Linking primary care electronic medical record data with hospital data to support Ontario Health Teams

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1. Background

- The primary objective of the project is to merge two key data sets, the Shared Health Integrated Information Portal (SHIIP) and the Eastern Ontario Network (EON).

EON: EASTERN ONTARIO NETWORK

The Eastern Ontario Network (EON), Queen's University's practice-based research network (PBRN), is a network of over 150 primary care providers in practice at 14 clinics in Eastern Ontario.

EON's goal is to leverage electronic medical record (EMR) data to transform primary care through cutting-edge research that impacts patient care and management.

SHIIP: SHARED HEALTH INTEGRATED INFORMATION PORTAL

SHIIP was developed as a central component of the South East Local Health Integration Network's (LHIN) Health Links Information Management Strategy.

SHIIP supports the delivery of collaborative, coordinated care to complex and high-needs patients.

- This robust data set will provide opportunities for quality improvement (QI) projects that can be undertaken by Frontenac, Lennox & Addington (FLA) Ontario Health Team (OHT) to improve the approach to population health management.

2. Supporting OHT priorities

- This project will supply the necessary data to understand and implement the Health Home approach which is a key priority for the FLA region.
- The data will directly support the prevention and screening elements of population health management to guide future FLA OHT planning.
- This data set will also be valuable to support the move to a one record system by highlighting the benefits of consolidated and available information across sectors which will be crucial during the regional HIS/Cerner implementation project.
- This project will directly serve FLA OHT with the vision to spread and scale the learnings, the model, & the systems used for the benefit of other OHTs
- Linkage of EON and SHIIP data will serve to foster ongoing collaboration between FLA OHT, Queen's University, Ontario Health, and other OHTs across the province

- Expected outcomes for this project include:

- An improved understanding of the care journey and reduction in healthcare siloes
- A system level understanding of healthcare needs in the COPD population
- Continuity of care improvements across sectors
- Decreased burden on emergency departments & primary care providers

3. Progress to date

- A privacy working group was formed in June 2022. Progress so far (see Figure 1) has included:
  - Understanding the ethical and legal requirements
  - Identifying stakeholders
  - Establishing the data flow (see Figure 2)
  - Undertaking a privacy impact assessment (PIA)
  - Developing a QI project as proof of concept of the data linkage

Figure 1: Progress to date

4. Data flow

- The flow of SHIIP data to EON has been described below:

STEP 1

EON sends list of all patients at clinic including:
- Health card number (HCN)
- CPCSSN ID
- COPD diagnosis

Linkage takes place at SHIIP using HCN

Patient data includes:
- Hospital
- Home care
- Community Support Services
- Addictions & Mental Health

STEP 2

SHIIP sends de-identified data (no HCN) for:
- All patients on list with confirmed COPD
- Patients with COPD diagnosis (diagnosis unknown to clinic)

Only includes CPCSSN ID, no HCN

Storage of data and analysis at EON/POPLAR*

Electronic medical record data from Queen's Family Health Team

Data is housed in the POPLAR database at the Centre for Advanced Computing at Queen's University

*POPLAR (Primary Care Ontario Practice-Based Learning and Research Network) is the Ontario-wide EMR database

Figure 2: Data flow

5. Quality improvement project overview

- Deidentified data from SHIIP (hospital, home care, community support services, and addictions and mental health) will be linked with EON data (electronic medical record (EMR) primary care data).
- Use SHIIP data to identify patients presenting to the emergency room (ER) with chronic obstructive pulmonary disease (COPD) exacerbations
- Link those patients with their primary care data to compare with COPD patients who are not showing up in ER
- Identify characteristics (co-morbidities, medications, deprivation scores, etc) which might predict those who are most likely to end up in ER
- Develop a program of intervention for those predicted to end up in ER
- Evaluate effectiveness of intervention using SHIIP data
- This project aims to test the utility of a merged data set by applying a physical health risk register to support the early identification of primary care intervention opportunities in those with COPD concerns to improve the quality and continuity of care.