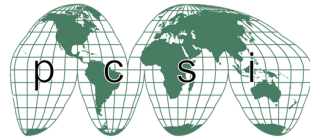




CIHI



# Introduction to Case Mix Workshop

37th PCSI conference, Québec City, Canada

September 9, 2025

## Program

1. Fundamentals of case mix
2. Case mix in Canada
3. Case mix in action – your perspectives

# Part 1: Fundamentals of case mix

Deniza Mazevska, President, PCSI

Kristiina Kahur, CEO, Nordic Casemix Centre



## Part 1 objectives

### **What case mix is and why it was developed**

- How case mix groups patients into clinically meaningful, resource-homogeneous classes for fair comparison and funding.

### **Why case mix matters**

- How case mix supports cost management, efficiency, transparency, and a common language for management, clinicians and funders.

### **Diagnosis Related Groups (DRGs)**

- Their origins and evolution.
- Principles for grouping.
- Grouping variables.

### **Components of a case mix system**

- Patient data
- Cost data
- Classification logic
- Link to funding and governance frameworks



# What is case mix?

- The term '**case mix**' was originally developed to make sense of the almost infinite variety of patients treated in a hospital.
- Subsequently, case mix classifications have been developed for a broader range of health care services and settings, and for whole populations.
- With a case mix classification, patients are grouped to a finite and manageable set of 'classes'.
- The classes are generally constructed to 'explain' or 'predict' how patients vary across a specific measure or group of measures, for example:
  - Length of hospital stay
  - Cost of hospital stays
  - Medical complications
  - Mortality



# Why we need it?

- Every patient is unique....
- But to compare, manage and fund hospitals we need to taken account of – 'control for' – the mix of patients
- case mix systems give us a capacity to compare “apples with apples” and then to aggregate our comparisons at the hospital, or any other relevant levels



DRGs are the most widely used case mix system

What were the circumstances in which DRGs were adopted and subsequently spread across the world?

## US Medicare 1965–1982: 18% average annual increase in expenditure

The main contributor to increasing costs were increases in the average payments for hospital and physician services.

**Hospitals were reimbursed for the costs incurred in providing care to Medicare patients.**

They submitted detailed cost reports to justify their expenses.

Since **payments were tied to the costs** incurred and **longer stays increased costs**, there was **little financial pressure** to minimise the length of hospital stays for Medicare patients.

Additionally, there was **little incentive to manage costs**.

# The search for a better payment system

To address concerns about inappropriate or excessive use of healthcare services, Medicare legislation required hospitals to review service use, including establishing utilisation review committees (URCs).

URCs were tasked with:

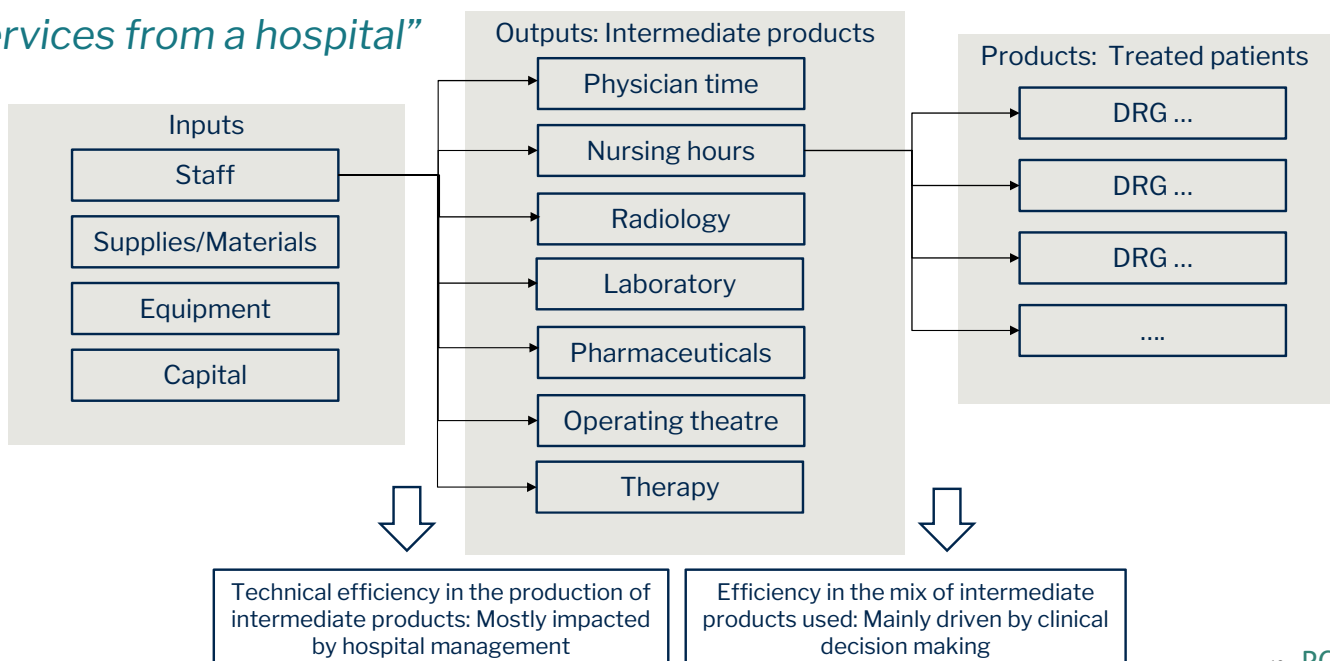
- Evaluating the medical necessity and appropriateness of inpatient hospital stays
- Reviewing the length of hospital stays and the level of care provided

