## **Using CIHI's Financial Tools**

**BC Financial Healthcare Professionals Society** 

Jacqueline Singer

Canadian Institute for Health Information



## Road Map



- Welcome
- Background
- Use of financial data
- High level Tools: Patient Cost Estimator, Quick Stats, Your Health System- In Depth
- Detailed tools: Functional Area Resource Intensity Weights, Your Health System- In Sight, eReports, Portal
- Additional resources



## Learning objectives



- List and describe the Financial Standards and Information tools available
- Determine when to use the different tools and list the benefits of each
- Use the tools to
  - Monitor your organization's performance
  - Benchmark against your peers
  - Assess your organization's cost-efficiency
  - Determine areas for improvement ,



#### Canadian Institute for Health Information (CIHI)

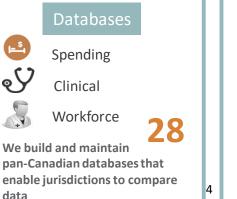
















#### CIHI's Strategic Plan 2016 to 2021

#### 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

#### Strategic goals



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

#### Priority themes and populations

#### Themes

Patient experience Quality and safety Outcomes Value for money



Health system performance

#### **Populations**

Seniors and aging Mental health and addictions First Nations, Inuit and Métis Children and youth



**Foundation** 



Our people



Stakeholder engagement and partnerships



Privacy and security



Information technology

Values

Respect • Integrity • Collaboration • Excellence • Innovation



#### Financial Standards & Information



#### **Standards**

MIS Standards

**Data processing** 



#### Analysis & Indicators

- Yourhealthsystem.ca
- Cost of a Standard Hospital Stay
- Administrative Expense
- Ad hoc analysis



#### **Databases**

• CMDB

(600+ hospitals & 2000+ non-hospitals)

CPCD

(60+ organizations / 4 provinces)



#### Tools

- Patient Cost Estimator
- CMDB eReports/Portal
- Functional Area RIWs



#### Stakeholder Engagement



#### Education

- Online training
- In-person workshops



**Custom Data Requests** 



**Data quality** 





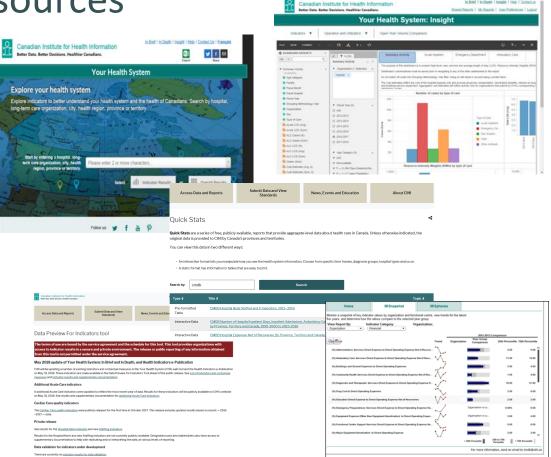
Better data to support better decisions regarding care and costs.



#### FSI Products and resources

- Patient Cost Estimator
- Quick Stats
- Your Health System In Brief, In Depth, Insight
- Functional Area RIWs (CMG+, CACS)
- CMDB eReports and Portal
- More...







CIHI's Health indicators update: Web-conference recording

#### Other FSI Activities

- Development of new indicators
  - Cost of a Standard Resident Day in LTC
  - Health human resources indicators (staffing ratio, overtime, sick time)
- Revisions to the MIS Standards
- Cost of a Standard Hospital Stay indicator breakdown reports
- On-going data quality improvements & reporting
- Education and information products
- Queries (~900/year) and data requests



## Road Map

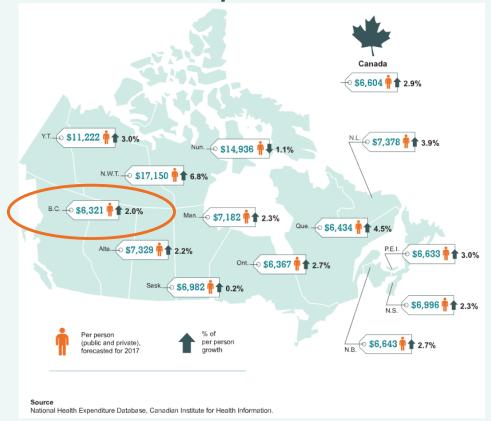


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#### Provincial/territorial health expenditures

