Drowning in data? Health analytics, a lifejacket for performance measurement

Brent Diverty
Vice President, Programs
Canadian Institute for Health Information (CIHI)

Health Analytics and BIG DATA
Rotman School of Management
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Outline

- About CIHI
- Big data and healthcare analytics at CIHI
- Strategies for keeping your head above water
- Looking forward

CIHI's Vision

Better data.

Better decisions.

Healthier Canadians.

CIHI = Health System Use (HSU)

CIHI Data . . .
Helps Change Practice

Antipsychotics move from a first-line treatment to one of last resort

CIHI data . . .
helps determine where beds should go

Data fed the methodology that identified future long-term care needs and communities with the greatest demand

CIHI Data . . .

Sheds light on the system's smallest patients

Health System Use benefits

- **Health System Management**: productivity and efficiency, allocation of resources, quality, safety and patient experiences

- **Clinical settings**: quality improvement initiatives, effectiveness of front-line care

- **Population and public health**: surveillance, burden of illness, quality of life, management and evaluation of public health interventions

- **Health research:** research that informs clinical programs, health system management, and population and public health

Big data and healthcare analytics at CIHI

Key CIHI data sources

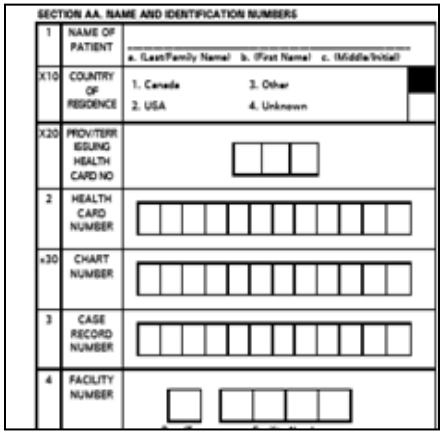
Point of care (EMR, EHR, ADT, etc.):

- Ambulatory care > 20 million records
- Home care, long-term care, mental health > 1 million assessments
- Primary health care (pilot, 500k records)

Administrative data:

- Acute care > 3 million records
- Pharmaceuticals > 1.2 billion claims

Assessment

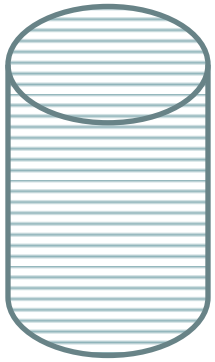


Vendor software/ Web application

Clinical Summary
- ✓Outcome scale scores
- ✓Clinical assessment protocols

Individual Care Plan

CIHI Database



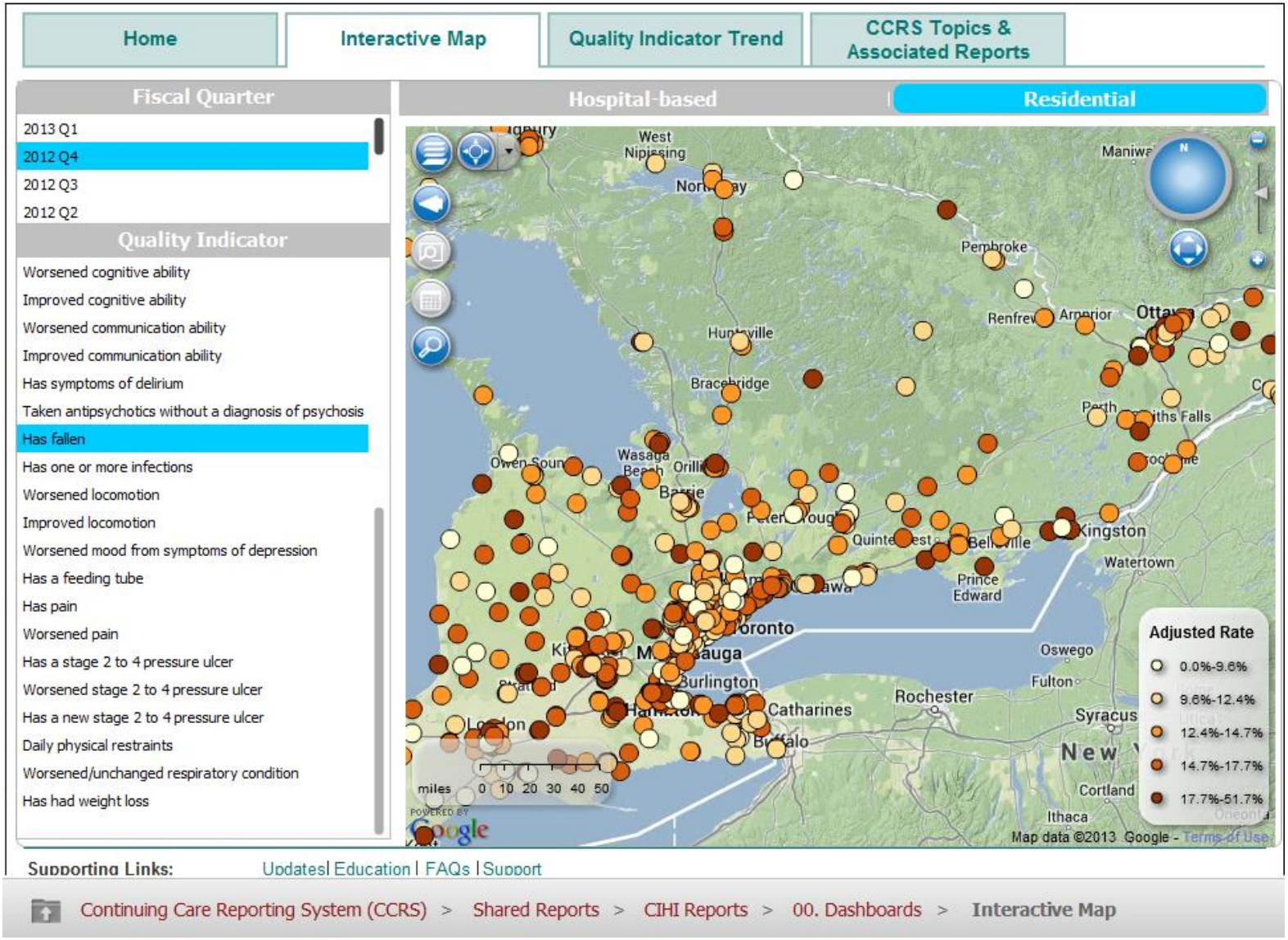
CIHI Privacy and Security Policy Framework

