

# Chronic Obstructive Pulmonary Disease: a data partnership to gather insights for community health centres

Jennifer Rayner, Alliance for Healthier Communities

Mary Byrnes, Primary Health Care Information, Canadian Institute for Health Information



Alliance for Healthier Communities  
Alliance pour des communautés en santé



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

June 12, 2019

[www.allianceon.org](http://www.allianceon.org)

[www.cihi.ca](http://www.cihi.ca)



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# Agenda

- **The partners: Alliance and CIHI**
- **The partnership project**
  - Information quality
  - COPD analysis
  - Lessons learned and next steps
- **Questions**



# Alliance for Healthier Communities (Alliance)

## CHAMPIONING TRANSFORMATIVE CHANGE

### In keeping with **OUR VALUES**

### and our **MODELS**

#### Equity:

We champion an equitable, inclusive and respectful primary health care system.

#### Leadership:

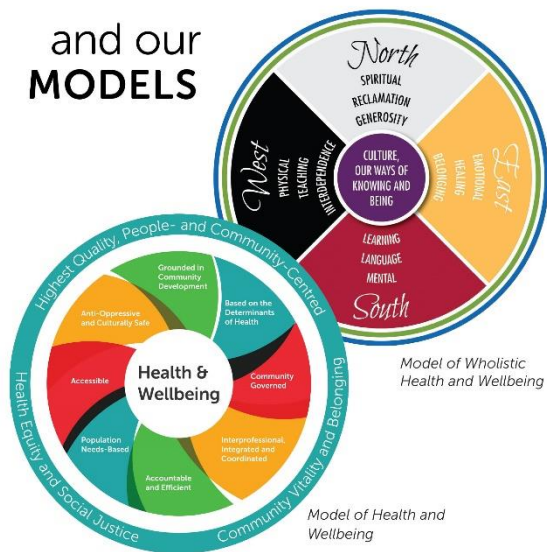
We challenge the status quo with integrity and transparency and are catalysts for system innovation.

#### Collaboration:

We embrace community-driven cooperation and partner to influence change.

#### Knowledge:

We act and learn from a community-informed and evidence-based approach.



### We're striving towards four **STRATEGIC DIRECTIONS**

- 1 Champion health equity and population needs-based planning, and challenge systemic inequities to achieve improved health outcomes.
- 2 Advance people-centred, high quality primary health care as the foundation of the universal and publicly funded health system to increase access to appropriate services, especially for populations facing barriers.
- 3 Demonstrate the value and impact of the Model of Health and Wellbeing on the improved health outcomes and experience of people and communities.
- 4 Advocate for appropriate policies, processes and resources to ensure members are equipped to operate healthy organizations and realize their potential as effective catalysts in system transformation.

### to support **OUR MISSION**

We champion transformative change to improve the health and wellbeing of people and communities facing barriers to health.

### and achieve **OUR VISION.**

The best possible health and wellbeing for everyone in Ontario.



# Business Intelligence Reporting Tool (BIRT)

- The Alliance developed BIRT to support member centres in the areas of accountability reporting to funders, administrative planning and evidenced-based clinical decision making
- Ability to look at data across multiple programs, drive quality improvement, make strategic planning decisions, and benchmark performance. A BIRT performance dashboard is used by all community health centres (CHCs).
- Near real-time EMR data
- Privacy and security infrastructure is flexible enough to have sensitive clinical information, while allowing users to share, collaborate and develop best practices
- Used to generate EMR data extracts, data elements can be mapped



# Alliance's structured data: What makes it possible?

- **Shared mission, vision, and values with invested clinicians**
- **Data governance and data quality mechanisms**
  - Performance indicators drive data quality initiatives
  - The Model of Health and Wellbeing Evaluation Framework
- **Significant investment in and commitment to IM/IT infrastructure**
  - Investment in EMR software with some common EMR tools (e.g. templates) for all CHCs
  - Business Intelligence Reporting Tool (BIRT) acts as a central store of EMR data
  - Ongoing training and resources (e.g. data management coordinators)



# Alliance common data requirements



## Model of Health and Wellbeing Evaluation Framework Manual

Performance Management Committee

February 2019

The *Model of Health and Wellbeing Evaluation Framework* supports a common data standard

- Overview of information needs
- ENCODE-FM use to codify health concern and intervention