Total health expenditure per capita is forecast to be \$6,604 in Canada for 2017



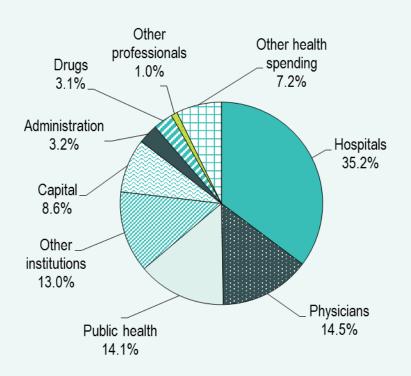


### **Hospital Spending**

2017<sup>f</sup>

Hospital spending accounts for 35% of Health Spending:

Hospital Spending includes Inpatient and Outpatient





## Cost of a Standard Hospital Stay (CSHS)



An indicator that integrates financial and clinical data . . .

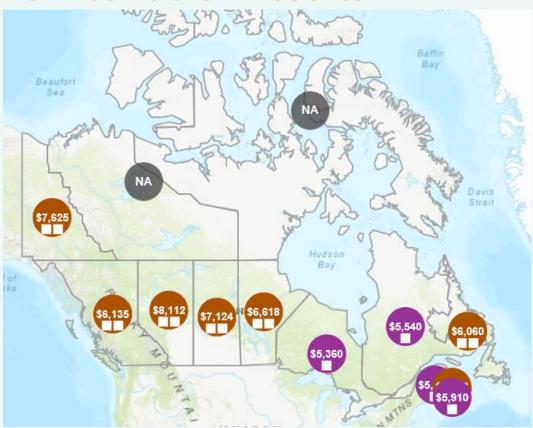


...estimates the hospital's relative cost-efficiency for acute inpatient care ...



. . . and is **specific** to each facility and **comparable** across facilities, provinces and patient characteristics

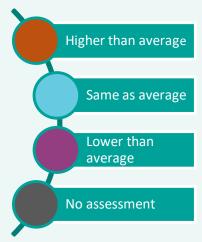
#### Pan-Canadian results



CSHS BC: \$6,135

Canada: \$5,992

(2016-17)



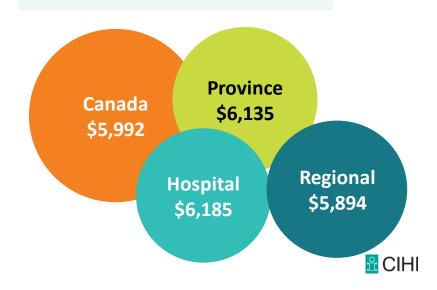


#### Cost of a Standard Hospital Stay

**Total acute inpatient cost\*** 

**Total acute inpatient** weighted cases<sup>†</sup>

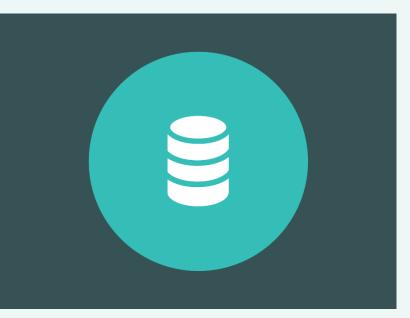
Cost of a Standard **Hospital Stay** 



<sup>\*</sup> Includes actual inpatient costs from Canadian hospitals that report to the CMDB

<sup>†</sup> Sum of Resource Intensity Weights assigned to all acute inpatients in the Discharge Abstract Database (DAD)

#### Canadian MIS Database



- Annual submissions
- Fiscal year based
- Data collected using the Management Information System (MIS) Standards
- Organization level data
- High coverage: 2000+ facilities (all provinces and territories except Nunavut & Quebec)
- Jurisdictionally mandated



#### The CSHS numerator in a nutshell

Inpatient portion of . . . Nursing OR/PARR ER **Ambulatory** Diagnostic Inpatient Care and Therapeutic Add Portion of Administrative, In-Service Education and Accounting Centres



#### Discharge Abstract Database

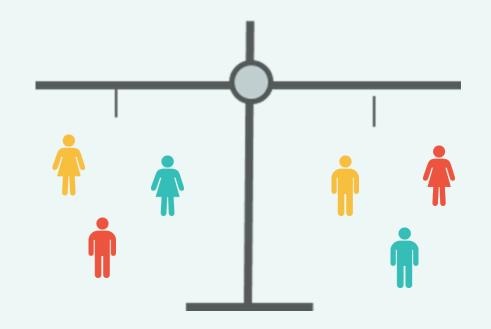


- Contains data on hospital discharges (acute) and day surgeries
- Populated with data that CIHI receives from participating hospitals
- Patient demographics
- Most responsible diagnosis & up to 24 other diagnosis (ICD-10 ~ 16,041 codes)
- Principle intervention & up to 19 other interventions (CCI ~17,851 codes)