Aggregate information available to Facilities, Regions and Ministries for:
- •planning services
- •quality monitoring
- •resource allocation

Health System Use

eReporting
- ✓Demographics
- ✓Client outcomes
- ✓Quality and safety indicators
- ✓Resource utilization

Long Term Care quality measures



Emergency Department wait times

Home | My ED Wait Times at a Glance | My ED Wait Times Targets | My ED Wait Times Comparison Profile | Report Index

Length Of Stay

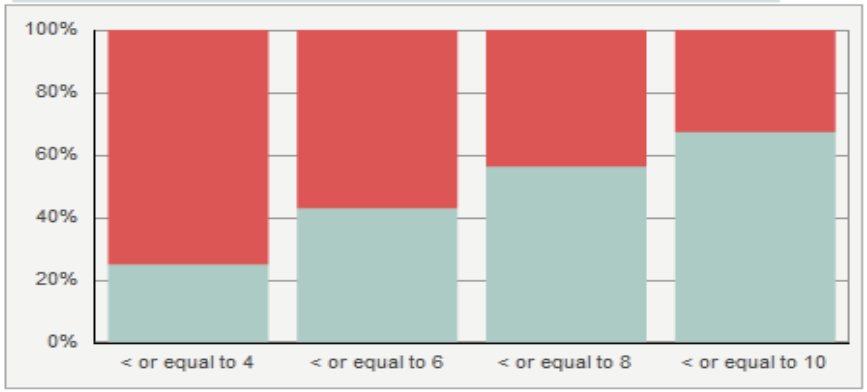
How long are patients spending in the ED? How does this compare to others in Canada?

My Answer Select: Facility =
Facility A

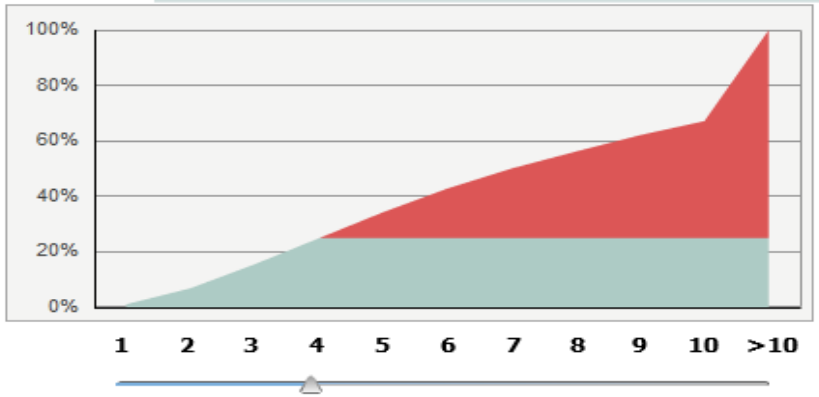
Fiscal Year	Triage Level Group	Triage Level	Visit Disposition Group	CACS Age Group
2013	Total	Total	Admitted Clients	Total

Total Number of Cases:
3,423

Percentage of patients with ED visit completed within specific time thresholds



Percentage of patients with ED visit completed within selected time



Target (Hours)	Cases (SUM) - Within Target	Cases (%) - Within Target	Cases (SUM) - Above Target	Cases (%) - Above Target
< or equal to 4	852	24.89	2,571	75.11
< or equal to 6	1,468	42.89	1,955	57.11
< or equal to 8	1,924	56.21	1,499	43.79
< or equal to 10	2,301	67.22	1,122	32.78