The Business Intelligence Reporting Tool allows for further data standardization

- ENCODE-FM is mapped to ICD-10 to support linkage and secondary use of the data

# Canadian Institute for Health Information (CIHI)

## Vision

**Better data.  
Better decisions.  
Healthier Canadians.**

## Mandate

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

## Values

Respect • Integrity • Collaboration • Excellence • Innovation

**A standards-based approach to EMR data in primary health care**



## CIHI's Strategic Plan (2016-2021)



**Be a trusted source of standards and quality data**



**Expand analytical tools to support measurement of health systems**



**Produce actionable analysis and accelerate its adoption**

**Pan-Canadian primary health care indicators**



# Primary Health Care EMR Content Standard v3.0

- Pan-Canadian guidelines: minimum EMR data set
  - Priority EMR data elements/fields
  - Associated value sets (e.g. structured vocabularies and/or code sets)
- Supports EMR data standardization for primary and secondary use
- Version 3.0: defines 45 EMR data elements
  - a subset of v2.1: 106 data elements

DE #	Data Element Name	DE #	Data Element Name
A1	Patient Identifier	E29	Height Unit of Measure
A2	Patient Identifier Type	E30	Weight
A3	Patient Identifier Assigning Authority	E31	Weight Unit of Measure
A4	Patient Date of Birth	E34	Clinician Assessment
A5	Patient Gender	F1	Intervention
A9	Patient Status	F2	Intervention Date
A14	Patient Postal/Zip Code	G1	Lab Test Ordered
B4	Clinician Identifier	G2	Lab Test Ordered Date
B5	Clinician Identifier Type	H1	Lab Test Performed Date
B6	Clinician Identifier Assigning Authority	H2	Lab Test Name
B7	Clinician Role	H3	Lab Test Result Value
C1	Service Delivery Identifier	H4	Lab Test Result Unit of Measure
C4	Service Delivery Postal Code	I1	Diagnostic Imaging Test Ordered
D1	Appointment Creation Date	I2	Diagnostic Imaging Test Ordered Date
D2	Reason for Visit	J1	Diagnostic Imaging Test Performed Date
D3	Visit Date	K1	Referral
D4	Visit Type	K2	Referral Requested Date
E11	Health Concern	L1	Referral Occurred Date
E12	Health Concern Date of Onset	M1	Prescribed Medication
E14	Social Behaviour	M2	Prescription Date
E23	Systolic Blood Pressure	O1	Vaccine Administered
E24	Diastolic Blood Pressure	O2	Vaccine Administered Date
E28	Height		



# CIHI: Advancing comparable EMR data in PHC



## CIHI partnerships & innovation to produce comparable EMR data

- Leveraging best practices and data of forward thinking primary care stakeholders like the Alliance
- Analyses of EMR data linked to CIHI data assets

## Evolving CIHI supports to advance comparable EMR data and its use

- A standards based approach to comparable EMR data set for quality improvement and health system use

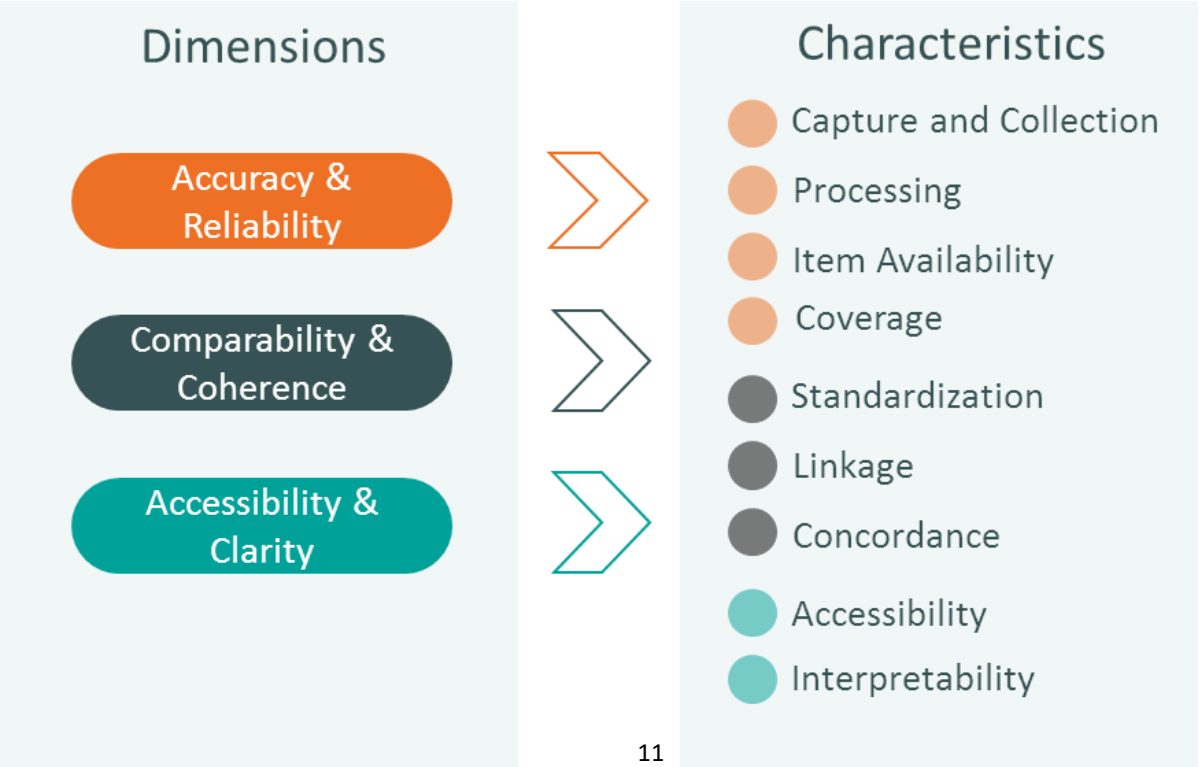
# Alliance-CIHI partnership: EMR data project