The original development of DRGs arose from research by Fetter and Thompson on utilisation review methods.

It soon became clear that the approach could provide a much sounder basis for payment.

This recognition led to additional funding to refine the model and pilot its use in prospective payment.

*“The Primary Objective in the construction of the DRGs was a definition of case types, each of which could be expected to receive similar outputs or services from a hospital”*



# Development of DRGs

Fetter, Thompson and Averill lead research on further developing DRGs, sponsored by HCFA, the agency managing Medicare.

Principles for classification development were articulated, which still apply today:

- Clinically meaningful
- Resource homogenous
- Mutually exclusive
- Derived from available data, and
- Manageable number of classes

1. It must be interpretable medically, with subclasses of patients from homogeneous diagnostic categories. That is, when the patient classes are described to physicians, they should be able to relate to these patients and be able to identify a particular patient management process for them.

2. Individual classes should be defined on variables that are commonly available on hospital abstracts and are relevant to output utilization, pertaining to either the condition of the patient or the treatment process.

3. There must be a manageable number of classes, preferably in the hundreds instead of thousands, that are mutually exclusive and exhaustive. That is, they must cover the entire range of possible disease conditions in the acute-care setting, without overlap.

4. The classes should contain patients with similar expected measures of output utilization.

5. Class definitions must be comparable across the different coding schemes.

Source: Fetter, R. B., Shin, Y., Freeman, J. L., Averill, R. F., & Thompson, J. D. (1980). Case mix definition by diagnosis-related groups. *Medical care*, 18(Suppl 2), 1-53.

## Early example of a DRG: 1977

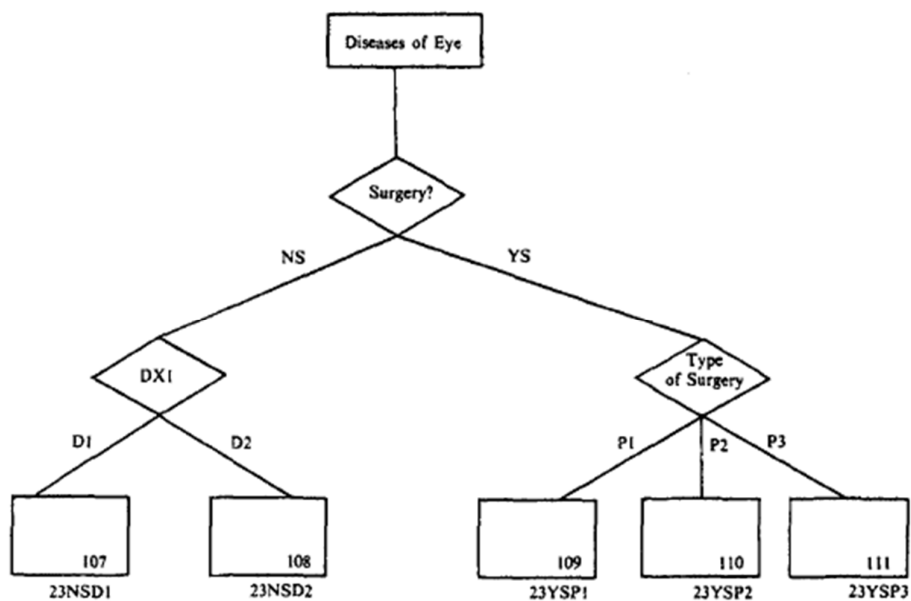
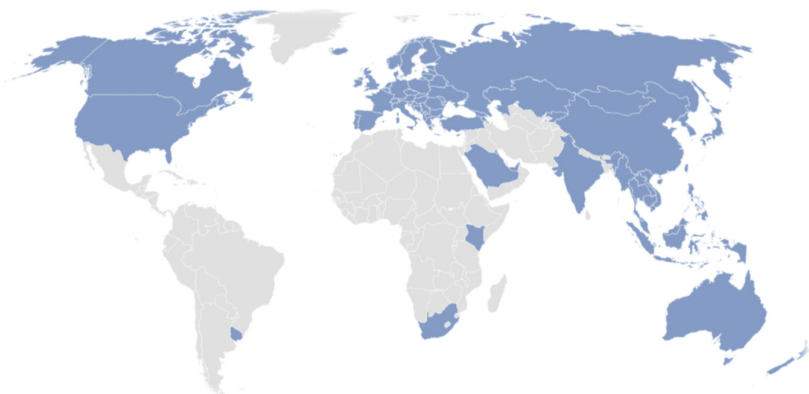