#### Calculating the denominator

Use CIHI's Case Mix Group+ (CMG+) methodology and sum all acute inpatient RIWs from the DAD

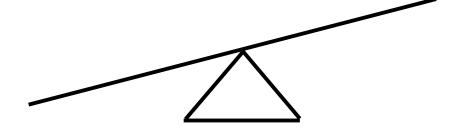




## Purpose of Grouping Methodology (CMG)

Infinite # of combinations of diagnoses and interventions

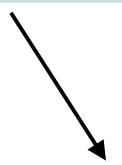
Reasonable number of groups with which to make comparisons between patient types





#### Components of CMG+

# Major Case Mix Clinical Groups Categories (CMG) (MCC)



## Factors Influencing the Resource Indicators

Age
Comorbidity
Flagged Intervention
Intervention Event
Out of Hospital Intervention

## Expected Resource Length of Intensity Stay (ELOS) Weights (RIW)





## Resource Intensity Weight (RIW)



- Derived from patient-level acute care cost data and CMG+ methodology
- Relative cost weight value assigned to each inpatient case in the DAD (and NACRS)\*
- Applied at CMG level and adjusted for five factors



<sup>\*</sup>Amb Care (CACS RIW is calibrated to the same level as DAD)

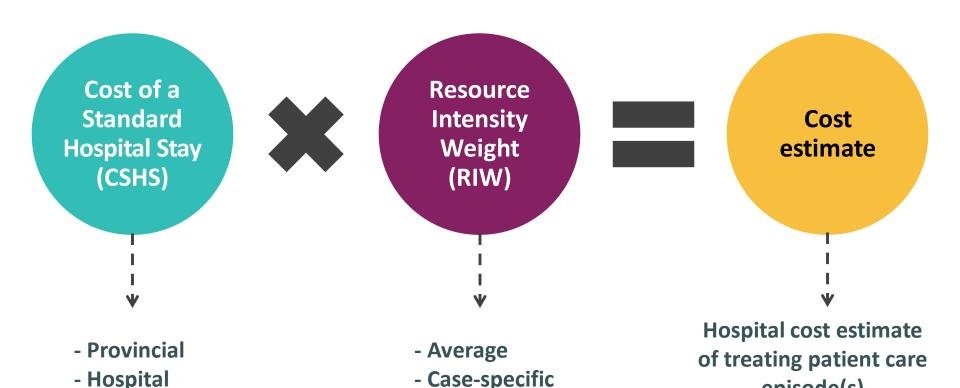
## Resource Intensity Weight (RIW)



- RIW value of 1.0
  - Average typical inpatient case
- RIW value of 2.0
  - Twice the average resource consumption
- RIW value of 0.5
  - Half the average resource consumption



#### Cost estimate methodology



episode(s)

<sup>≗</sup> CIHI

## Example: Cost estimate for CMG 136: Bacterial pneumonia





#### Five common financial questions:





## Cost estimates from aggregated data

Estimate costs by aggregating financial and statistical information

(number of visits, number of exams, etc.) of the organization

## The first 4 groups of cost questions

- Organizationally based costs
- Functional centre costs
- Service volumes
- Costs per service volumes



#### Patient-level cost estimates

The 5th group of cost questions, costs of specific patient care episodes (encounters), are record-level costs

## Patient-level cost estimates rely on:

- Collection of detailed data on resources utilized
- Value of those resources at the encounter level
- Also known as patient costing, case costing or service recipient costing



#### CIHI's Financial Databases

Canadian Patient Cost Database (CPCD)

Annual submissions

Fiscal year based

Data collected using the MIS Standards



Patient level data

Lower coverage: **60+** facilities (Alberta, Ontario, Nova Scotia)

Represents real dollars and more precise estimations

Voluntary database

Canadian MIS Database (CMDB)

Annual submissions

Fiscal year based

Data collected using the MIS Standards

Organization level data



Higher coverage: 2000+ facilities (all P/T except NU & QC)

Some complexity & cost variations are "averaged" out

Jurisdictionally mandated



#### **Precision of Cost Estimates**

Cost of a specific patient care episode (Patient Cost Data)