Target (Hours)	< or equal to 4
# of Cases Within Target	852
% of Cases Within Target	24.89
# of Cases Above Target	2,571
% of Cases Above Target	75.11

ED LOS | TPIA | TtoD | TWIB

Quick View | Custom View

Supporting Links: Updates | Education | FAQs | Support

NACRS Home

Medication Incident monitoring

Table 1: Heparin Incidents by Degree of Harm—Example of a Single-Variable Report

Degree of Harm	Frequency
Reportable Circumstance	1
Near Miss	13
None	19
Mild	6
Moderate	2
Severe	1
Death	0
Total	**42**

Table 2: Heparin Incidents in a Multiple-Variable Report—Medication/IV Fluid Problem by Level of Harm

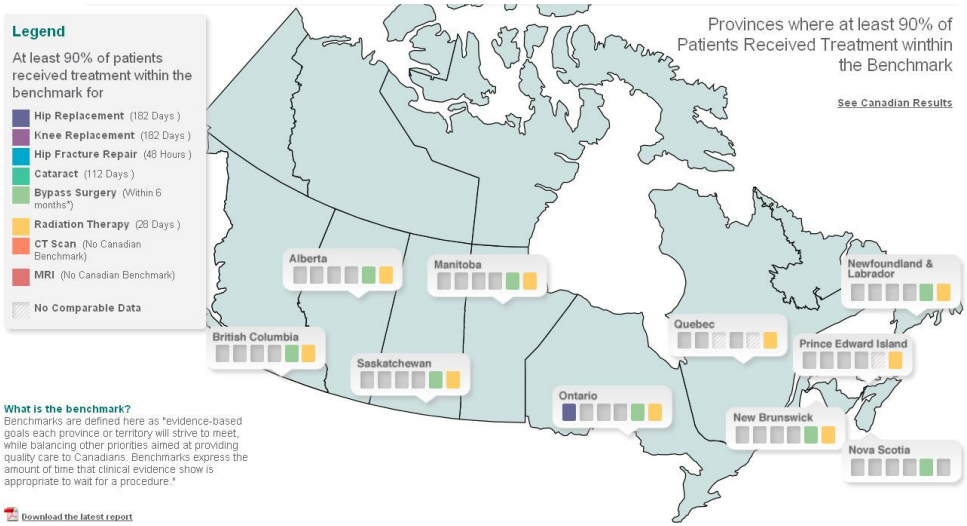
Medication/ IV Fluid Problem	Level of Harm			Total
	No Error	Error, No Harm	Error, Harm	
Wrong Route/ Technique	0	3	0	3
Wrong Product	1	5	3	9
Wrong Quantity	0	7	4	11
No Order	0	7	0	7
Wrong Time	0	4	1	5
Wrong Patient	0	6	1	7
Total	**1**	**32**	**9**	**42**

Table 4: Heparin "Severe Harm" Case Listing

NSIR Case ID	Detected Date	Degree of Harm	Functional Areas List	Medication/ IV Fluid Use Process	Medication/ IV Fluid Problem	Generic Drug Name	Description
254136987	3/6/2011	Severe	Surgical Unit	Administration	Wrong Rate/ Frequency	Heparin Sodium	Set Pump Rate Incorrectly
225639874	1/5/2010	Severe	Pharmacy	Preparing/ Dispensing	Wrong Quantity	Heparin Sodium	Prepared IV Bag Incorrectly

The Health System Performance Initiative

- Three-year plan (2012 to 2015) to strengthen pan-Canadian health system performance (HSP) reporting;
- Builds on more than 10-years of experience in indicator development and public reporting on HSP.



www.ourhealthsystem.ca

In Canadian long-term care homes,

residents is taking antipsychotic drugs without a diagnosis of psychosis

(Source: CIHI)

patients is readmitted within a month of leaving hospital

(Source: CIHI)

Wait time for cancer radiation therapy 2012

50% of Canadians got treatment in **7 DAYS OR LESS**

90% got treated within **19 DAYS**

Recommended maximum **28 DAYS**

(Source: CIHI)

