

Analyzing Health Data Across Care Systems: The Primary Care – Hospital Joint Data Warehouse in Toronto, Ontario

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Partnering Organizations: North York Family Health Team & North York General Hospital

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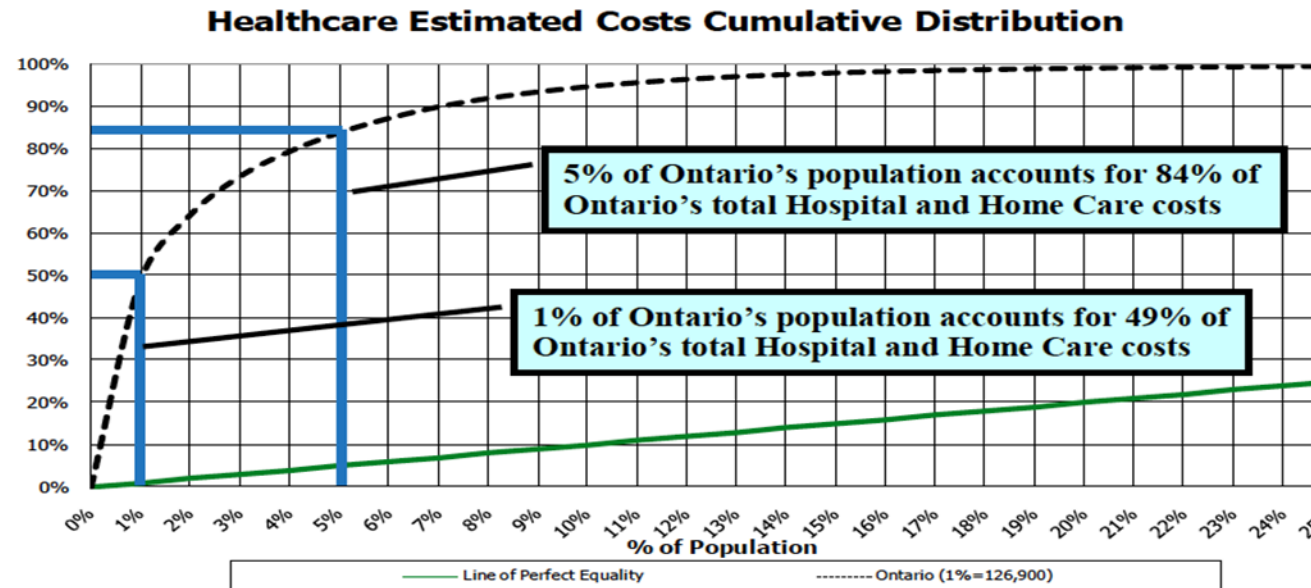
Objective



- To **merge** hospital and primary care clinical data into a joint **analytic** data warehousing system to study and **improve the care** of our most vulnerable patients.

Background

- ▶ A small number of patients account for a large proportion of health care use and costs.
- ▶ These patients are looked after in multiple settings.



Care across the continuum

- **Ontario Health Links** - To improve the management and coordination of care for complex patients.
- **Complex patients** - More likely to be seen in both hospital and primary care, and other settings.
- **Information** – To monitor & measure health services and patient outcomes.
- **Data collection** – Lack of integrated clinical information systems across care settings in Ontario.



Partners

- **North York General Hospital**

- Leader in computerization of hospital data
- One of the first hospitals in Canada to achieve Stage 6 by HIMSS Analytics