Average cost of a specific patient  $(CSHS_{hosp} \times RIW_{pt})$ 

Average cost of an average patient in a jurisdiction (CSHS<sub>prov</sub> x RIW<sub>pt</sub> Patient Cost Estimator)





## Road Map



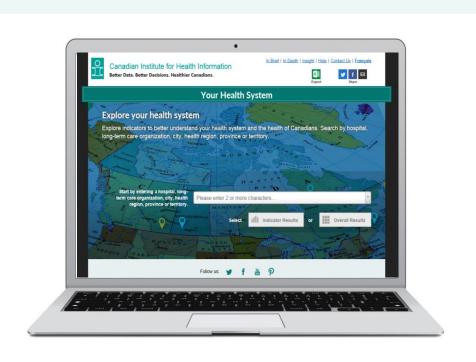
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#### **High Level Tools**

#### **Publicly available:**

- Patient Cost Estimator
- Quick Stats
- Your Health System In Depth





#### Patient Cost Estimator

- Easily see the average hospital cost of a typical inpatient care episode
  - Average cost per Case Mix Group (CMG) by jurisdiction and age group
  - Average length of stay by CMG by jurisdiction and age group
  - Volumes by CMG by jurisdiction and age group

Various summary reports



12 of 13

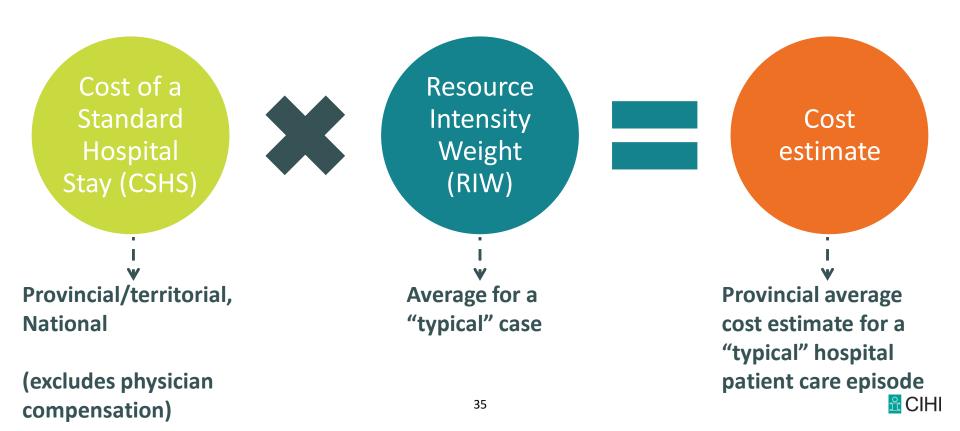
Hospital provinces and costs territories

Clinical data (LOS, typical volumes)



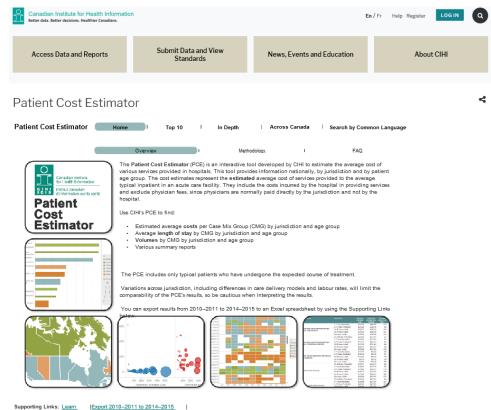
500+ clinical groups Graphs and tools

#### Patient Cost Estimator: Methodology



#### Who does it help and how?

- Functional centre managers, researchers, media and also the public hospitals, regions, provinces/territories
- policy, planning and estimating
- https://www.cihi.ca/en/patient-costestimator





- You work for a hospital in British Columbia and want to estimate the operational costs for your nursing unit, which mainly provides mental health care
- Here are the volumes per Case Mix Group on your mental health inpatient nursing unit.

Volume	CMG description
102	693 Depressive Episode

Use the Patient Cost Estimator to estimate the operational cost for your unit





### Demo

**Patient Cost Estimator** 



## Estimating costs with the Patient Cost Estimator

V	olume'	CMG description	Estimated average cost (all age groups)	Estimated total cost
	102	693 Depressive Episode	\$6,185	\$630,870

The estimated cost is approximately \$630,870 for 102 Depressive Episode cases in BC in 2016-2017.

