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

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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

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.

doing values

and our MODELS

North
South
West
East

Health & Wellbeing

Model of Wholistic Health and Wellbeing

Model of Health and Wellbeing

we're striving four towards change

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

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

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

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

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

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

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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
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 focused on 3 dimensions of quality within CIHI’s Data Source Assessment Tool

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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

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<tr>
<td>Chronic Obstructive Pulmonary Disease</td>
<td>8.7%</td>
<td>10.3%</td>
<td>10.2%</td>
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<tr>
<td>Diabetes</td>
<td>10.2%</td>
<td>9.2%</td>
<td>8.6%</td>
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*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?

COPD prevalence rate of 8.7%
(13,023 enrolled clients aged 35+)

Demographics:
- Average age of 64.3 years
- 50.4% male, 49.4% female

Chronic conditions other than COPD*:
- 27.3% have at least three
- 56.2% have one or two
- 16.6% have no others

- 15.4% are non-English speakers
- 37.7% have a high school education
- 26.4% live alone
- 22.5% have an annual household income <$15,000

Source: Alliance for Healthier Communities EMR data, 2015-16 to 2017-18 (73 CHCs)

*Chronic diseases for the comorbidity analysis included asthma, coronary artery disease, diabetes, depression, hypertension and osteoarthritis.
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%)

Common reasons for PHC visits:
- Health advice/instructions (12.8%)
- Discussion regarding the treatment plan (8.2%)
- Medication renewal (7.5%)

Top external referrals:
- Surgeon-general (8.0%)
- Other (7.8%)
- Respirologist (5.8%)

Top internal referrals:
- Physician (13.0%)
- Other (7.0%)
- Nurse (6.7%)

Vaccinations among those offered:
- Flu vaccine (83.1%)
- Pneumococcal vaccine (95.0%)

Source: Alliance for Healthier Communities EMR data, 2015-16 to 2017-18 (73 CHCs)
What is the journey of COPD clients through the continuum?

Linkage of EMR to CIHI data

- Enrolled clients aged ≥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...

- **Three quarters** of all COPD clients had at least one ED visit
- Average of **5 ED visits** (average of 5.7 hours)
- **Top 3 reasons** for ED visit: COPD, pain in throat/chest and abdominal/pelvic pain
- Most ED visits resulted in the client being **discharged home**

- **16.2%** of ED visits led to hospital admission

- **One third** of all COPD clients had at least one hospitalization
- Average of **2 acute care stays** (average stay 6 days)
- **Top 3 reasons** for stay in hospital: COPD, heart failure and AMI
- **4 out of 5** patients were discharged home.

- **Half** of COPD patients discharged had a primary care follow-up within 7 days.

Source: Alliance for Healthier Communities EMR data, DAD, NACRS, 2015-16 to 2017-2018 (73 CHCs)
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
Questions?

Alliance Booth

CIHI Booth

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