- **North York Family Health Team**

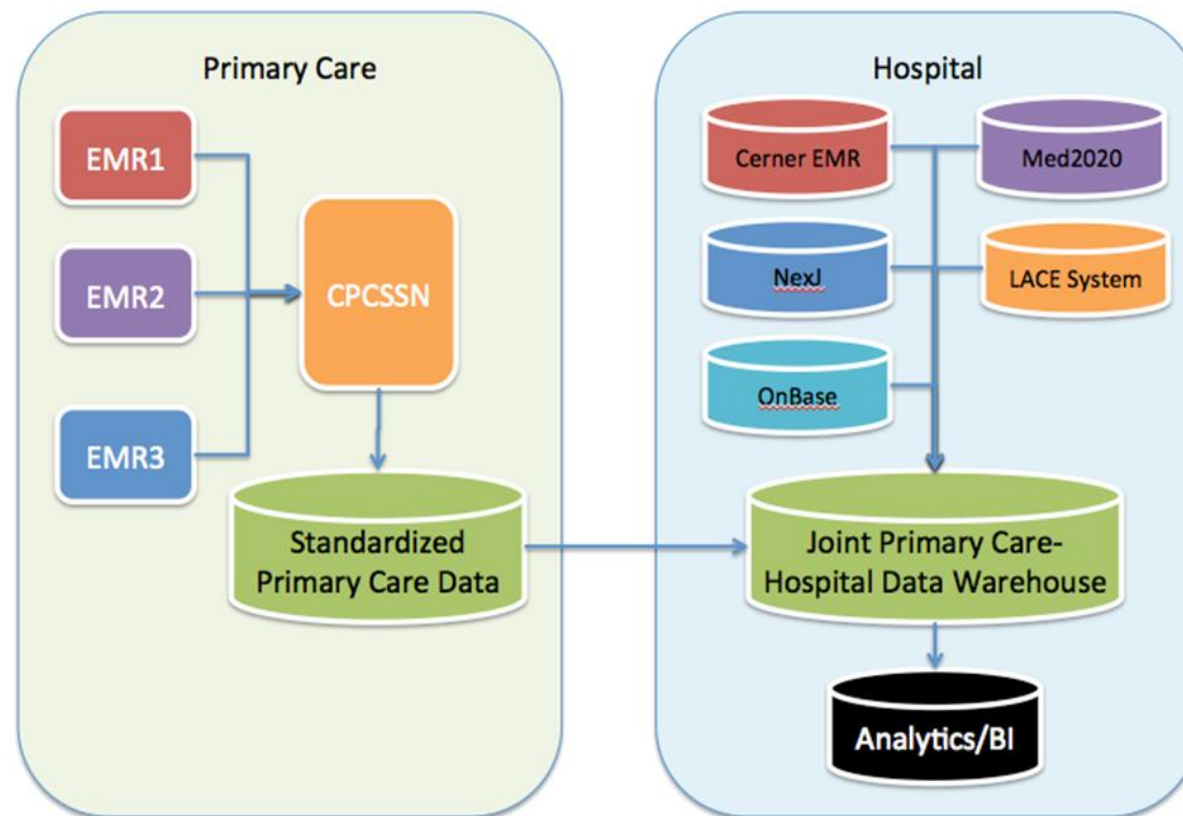
- Early adopter of EMRs
- Toronto center for **CPCSSN**, Canada's national multi-disease EMR based surveillance system

- **UTOPIAN** –University of Toronto

- Department of Family Community Medicine
- The largest Practice Based Research Network in Canada



A Joint Hospital – Primary Care Data Warehouse



Process

Step 1: Literature review

Step 2: Seek input from a broad range of stakeholders before proposing an IT solution.



- **Step 1: Literature Review** - Main areas proposed:
 - Governance
 - Privacy
 - Data, IT and analytics infrastructure (hardware, software, personnel)
 - Value proposition, feasibility and implementation plan

Step 2: Stakeholder interviews

Stakeholders were interviewed at NYGH, NYFHT and other organizations (LHIN, Ministry, e-health, etc.)
(n=36)

3-Step Process:

1. Initial set of interviews provided scope and scale of issues faced by clinicians.
2. Developed initial solution based on literature and stakeholders' identified issues.
3. Improved and validated the solution through second round of interviews.