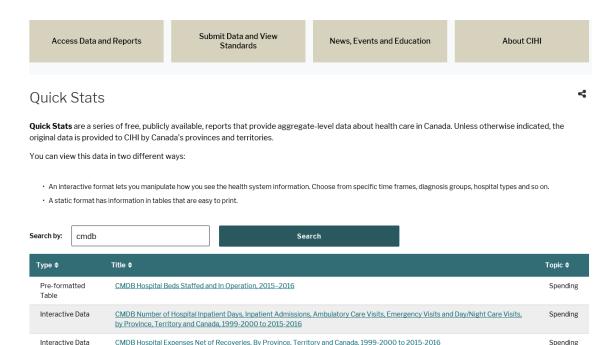






## **CMDB Quick Stats**

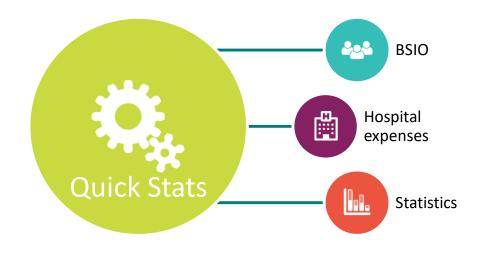
- Get quick access to detailed financial and service activity information on hospitals and/or provinces/territories
- Interactive tables and spreadsheets give you the data you want and need





#### What kind of information?

- Hospital beds staffed and in operation (BSIO)
- Hospital expenses net of recoveries
- Number of hospital inpatient days
- Inpatient admissions
- Ambulatory care visits
- Emergency visits
- Day/night care visits





## Who do they help and how?

- The public, researchers, media, clinicians, hospitals, regions, provinces/territories
- Useful when planning resources and monitoring services delivered in hospitals
- https://www.cihi.ca/en/quick-stats
- Topic "Spending" or Search by "CMDB" within Quick Stats page



- Find the number of Intensive Care Nursing Unit beds staffed and in operation in the province of BC
  - How many are at teaching hospitals?





## Demo

**Quick Stats** 



- Find the number of Intensive Care Nursing Unit beds staffed and in operation in the province of BC
  - How many are at teaching hospitals?

#### • Solution:

- 465 ICU beds staffed and in operation in BC in 2016-17
- Of those, 280 (over 60%) are at teaching hospitals







## Your Health System- In Depth

- Puts comparable, interactive data for 45 important health indicators at your fingertips
  - National, provincial/territorial, regional and facility level
  - 600 Canadian hospitals, 1,200 long-term care facilities
- Includes suite of clinical indicators
- Includes 2 key efficiency indicators
  - Cost of a Standard Hospital Stay (CSHS)
  - Administrative Expense

Your Health System



Take a look at an expanded suite of indicators: find comparable results for hospitals and regions.



## Administrative Expense

• Shows you the percentage of a legal entity's total expenses that were spent in administrative departments

Administrative department expenses  $\div$  Total expenses  $\times$  100%

 Administrative department expenses include finance, administration, human resources and communications expenses





## Who does it help and how?

- Stakeholders at all levels of our health systems
  - The public, researchers, clinicians, hospitals, regions, provinces/territories
- Great for monitoring your organization's performance (e.g., trending, benchmarking, peer comparisons)
- https://yourhealthsystem.cihi.ca/hsp/indepth



- What is the trend for the Cost of a Standard Hospital Stay Indicator for Fraser Health over the past 5 years?
- How does this compare to other regional averages? Provincial average?





## **Demo**

Your Health System



#### Demo Scenario-Solution

- What is the trend for the Cost of a Standard Hospital Stay Indicator for Fraser Health over the past 5 years?
- How does this compare to other regional averages? Provincial average?
- CSHS for Fraser Health is increasing from \$5,183 in 2012-13 to \$5,833 in 2016-
- Regional trend is fairly consistent with provincial trend increasing over time





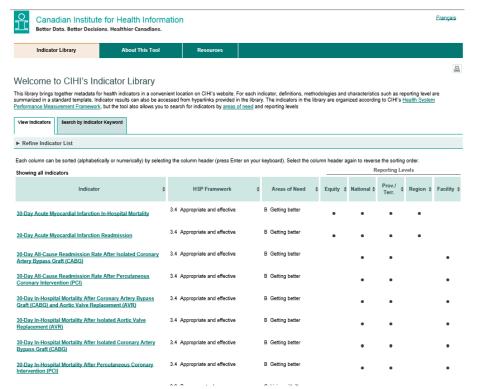


## CIHI's Indicator Library

For more information on the indicators showcased in Your Health System, check out CIHI's