- The Alliance's members reached an agreement with CIHI to share their EMR data from the Business Intelligence Reporting Toll (BIRT)
- In July 2018, the Alliance shared 3 years of data from BIRT with CIHI (73 CHCs, 569,318 clients, representing more than 8.5 million encounters)
- CIHI, with input from the Alliance, assessed EMR data for quality, usability and linkage potential, to continue to make the case that the collection and use of standardized EMR data is possible in Canada
- CIHI, with input from the Alliance, conducted analysis on COPD using Alliance EMR data linked to CIHI data holdings (DAD, NACRS), in the context of the continuum of care
- Generated project lessons about the alignment of Alliance data to the CIHI pan-Canadian PHC EMR content standard, to inform its evolution

# Information quality approach to Alliance EMR data

Assessment focussed on 3 dimensions of quality within CIHI's Data Source Assessment Tool



# Comparability & coherence key findings

## Concordance of Prevalence Rates - EMR vs Population Survey Data

- Crude prevalence rates within EMR data are higher or within range of population estimates for conditions such as COPD and diabetes

Condition	Alliance EMR Data Crude Prevalence	Ontario Crude Prevalence (2015-16)	Canada Crude Prevalence (2015-16)
Chronic Obstructive Pulmonary Disease	8.7%	10.3%	10.2%
Diabetes	10.2%	9.2%	8.6%

\*Enrolled Clients Only

Data sources: 1. Alliance (EMR data, 2015-16 to 2017-18; 73 CHCs) 2. Canadian Chronic Disease Indicators, 2015-16

# What we learned about usability of the EMR data

## Successes

- Minimal processing was required to make data fit for analysis
- Data required for linkage was available
- Of enrolled clients, 78% had a valid HCN
- Diagnosis data such as health concern and reason for visit are highly standardized and complete
- Good alignment with CIHI's primary health care EMR content standard

## Opportunities for Advancement

- Future availability of medications, lab results and risk factors in BIRT will provide a more comprehensive picture of care
- Improving the availability of structured data for procedures and ordered tests will help generate a more complete overview of services provided to clients
- More complete data for determinants of health and biometric data such as blood pressure and BMI will allow for improved understanding of clients