Number of Canadians who received a hip or knee replacement

2010 **73,000**

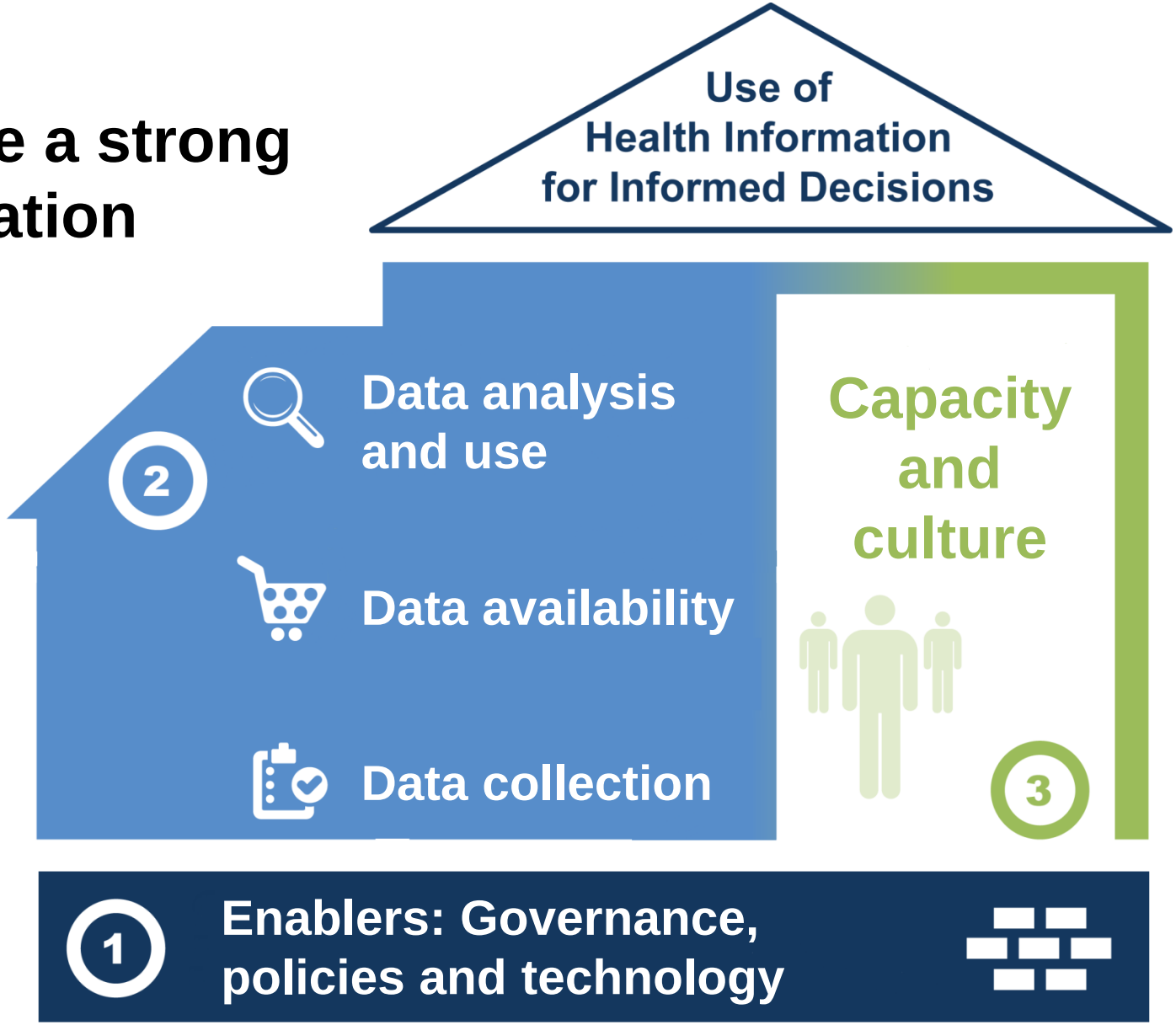
2012 **85,000**

These additional **12,000** hip and knee replacements cost the health system more than **$100 million**

(Source: CIHI)

