

Special Webinar

Orientation to the CIHI/Alliance EMR Data Quality Assessment Dashboard



Alliance for
Healthier Communities
Alliance pour des
communautés en santé



Canadian Institute for Health Information
Better data. Better decisions. Healthier Canadians.

Welcome & Introduction

- **Housekeeping**
- **Land Acknowledgement**
- **Presentation: Canadian Institute for Health Information**
 - Ann Chapman, Director of Spending and Primary Care
 - Paul Sajan, Manager of Primary Health Care Information
 - Chardé Morgan, Project Lead, Primary Health Care Information
 - Chen Wu, Project Lead, Primary Health Care Information
 - Rebecca Ling, Senior Analyst, Primary Health Care Information
- **Q&A / Discussion**

Acknowledgement of Traditional Indigenous Territories

We recognize that the work of the Alliance for Healthier Communities and Alliance members takes place across what is now called Ontario on traditional territories of the Indigenous people who have lived here since time immemorial and have deep connections to these lands. We further acknowledge that Ontario is covered by 46 treaties, agreements and land purchases, as well as unceded territories. We are grateful for the opportunity to live, meet and work on this territory.

Ontario continues to be home to vibrant, diverse Indigenous communities who have distinct and specific histories, needs, and assets as well as constitutionally protected and treaty rights. We honour this diversity and respect the knowledge, leadership and governance frameworks within Indigenous communities. In recognition of this, we commit to building allyship relationships with First Nation, Inuit and Métis peoples in order to enhance our knowledge and appreciation of the many histories and voices within Ontario. We also commit to sharing and upholding responsibilities to all who now live on these lands, the land itself and the resources that make our lives possible.

CIHI – Alliance EMR Data Quality Assessment

Chen Wu & Rebecca Ling

Primary Health Care Information Department

Canadian Institute for Health Information

Today's agenda



- **Project Overview – Alliance-CIHI Partnership**
- **Overview of Data Quality Assessment**
 - Information Quality Approach to Alliance EMR Data
 - Findings by Dimension and Characteristic
 - Demonstration of Data Quality Dashboard
- **Successes & Opportunities for Advancement**
- **Next Steps**



Alliance-CIHI Partnership

Alliance-CIHI Partnership | Projects and Ongoing Data

Partner and Share 2018

Initial Data Sharing Agreement was signed and Alliance shared 3 years of BIRT data with CIHI

Assess and Analyze 2018-2019

Key Deliverables

1. Data quality report focused on data quality, usability and linkage potential
 2. COPD analysis
 3. Mental health & addictions analysis
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Ongoing Agreement 2020

Data Sharing Agreement signed for an annual ongoing data submission

Submission 2021 and forward

1st ongoing submission was received in December 2021
Data quality assessment and preliminary analysis of visit modality are now complete
2nd submission of data from 2015 to 2021 is scheduled for September 2022

Overview of Data Quality Assessment

Information Quality at CIHI

CIHI's Data Source Assessment Tool (DSAT) provides a set of criteria to assess data quality across 5 dimensions, allowing for appropriate determination of fitness for health system use.



Approach to Assessing Alliance EMR Data Quality

Dimensions

Assessment focused on 3 dimensions of quality within CIHI's Data Source Assessment Tool which applied to this project