Figure 1. Diagnostic category 23: HICDA2

Source: Fetter, R. B., Shin, Y., Freeman, J. L., Averill, R. F., & Thompson, J. D. (1980). Case mix definition by diagnosis-related groups. *Medical care*, 18(Suppl 2), 1-53.

# International adoption



Source: Adapted from various authors, circa 2019

Many countries have used and adapted DRG systems. Some of the variants include:

**HCFA-DRGs, now MS-DRGs**

**AP-DRGs (All Patient DRGs) and APR-DRGs (All Patient Refined DRGs)** developed by 3M around 1988, adopted in several European and other countries ; variants developed in Spain and Portugal

**Nord-DRGs** – first developed in mid 1990s, adopted with some variation across most Nordic Countries, originally derived from the HCFA-DRGs

**AR-DRGs (Australian Refined DRGs)** first developed 1998) adopted by several countries and variants developed in Germany and Ireland

**CMGs (Canadian Case Mix Groups)**

**HRGs (Health Resource Groups) (England)**

13 PCSI



## Why has case mix spread across the world?

- Cost management
- Efficiency
- Transparency and accountability
- Benchmarking
- Quality of care
- Foundation for other value-based approaches
- Market operation
- Creating a common language for payers/funders, management and clinicians

The emphasis depends on the **starting point** for a country:

- Private insurance based
- Social health insurance
- National health service
- Centrally planned/state-controlled model

Often considers **pre-existing approaches** to funding hospitals:

- Cost reimbursement
- Line based budgeting
- Global budgeting
- Bed based funding
- Bed day funding
- Fee for services
- Capitation

14 PCSI



# Extending the use of case mix beyond DRGs

Other services types beyond acute admitted hospital care

- Sub-acute care
- Outpatients
- Emergency department care
- Primary care
- Aged care

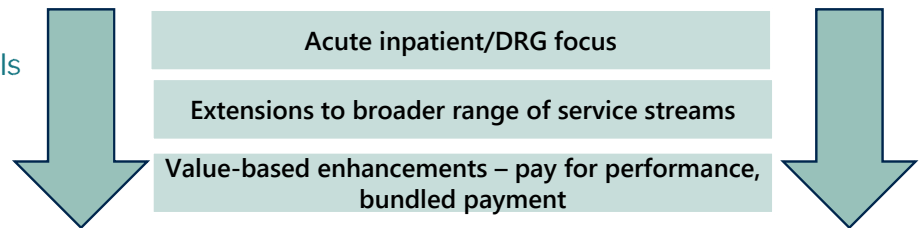
Enhanced payment/ funding models

- Bundling across services types
- Risk adjusted population based models
- Pay for performance

Creating the unit of measure for the operation of private insurance markets

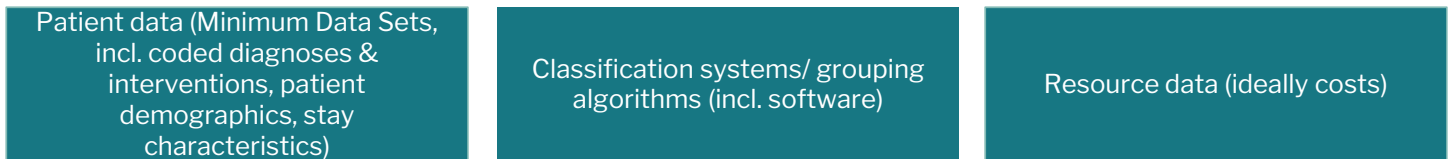
Better measures/methods to enhance:

- Transparency
- Accountability
- Hospital management
- Planning
- Quality improvement