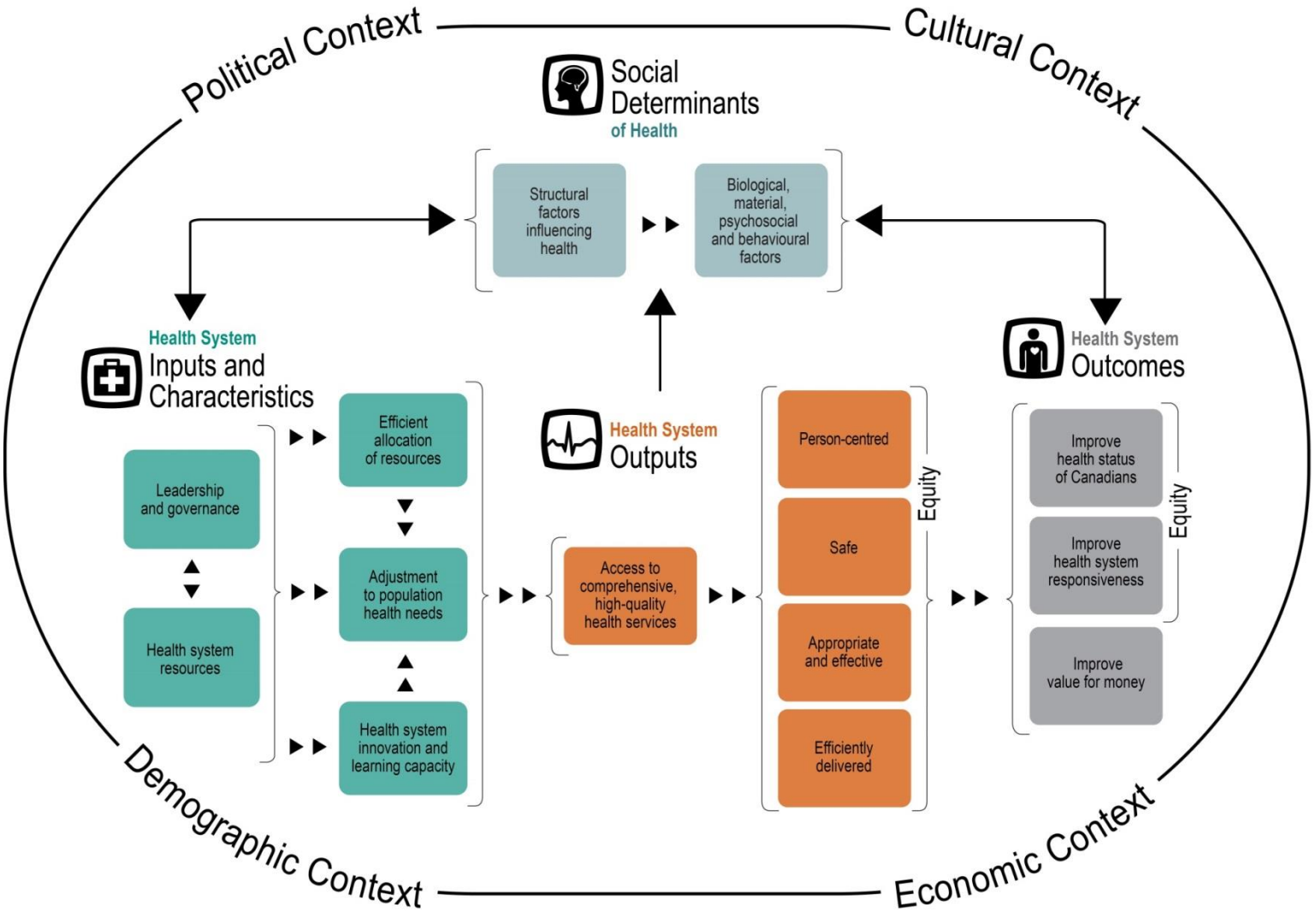
Strategies for keeping your head above water