**Indicator Library for the** 

- Description
- Methodology
- Inclusions/exclusions
- Interpretation
- Coverage
- Reporting level
- <a href="http://indicatorlibrary.cihi.ca/">http://indicatorlibrary.cihi.ca/</a>





# Road Map

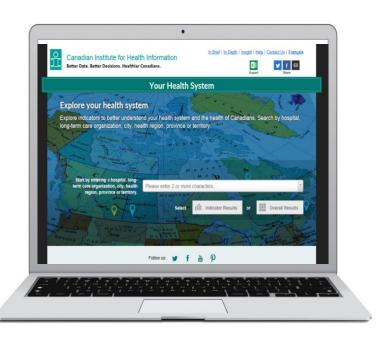
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- Additional resources



#### **Detailed Tools**

- Functional Area RIW (public)
- Your Health System- Insight (private)
- CMDB eReports (private)
- Portal (subscription)





# Functional Area Resource Intensity Weight (RIW) Proportions

• Shows you the proportion of resources used by functional area and patient type (Case Mix Group)

#### Covers 7 functional areas:

- Inpatient nursing services (N)
- Outpatient nursing services (A)
- Clinical laboratory (L)
- Medical imaging (G)
- Operating and recovery room nursing services (O)
- Other professional services (P)
- Indirect costs (I)





## Who does it help and how?

- Functional centre managers, hospitals, regions, provinces/territories
- Helps with budgeting and planning of resources
- https://secure.cihi.ca/estore/productSeries.htm?pc=PCC566
- Download CMG Client Tables YYYY
  - The files related to the Functional Area RIW Proportions are
    - Functional Area RIW Proportion Technical Notes (PDF document)
    - Functional Area RIW Proportions CMG YY (Excel document)
  - CACS Tables
  - <a href="https://secure.cihi.ca/estore/productSeries.htm?pc=PCC565">https://secure.cihi.ca/estore/productSeries.htm?pc=PCC565</a>



- As the clinical manager of an operating room, you want to better understand the costs incurred for a knee replacement (CMG 321-Unilateral knee replacement, RIW 1.2103)
- What functional area are the majority of costs expected to be attributed to?
- What is the estimated operating & recovery room nursing services cost for this patient group?
- In this example, use the BC average for your Cost of a Standard Hospital Stay value \$6,135





#### Demo

Functional Area Resource
Intensity Weights



## Activity debrief



The Operating & Recovery Room Nursing Services cost\* per knee replacement case is \$3,638



<sup>\*</sup>excludes physician costs





## Your Health System- Insight

- CIHI's secure analytical web tool
  - Integrates CIHI's suite of e-reporting products
  - Includes customizable dashboards and reports



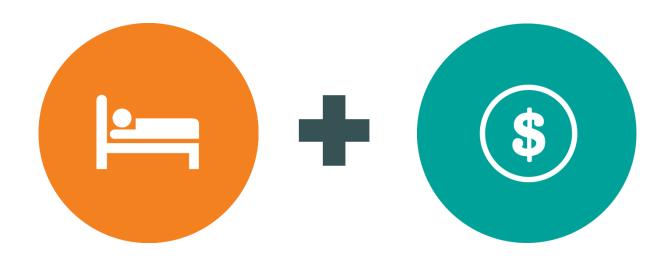
- Acute inpatient
- Emergency department
- Ambulatory care
- Drill down by CMG/CACS and other attributes (e.g., admission category, age group)





# What makes Your Health System- Insight different from previous CIHI analytical tools?

For the first time, clinical and financial information are presented together (at patient level)





#### Cost estimates . . .

- Match the most recent clinical open-year data
- Are available at the record level or at a summary level (hospital)
- Are broken down by functional area:
  - Inpatient Nursing Services
  - Outpatient Nursing Services
  - Operating and Recovery Room Nursing Services
  - Total Nursing

- Clinical Lab
- Medical Imaging
- Other Professional Services
- Indirect Costs



## Who does it help and how?

- Designed for health care decision-support managers, analysts and clinicians at all levels of our health systems: facility, region, province/territory
- Delve into your performance results so you can identify and understand contributing factors
  - Get help identifying potential cost savings
- Monitor your performance and progress in a more timely manner (open-year results, monthly data refresh)

#### Login required

• https://insight.cihi.ca/MicroStrategy/plugins/CIHIFiles/YHSInsight/YHSInsight.asp



• What is the volume of acute inpatient cases for CMG 193 (myocardial infarction/shock/arrest with coronary angiogram) at your facility? Using the YHS: Insight tool, explore the cost distribution for at your facility.