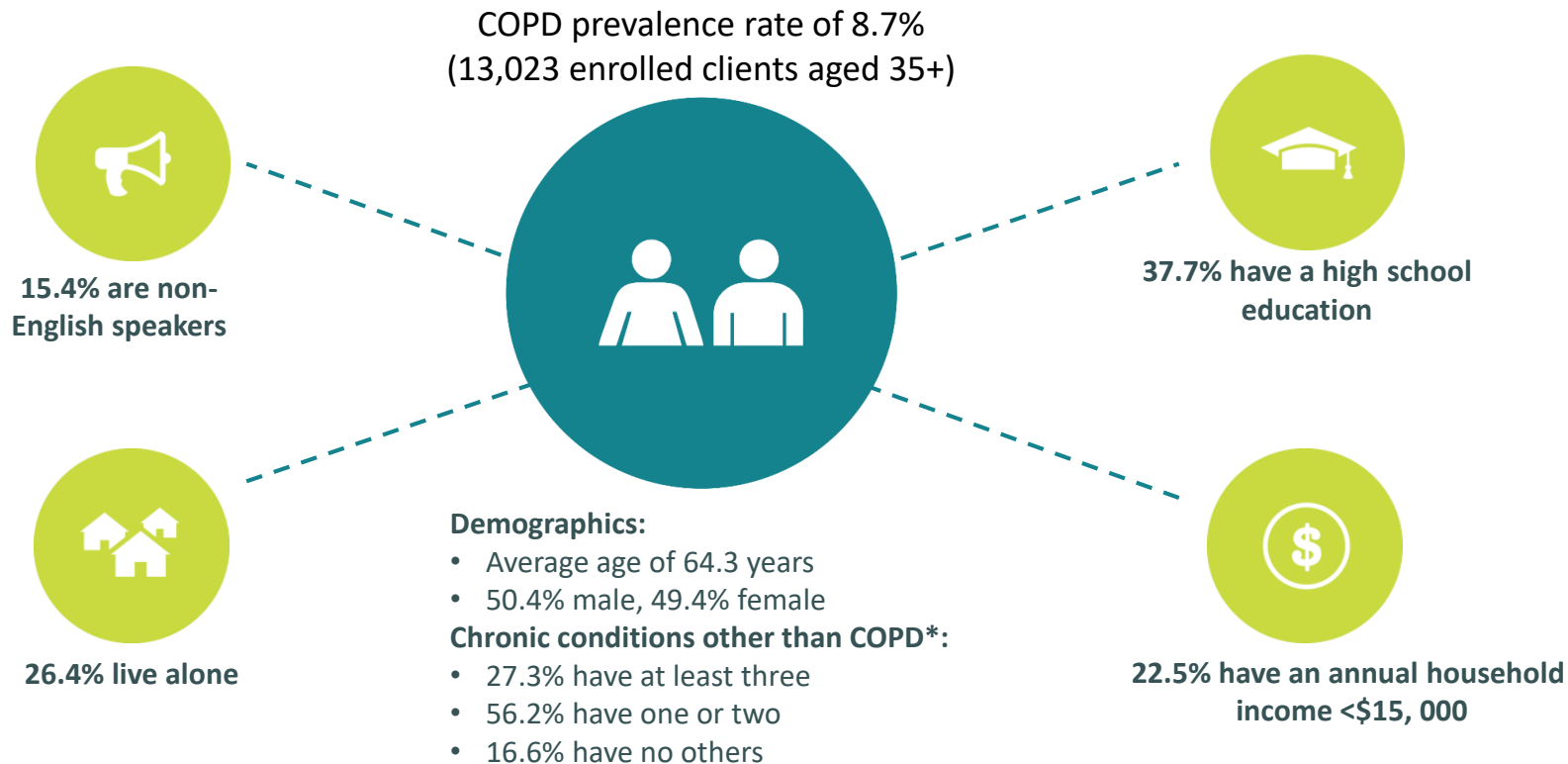
# Profile of COPD clients in primary care

What is the portrait  
of COPD clients?

How are COPD  
clients managed in  
primary care?

- Leading cause of morbidity and mortality costing \$1.5 billion annually
- Better management of COPD clients can slow progression of the disease and prevent avoidable hospitalizations and ED visits
- This analysis builds on and enriches CIHI's previous reports on COPD using physician billing data and chronic disease using VRS data

# What is the portrait of Alliance COPD clients?



# How are COPD clients managed in primary care?



**Most clients had 10-19 PHC visits per year, with multi-disciplinary care:**

- Physician (29.0%)
- Nurse Practitioner (20.3%)
- Nurse (20.0%)



**Top external referrals:**

- Surgeon-general (8.0%)
- Other (7.8%)
- Respiriologist (5.8%)



**Common reasons for PHC visits:**

- Health advice/ instructions (12.8%)
- Discussion regarding the treatment plan (8.2%)
- Medication renewal (7.5%)



**Top internal referrals:**

- Physician (13.0%)
- Other (7.0%)
- Nurse (6.7%)



**Vaccinations among those offered:**

- Flu vaccine (83.1%)
- Pneumococcal vaccine (95.0%)