Ensure a strong foundation

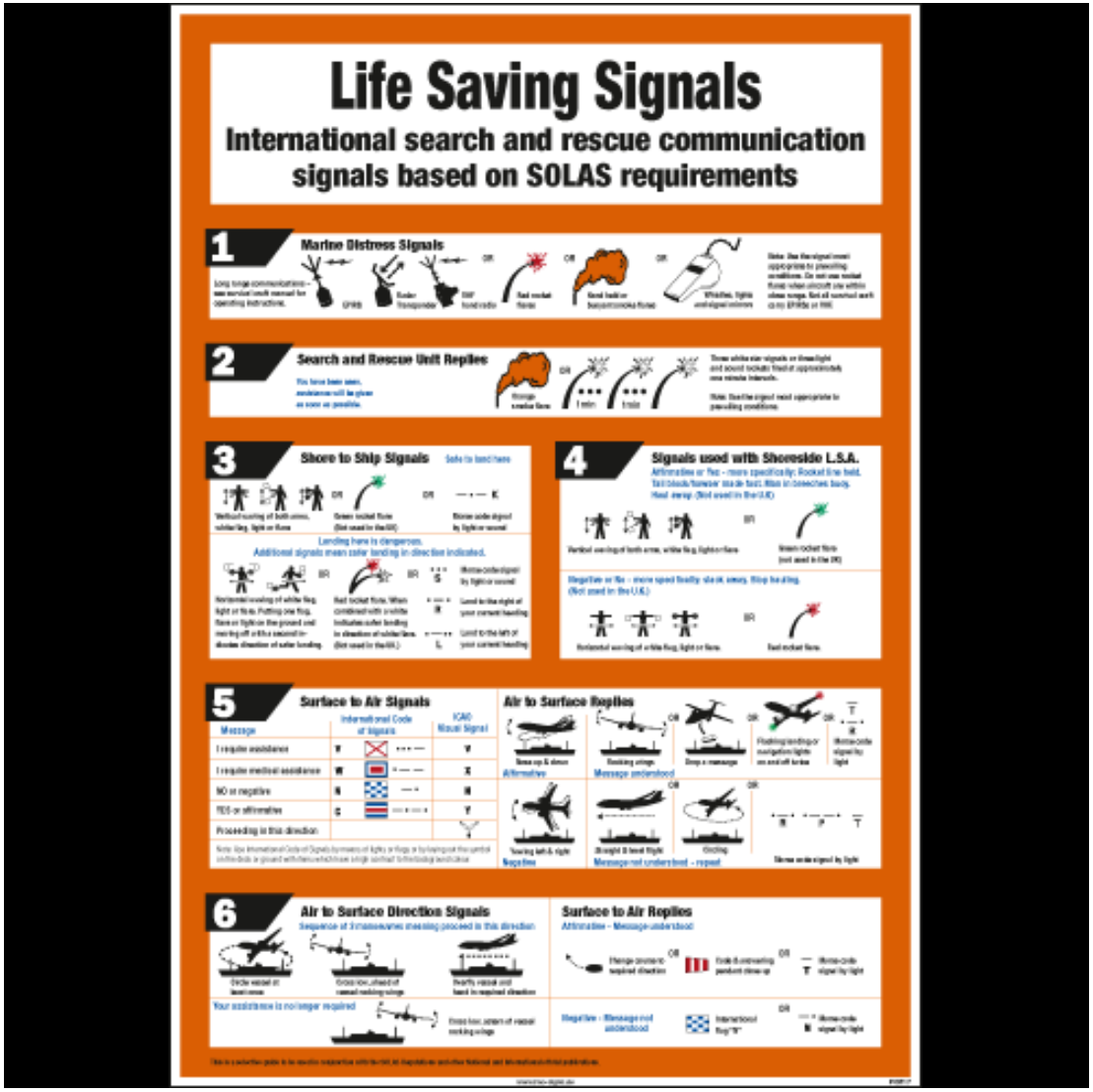


www.cihi.ca/health_system_use_of_data

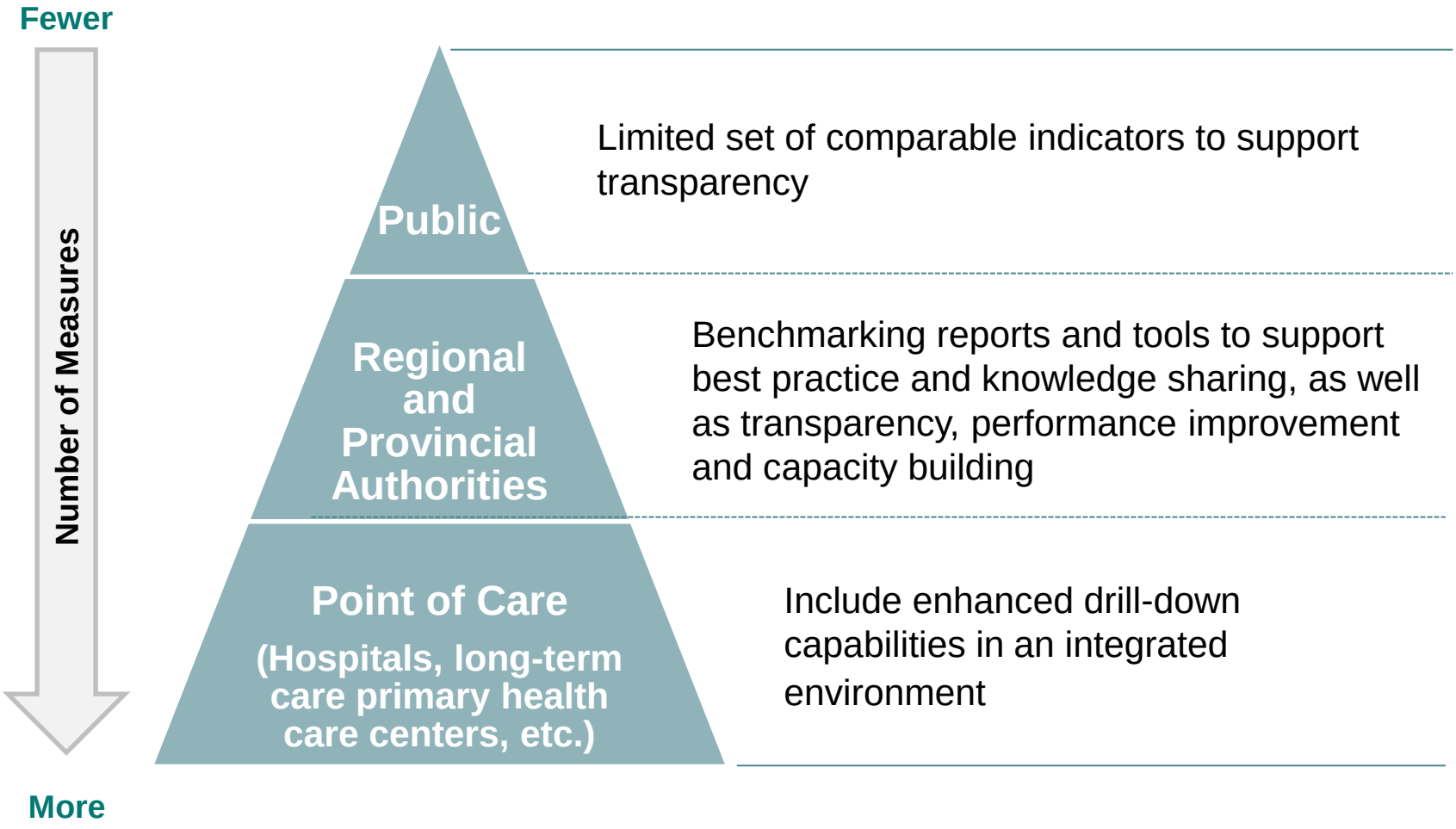
Follow a conceptual framework



Adhere to data and information standards

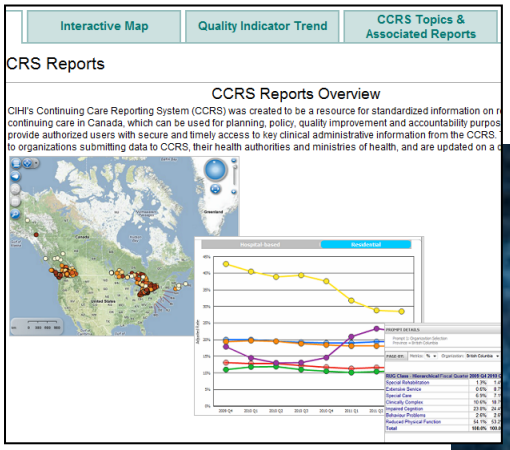


Consider your audience's needs