Accuracy and Reliability

Comparability and Coherence

Accessibility and Clarity

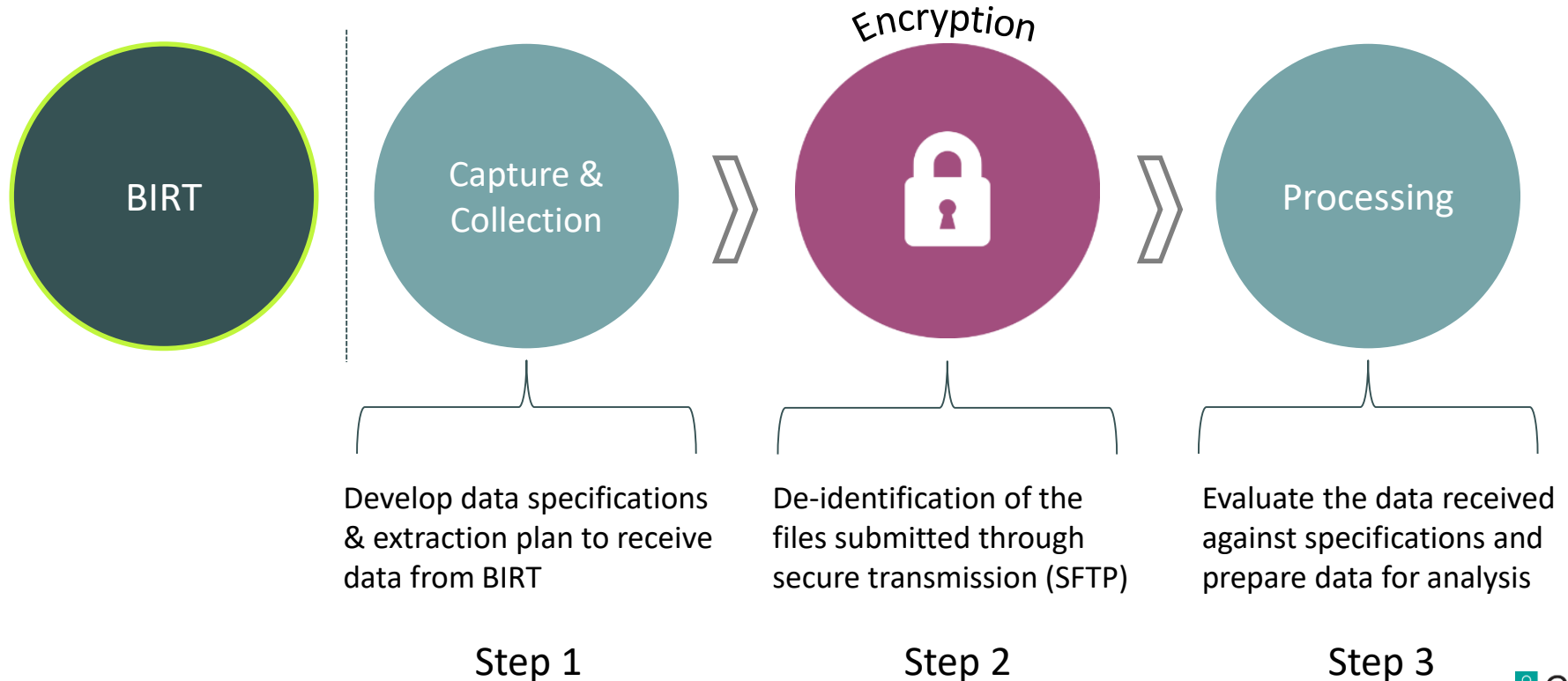
Relevance

Timeliness and Punctuality

Characteristics

- Capture and Collection
- Processing
- Coverage
- Item Availability
- Standardization
- Linkage
- Concordance
- Accessibility
- Interpretability

Accuracy and Reliability | Capture & Collection, Processing



Accuracy and Reliability | Coverage

100% Participation, 73 CHCs

892, 010 Clients, representing 6% of Ontario's population

319, 897 Clients with an ongoing primary care status with a CHC

13.9 million encounters over 6 years (2015/16-2020/21)

Accuracy and Reliability | Item Availability



Linkage

Data Elements

All Ongoing
Primary Care Clients

Health Card Number	91.1%
Client Date of Birth	100%
Client Sex	99.6%
Client Postal Code	96.9%



Diagnosis & Treatment

Issue Addressed (Health Concern English Terms)	100%
Issue Address (Health Concern ICD-10 Codes)	99.8%
Procedure (Intervention)	100%
External Referral – Provider Type	78.8%
Immunization	87.8%



Social Determinants of
Health

Language	95.1%
Education	72.0%
Household Composition	72.7%
Disability	75.2%

PHC Data Standard | Alliance Alignment

A-Patient/ Client	B-Clinician/ Provider	C. Service Delivery Location	D-Visit/ Encounter	E-Observation	F-Intervention	Lab Tests G-Ordered H-Results	Diag Imaging I-Ordered J-Results	Referral K-Requested L-Result	Medication M-Prescribed N-Dispensed	O- Immunization
Patient Identifier	Clinician Identifier	Service Delivery Identifier	Reason for Visit	Social Behaviours (Risk Factors)	Intervention (Treatment)	Lab Test Ordered	DI Test Ordered	Referral Service Code	Prescribed Medications	Vaccine Administered
Patient Identifier Type	Clinician Identifier Type	Service Delivery Postal Code	Visit Type/Mode	Health Concern (Problem List)	Intervention (Treatment) Refusal Reason	Lab Test Name			Prescribed Medication Dose	Vaccine Administered Lot Number
Patient Identifier Assigning Authority	Clinician Identifier Assigning Authority	Service Delivery Name	Billing Code	Clinician Assessment		Lab Test Result Value				
Patient Status	Clinician Role			Systolic Blood Pressure		Lab Test Result Unit of Measure				
Patient Postal Code	Clinician Expertise			Diastolic Blood Pressure		Lab Test Result Low Range				
Patient Gender				Height						
Patient Date of Birth				Height Unit of Measure						
Racialized Group				Weight						
Indigenous Identifier				Weight Unit of Measure						
Patient Highest Education				Family Member Health Concern						
Patient Housing Status				Allergy/Intolerance Type						