### Demo

Your Health System- Insight



- What is the volume of acute inpatient cases for CMG 193 (myocardial infarction/shock/arrest with coronary angiogram) at your facility? Using the YHS: Insight tool, explore the cost distribution at your facility.
  - Using a sample facility, there were 95 cases in 2017-18
  - The average cost per case was \$9,925 per myocardial infarction
  - Over \$5,000 towards nursing inpatient services, nearly \$1000 in medical imaging
  - The average acute inpatient RIW is 1.6
  - Average LOS 6.0 days









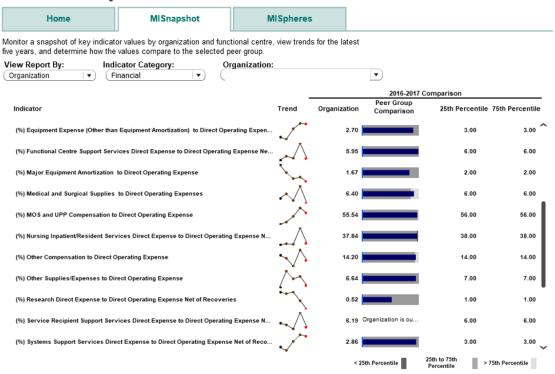
## CMDB eReports

- Lets you view and compare indicators and other metrics that are calculated from the financial and statistical data housed in the Canadian MIS Database
- Over 50 indicators users can access and customize
- Available to Canadian health service organizations that submit to the CMDB
- Client services account required



## CMDB eReports: MIS Snapshot

- Concise snapshot of organization's key indicator values
- View results by organization
- Define custom peer group
- Monitor trends over time



For more information, send an email to fsi@cihi.ca



## CMDB eReports: Custom reports

- Create your own custom reports on your organization's key indicators
- View results by
  - Fiscal year
  - Organization
  - Functional centre
- Decide which peers to compare your results with



## Who does it help and how?

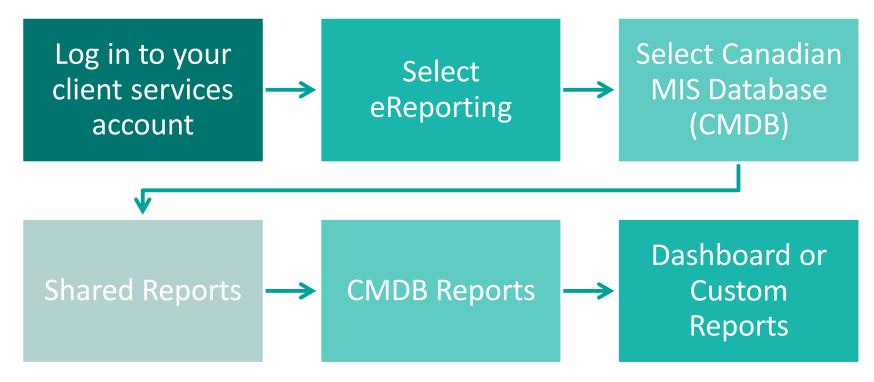
- Designed for health care decision-support managers, analysts and clinicians at all levels of our health systems
  - Facility, region, province/territory
- Another great tool for monitoring your organization's performance (e.g., benchmarking, peer comparisons, trending)

### Login required

https://portal.cihi.ca/MicroStrategy/asp/Main.aspx



## Access CMDB eReports



## Demo Scenario

 You are trying to understand possible reasons why your Cost of a Standard Hospital Stay value is high, relative to your peers, and want to investigate whether it is a result of more patient care provided. What is the average hours of direct care provided per inpatient/resident day?