Collect once (electronically), use often

Avoid the data black hole



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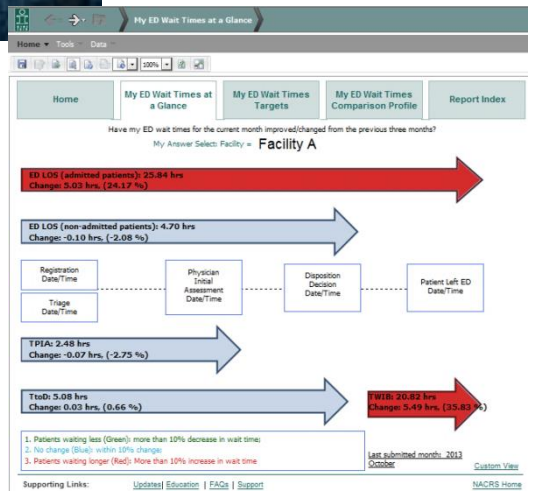
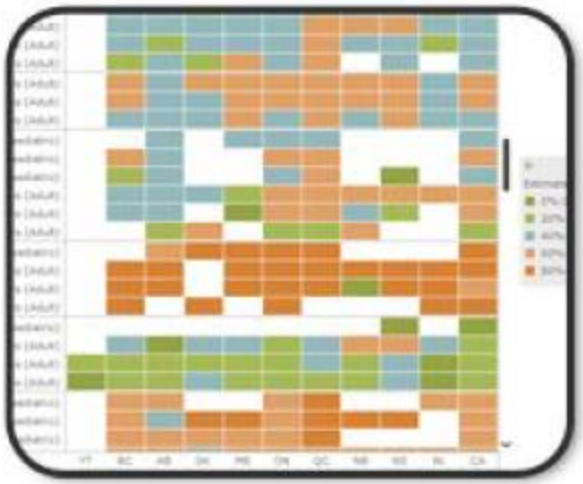
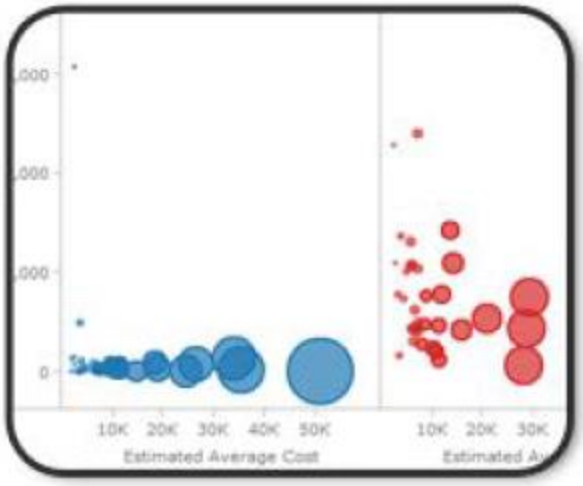
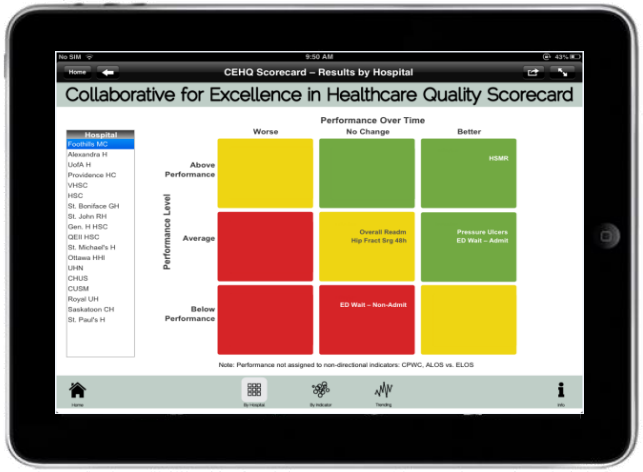