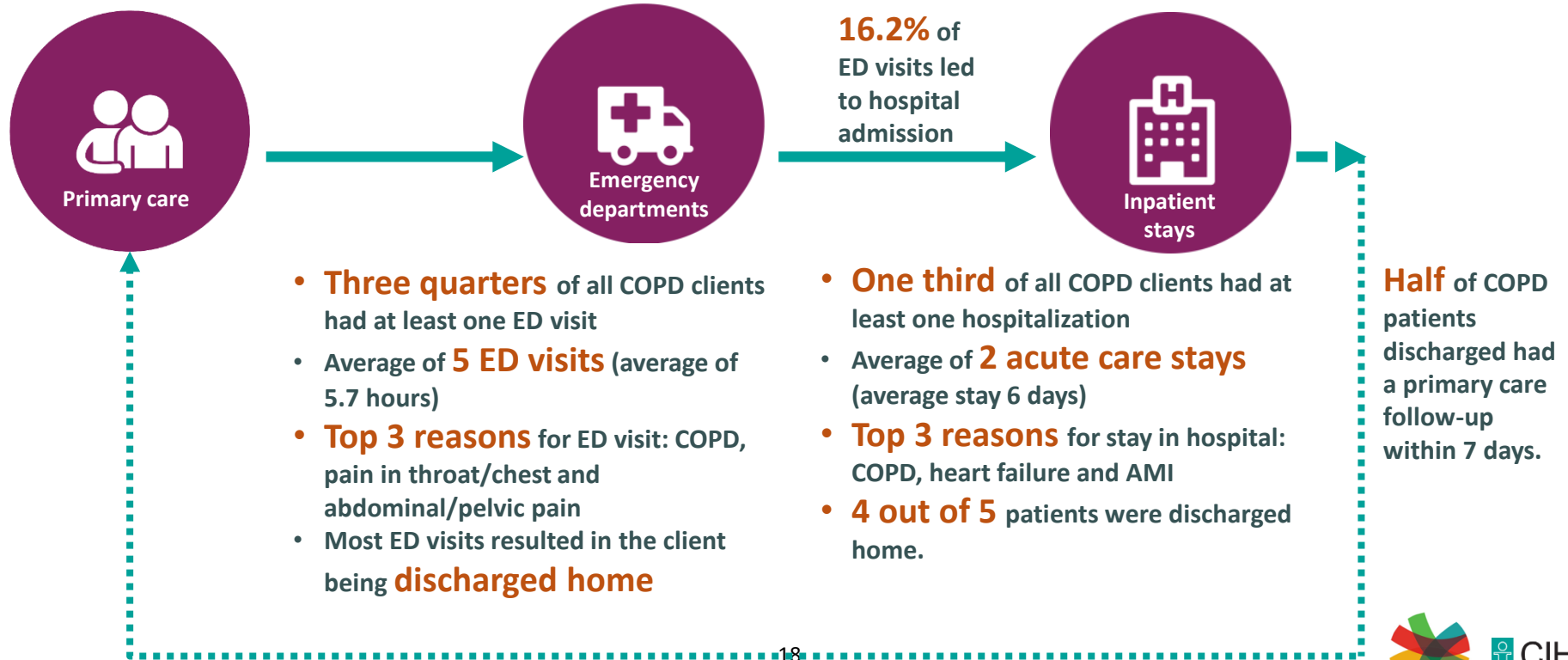


# Linkage of EMR to CIHI data

What is the journey of COPD clients through the continuum?

- Methods:
  - Enrolled clients aged  $\geq 35$  years with a health concern of COPD during the 3 year study period
  - Link to CIHI's inpatient and emergency department databases (DAD/ NACRS) using CIHI's Standard Client Linkage Methodology
  - Of the 13,023 COPD clients 35+ years, 83.5% have a valid HCN

# What is the journey of COPD clients through the continuum? Over three years...



# Insights for Community Health Centres



- **What was produced? Data quality and COPD interactive reports**
- **Consider the COPD results against clinical practice guidelines where relevant (e.g. immunizations)**
- **Undertake quality improvement activities, including benchmarking CHC results against other CHCs**
- **Improve transitions between care settings**

# Next steps



- **Promote this work in Canadian jurisdictions to make the case for the usefulness of standardized data at the clinic and health system level**
- **Consider enhancements to the COPD proof of concept analysis once additional data elements are available in BIRT (e.g. medications)**
- **Initiate another proof of concept analysis focused on mental health and addictions**

# Next steps (continued)



- **Continue to support the evolution of Alliance and CIHI data standards**
  - Continue to assess comparability of standards and identify any opportunities for evolution (CIHI is currently reviewing and updating it's standard)
- **Determine feasibility of EMR content standards across Canadian CHCs**
  - Survey to determine current state and interest in implementing key data elements from the Alliance's CHC evaluation framework
  - National Data Working Group will guide this initiative



Alliance Booth

CIHI Booth



**Alliance for  
Healthier Communities**

*Advancing Health  
Equity in Ontario*

Jennifer Rayner, Alliance: [jennifer.rayner@allianceon.org](mailto:jennifer.rayner@allianceon.org)



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Mary Byrnes, CIHI: [mbyrnes@cihi.ca](mailto:mbyrnes@cihi.ca)