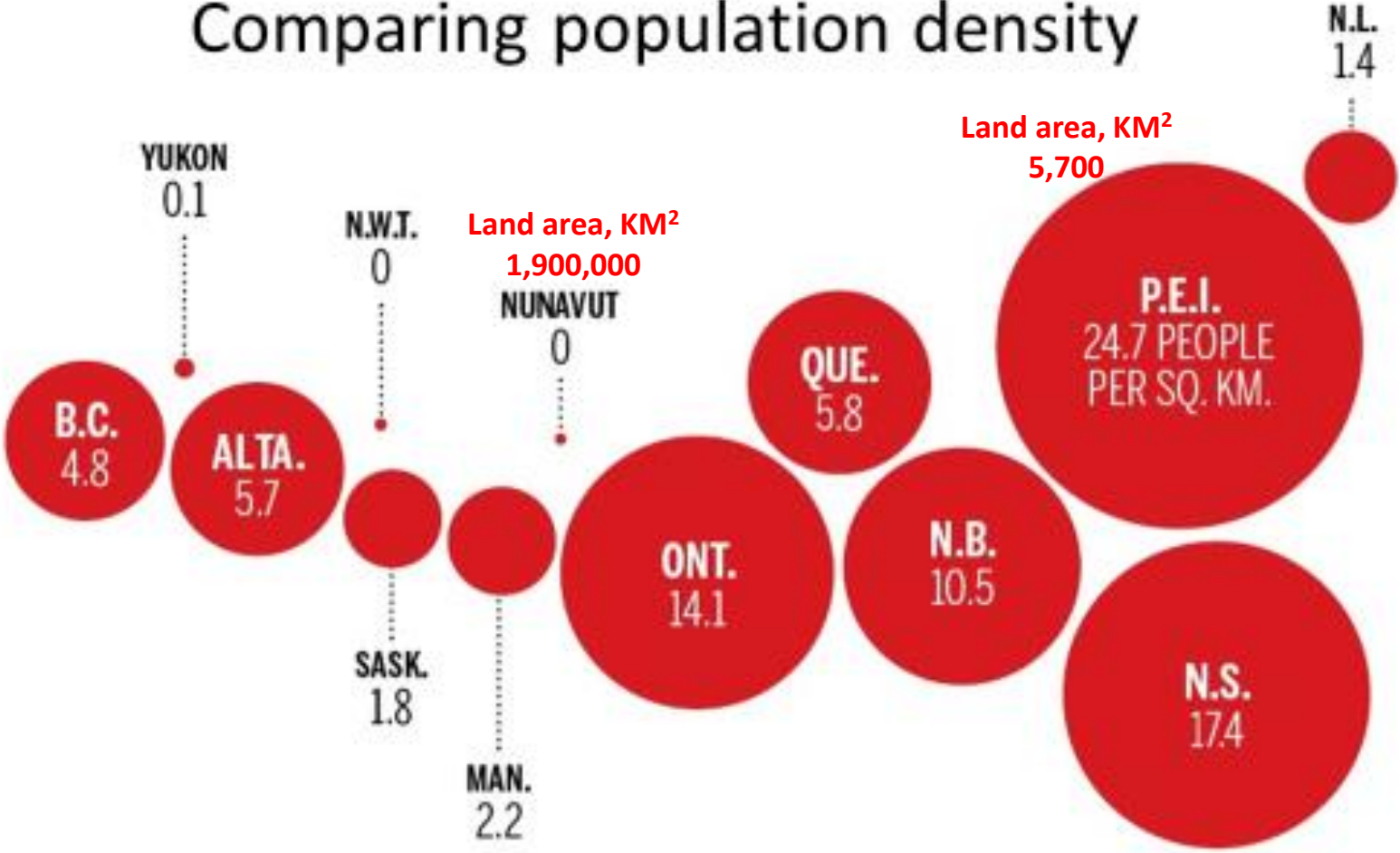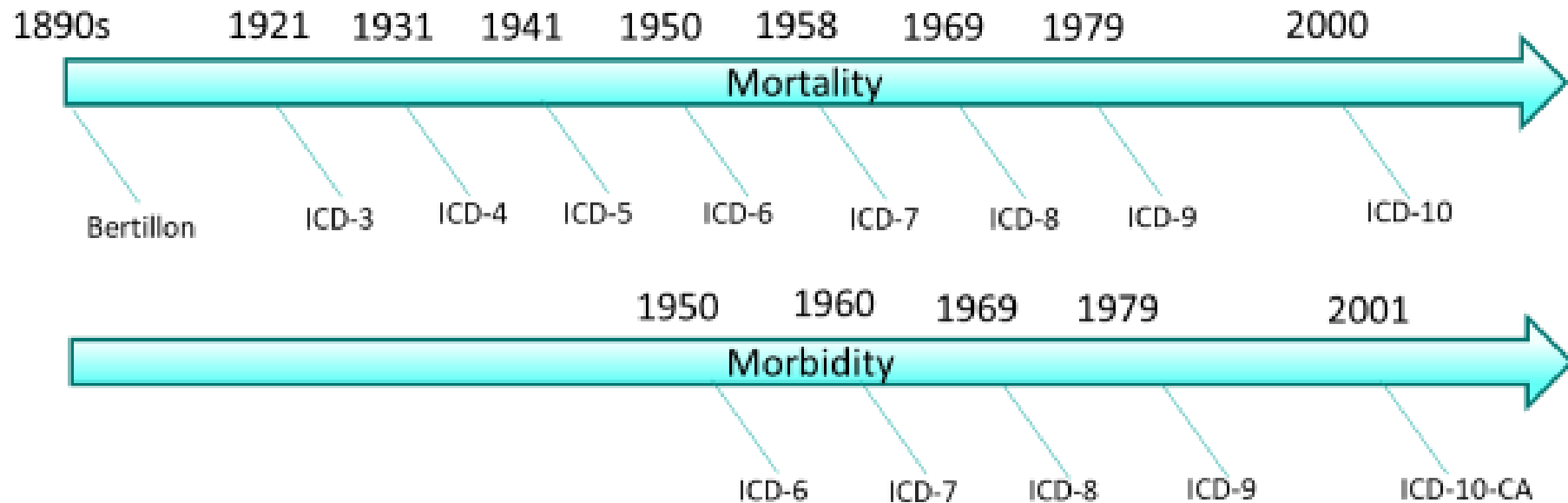
Population distribution

Name	Total (2021)	%	Density per KM²	Land area KM²
Ontario	14,223,942	38.45%	15.2	908,699.33
Quebec	8,501,833	22.98%	6.5	1,356,625.27
British Columbia	5,000,879	13.52%	5.4	922,503.01
Alberta	4,262,635	11.52%	6.7	640,330.46
Manitoba	1,342,153	3.63%	2.3	552,370.99
Saskatchewan	1,132,505	3.06%	2.0	588,243.54
Nova Scotia	969,383	2.62%	18.4	52,942.27
New Brunswick	775,610	2.09%	10.9	71,388.81
Newfoundland and Labrador	510,550	1.38%	1.4	370,514.08
Prince Edward Island	154,331	0.42%	27.2	5,686.03
Northwest Territories	41,070	0.11%	0.04	1,143,793.86
Yukon	40,232	0.11%	0.08	474,712.68
Nunavut	36,858	0.10%	0.02	1,877,778.53
Total	36,991,981	100%	4.2	8,965,588.85

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