MDS Data Elements
 Group-11
 Core-47
 Supplementary-58

- MDS Groups (A-O)
- Core (w code examples)
- Core (no code examples)
- Supp (example DE)

Comparability and Coherence | Standardization

- Good alignment to the Pan-Canadian Primary Health Care EMR Minimum Data Set v1.1

35 Alliance data elements aligned to 31 of 47 core data elements

6 Alliance data elements aligned to 6 of 58 supplementary (optional) data elements

23 Alliance data elements not aligned

- Standardized codes (ENCODE-FM, mapped to ICD-10) are available to structure and capture diagnosis and treatment data.

Comparability and Coherence | Standardization

- Key data elements in the Pan-Canadian Primary Health Care EMR Minimum Data Set such as medication, lab results and risk factors (called social behavior in the Minimum Data Set) are not yet available in BIRT, which would be useful for analysis.

Comparability and Coherence | Linkage

- Generally, linkage of records across data tables is very good
- Linkage to CIHI data holdings will be explored

Comparability and Coherence | Concordance

Condition	Alliance EMR Data Prevalence ¹ (2015/16-2020/21)	Ontario Prevalence (2016/17) ²	Canada Prevalence (2016/17) ²
COPD	10.1%	10.4%	10.3%
Diabetes	10.9%	9.4%	8.8%
Stroke	2.0%	3.0%	2.9%
Heart Failure	2.8%	3.6%	3.7%
Ischemic Heart Disease	5.2%	8.8%	8.5%
Asthma	9.0%	12.9%	11.6%
Osteoarthritis	12.2%	15.7%	13.6%
Osteoporosis	6.8%	11.8%	11.9%
Dementia, Including Alzheimer's Disease	6.7%	7.5%	6.9%

¹Ongoing primary care clients only.

²Most current results at time of analysis from [the CCDSS](#). Case Definitions available at [this link](#).

Accessibility and Clarity | Accessibility

- The Alliance EMR data was stored at CIHI in a secure SAS environment with controlled access to CIHI staff
- Used as a source of truth for all CIHI linkage and analysis related to this project

Accessibility and Clarity | Interpretability

- Metadata and other data source documentation are available to support use of the data for analysis including
 - Data dictionary
 - Alliance’s Model of Health and Well-being Evaluation Framework Manual
 - Entity relationship diagrams (ERD)
 - EMR workflow screenshots and BIRT’s logical model schemas

Live Demo of the Data Quality Dashboard

What We Learned about Usability of Alliance Data

Successes

- Minimal processing was required to make data fit for analysis
- Metadata and other data source documentation greatly improve appropriate understanding and use of the data
- Data required for linkage was available; Of all 319,897 ongoing primary care clients, 91% had a valid health card number
- Diagnosis data such as health concern and reason for visit are highly standardized and complete

Opportunities for Advancement

- More complete data for social determinants of health
- Future availability of medication, lab results and risk factors in BIRT
- Improving the availability of structured data for procedures and ordered tests in BIRT

Next Steps

- Linkage to CIHI data holdings in order to examine the patient journey through the continuum of care in great detail, including
 - Discharge Abstract Database (DAD)
 - National Ambulatory Care Reporting System (NACRS)
 - National Prescription Drug Utilization Information System (NPDUIS)
 - Patient-Level Physician Billing Repository (PLPB)
- Analytic projects
 - Visit modality (virtual care) analysis with equity lens is complete
 - Other topics to address priority and emerging issues in development



For questions about:



Analytics

- Contact Jennifer Rayner
jennifer.rayner@allianceon.org

Data quality & your CHC's data

- Contact Christine Randle
christine.randle@allianceon.org

CIHI's primary health care program and services

- Contact the CIHI Primary Health Care team
phc@cihi.ca



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@cihi_icis

phc@cihi.ca

cihi.ca