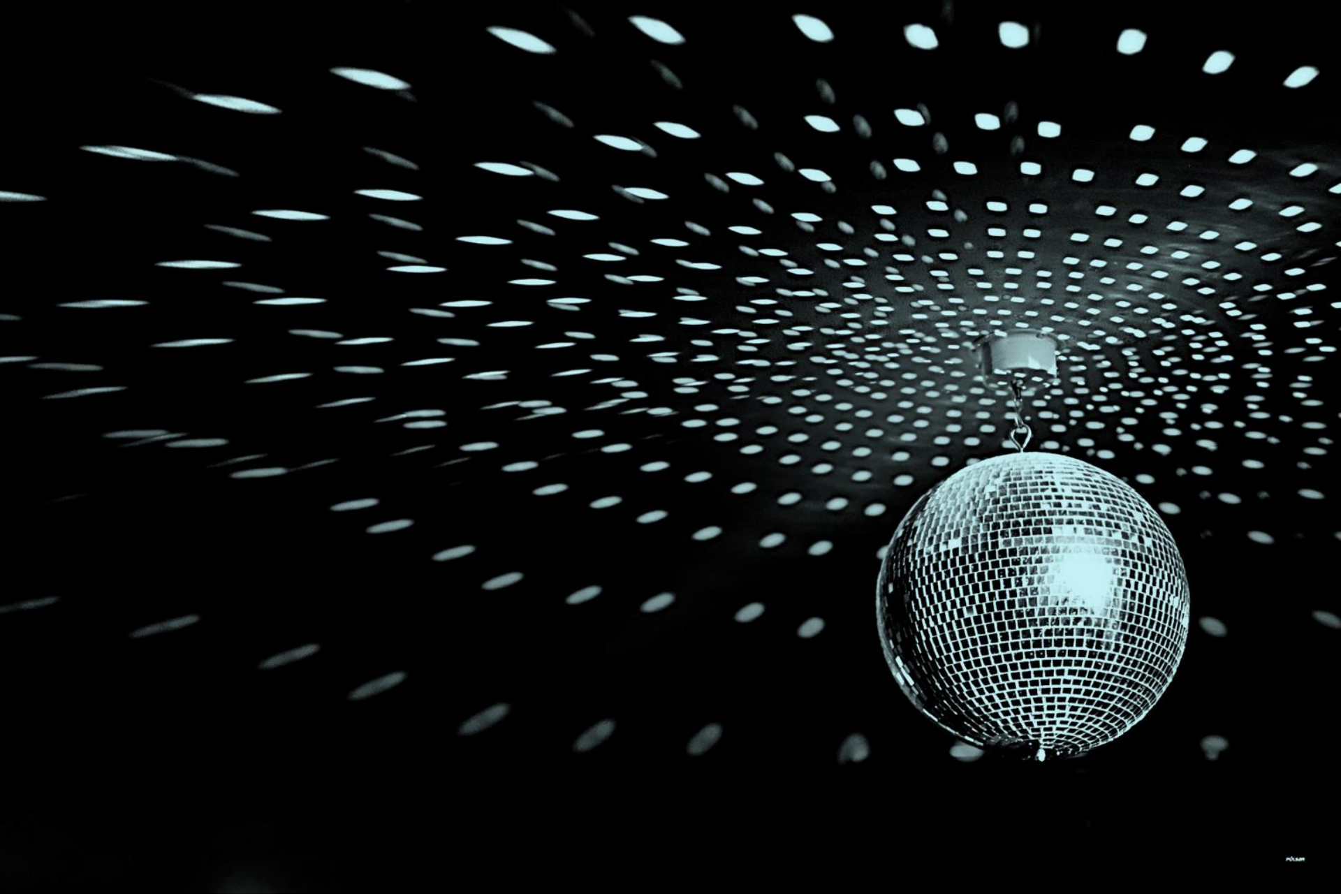
Start at the end…information needs







Simplify, know what is available to you



Beware the disco

Looking Forward

Looking forward

- Revamping older systems
- Simplifying data capture and submission burden (e.g. more use of point of care)
- Filling in jurisdictional gaps, and health service gaps (e.g. Labs, DI, primary care, community services)
- Supporting the adoption of content standards for primary health care EMRs
- Data integration, integrated e-reporting

Looking forward

- Enhanced data access, data visualization
- Patient-centred data (PREMS, PROMS)
- Health System Performance regional, hospital and LTC products

Thank You

Brent Diverty
VP Programs, CIHI
bdiverty@cihi.ca
www.cihi.ca

Canadian Institute for Health Information
Institut canadien d'information sur la santé