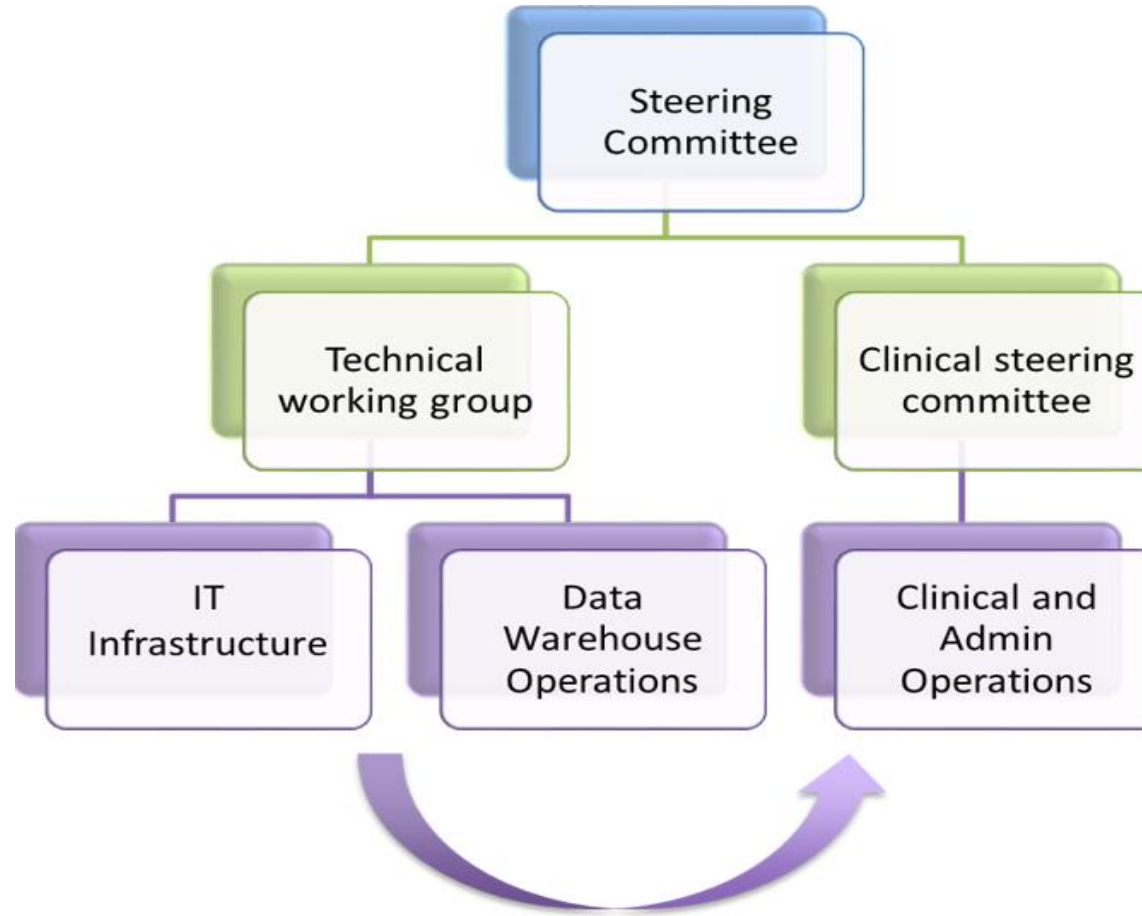
Interview Results



Interviews shed light on the following topics:

- Governance
- Business case
- Workflows and clinical goals
- Technical requirements
- Data requirements
- Privacy

Governance and implementation Infrastructure



Proposed Governance

Data Warehouse **Steering Committee:**

- To oversee and govern use of data, review and approve projects
 - Quality improvement; project planning
 - Research projects (REB approved)
- Members:
 - Co-Chairs from hospital and primary care
 - Equal representation from hospital and primary care
 - Chief Privacy and Freedom of Information Officer as non-voting member



Privacy Infrastructure

- Encrypted Health card numbers to allow for secured linkage
- Data de-identified
- Protected database at NYGH, restricted access
- Aggregate data on processes of care
- Physician consent



Physician Consent

- Process overseen by Physician Leaders at NYFHT
- Consent document:
 - Reviewed by OMA legal and Privacy Officer
 - Reviewed by NYGH Chief Privacy Officer
 - Meets all requirements under PHIPA



Data in Data Warehouse



From Hospital

- Diagnosis at intake and at discharge
- Medications at discharge
- Medication reconciliation
- Date of discharge
- Date of ED Visit
- Date of D/C Summary (calculate timeliness)



From Primary Care

- CPP diagnoses
- Medications in CPP
- Vitals
- Date of first visit post discharge
- Lab results (ensure patient's condition is under control)

Data in Data Warehouse



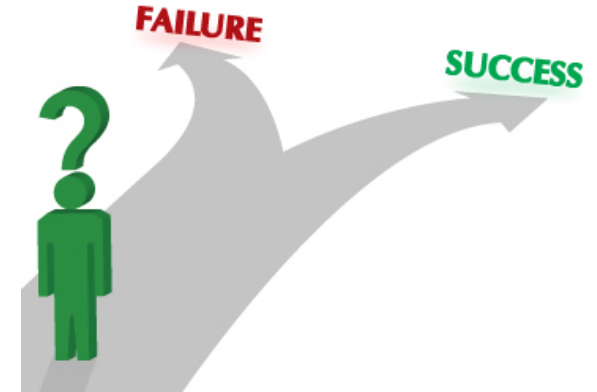
Initially

- Simple data warehouse with
 - 5-7 key hospital metrics and
 - 5-7 key primary care metrics
- Architect to make it easy to collect those metrics
 - Ensure metrics collection is within the workflow of clinicians
 - Ensure metrics are clinically relevant
- Focus on specific diagnoses that are at high risk for readmission

Later, as data warehouse grows

- Add more types of data/metrics
- Add more diseases
- Increased timeliness, consider some real-time data
- Improve workflows

Feasibility Trial



Primary care (NYFHT):

- 1 650 patients with CHF and COPD identified in NYFHT seen in last 3 years

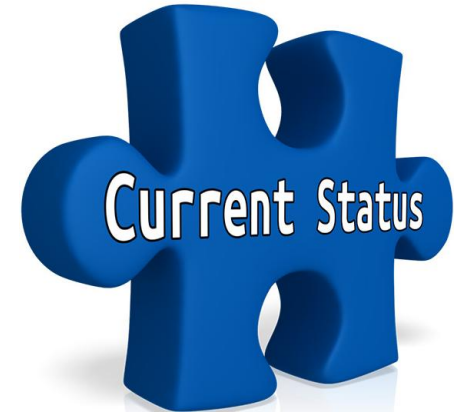
Health Card Numbers linked at hospital, validated

Hospital (NYGH):

- 1 284 had a record in Cerner system
- 660 (40%) had at least one ED visit in last 3 years
 - 1 patient had 20 visits
- 391 (24%) had at least one admission in last 3 years
 - 1 patient had 12 admissions

Currently:

- **Strong support** from hospital and primary care
- Seeking consent from physicians
- Once approved, will initiate infrastructure at NYGH:
 - Database
 - Analytics tools
 - Analysts
- Moving from planning to Steering Committee
- Seeking sustainable funding





Thank you!