## Demo

**CMDB** eReports







## Portal

- Subscription-based service
- Powerful tool to create <u>custom</u> reports on key metrics and indicators
  - Organizational and functional centre levels
- Advanced functionality to create, format and export tables, graphs and charts



# Who does it help and how?

- Designed for health care decision-support managers, analysts and clinicians at all levels of our health systems: facility, region, province/territory
- Great for creating **custom reports and analytics**, useful for **monitoring** your organization's performance (e.g., trending, peer comparisons, benchmarking)
- Contact <a href="mailto:portal@cihi.ca">portal@cihi.ca</a> for more info

### Login required

https://www.cihi.ca/en/types-of-care/hospital-care/cihi-portal-support









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# Custom Reports and Ad Hoc Data Requests

- Further detailed tools available for data submitters:
  - CSHS breakdown reports (available only to participants in CSHS workshop)
  - Preliminary Data Quality Report

• If the available tools don't meet your needs, contact us at <a href="mailto:fsi@cihi.ca">fsi@cihi.ca</a> for Ad Hoc data requests



## **Additional Resources**

- MIS Standards: <a href="https://www.cihi.ca/en/submit-data-and-view-standards/data-standards/management-information-system-standards">https://www.cihi.ca/en/submit-data-and-view-standards/data-standards/management-information-system-standards</a>
- Canadian MIS Data base (CMDB): <a href="https://www.cihi.ca/en/canadian-management-information-system-database-metadata">https://www.cihi.ca/en/canadian-management-information-system-database-metadata</a>
- Portal metadata documents CMDB: https://www.cihi.ca/sites/default/files/document/cmdb metadataportal en.xlsx
- Canadian Patient Cost Database: <a href="https://www.cihi.ca/en/spending-and-health-workforce/spending/cpcd-metadata">https://www.cihi.ca/en/spending-and-health-workforce/spending/cpcd-metadata</a>
- Case Mix: https://www.cihi.ca/en/data-and-standards/standards/case-mix



## Educational resources



### **eLearning**

- Navigating the MIS Standards With Folio Views®
- Introduction to MIS Standards (several modules)
- Auditing MIS Data Quality
- Recording Services Purchased From a Third Party
- Reporting Surgical Visits, PARR and Visits
- Clinical Laboratory Services
- Compensation series



# List of Introductory eLearning Courses in Financial Standards

- 773E-MIS Standards Intro: 1 Overview
- 775E-MIS Standards Intro: 3 Statement of Operations and Accounts
- 776E-MIS Standards Intro: 4 Secondary Financial Accounts
- 777E-MIS Standards Intro: 5 Secondary Statistical Accounts
- 781E-MIS Standards Intro: 9 Service Activity and Caseload Status Statistics
- 785E-MIS Standards Intro: 13 Canadian MIS Database



## Educational resources



## Workshops

- MIS Standards Indicators: Use and Analysis
- Statistical Data Collection
- Improving the Quality of Reported Financial and Statistical Data
- CSHS: Calculating, Comparing and Analyzing Your Results



# FSI courses available in Learning Centre



### Web conferences (recorded)

- What's New in the MIS Standards
- Calculating and Using the Cost of a Standard Hospital Stay (parts 1 and 2)
- Getting to know CIHI's FSI tools



# Summary- high level financial tools- data availability

Tool	Data Years Currently Available	Reporting detail
Patient Cost Estimator	2012-2013 to 2016-2017	Provincial
Quick Stats- Beds Staffed and In Operation	2016-2017	Facility
Quick Stats- Financial + activity	1999-2000 to 2016-2017	Provincial
Your Health System- In Depth	2012-2013 to 2016-2017	Facility



# Summary- detailed financial tools- data availability

Tool	Data Years Currently Available	Reporting detail
Functional Area Resource Intensity Weight Proportions	2016-2017	National
Your Health System- Insight	2013-2014 to 2018-2019* Open year data	Record level
eReports - CMDB	2012-2013 to 2016-2017	Functional centre
Portal – CMDB	2012-2013 to 2016-2017	Functional centre + secondary accounts



# Summary – Use of high level financial tools

#### Patient Cost Estimator

- use to determine the cost estimate of a particular CMG

#### Quick Stats

- use to find your hospital's number of beds staffed and in operation
- provincial results for a number of service activity indicators and total expenses

#### YHS- In Depth

- find your hospital's Cost of a Standard Hospital Stay and Administrative Expense results



# Summary – Use of detailed financial tools

#### • YHS- Insight

- use to find record level clinical data linked with financial cost data
- create custom reports of your organization's results

#### Functional Area RIW Proportions

use to identify the proportion of functional centre costs related to a particular CMG

#### eReports

custom reports on your organization's key indicators

#### Portal

fully customizable metrics and output reports



## Who to contact for . . .

Any query about Financial Standards and Information









- fsi@cihi.ca
- cihi.ca



Canadian Institute for Health Information

Better data. Better decisions. Healthier Canadians.

@cihi\_icis fsi@cihi.ca