# Components of a case mix system

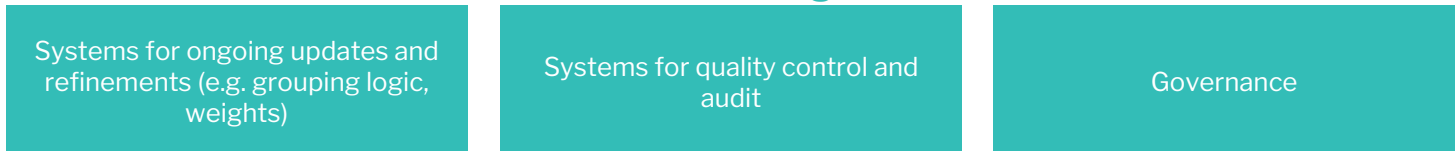
## Foundational elements



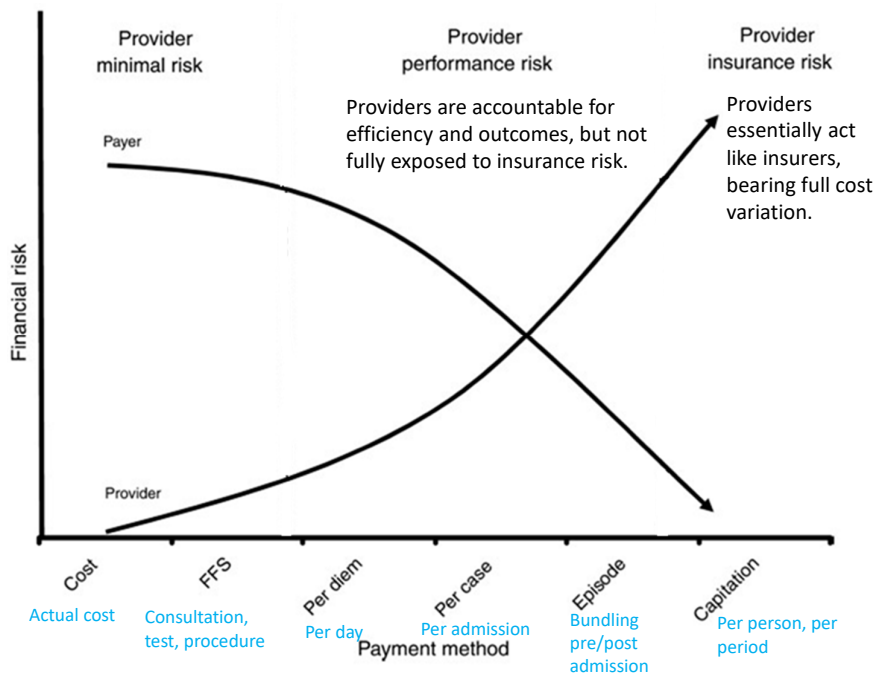
## Funding/ payment system



## Institutional arrangements



# Continuum of financial risk in health care payment methods



Different payment models change who carries financial risk:

- **Cost reimbursement, FFS and per diem:** expose payers to service volume growth, while shielding providers.
- **Per case (DRGs):** providers assume efficiency risk; incentives align toward reducing length of stay and unnecessary services.
- **Episode/bundled payments:** providers face broader accountability across settings and time, with incentives for coordination and quality.
- **Capitation:** providers assume insurance risk, managing population health within fixed per-person payments.

Movement along the continuum reflects a **shift from payer-dominated to provider-dominated risk exposure.**

## Exercise

- Imagine you are designing a DRG classification for acute hospital admissions.
- Look at the list of information grouped by categories.
- In small groups:
  - ✓ Decide which items you would use to create DRG classes.
  - ✗ Decide which items you would NOT use.
- Be ready to share your reasoning.

# Information for DRG grouping

Hospital characteristics	<ul style="list-style-type: none"> <li>• Size</li> <li>• Specialisation/teaching status</li> </ul>	<ul style="list-style-type: none"> <li>• Accreditation status/level</li> <li>• Calibre of medical staff</li> </ul>	<ul style="list-style-type: none"> <li>• Location (metro/rural/remote)</li> </ul>
Patient demographics	<ul style="list-style-type: none"> <li>• Age</li> <li>• Sex</li> </ul>	<ul style="list-style-type: none"> <li>• Socioeconomic status</li> <li>• Residence (metro/rural/remote)</li> </ul>	<ul style="list-style-type: none"> <li>• Race/ethnicity</li> <li>• Socioeconomic status</li> </ul>
Patient clinical factors	<ul style="list-style-type: none"> <li>• Reason for admission (diagnosis)</li> </ul>	<ul style="list-style-type: none"> <li>• Other diagnoses (complications or comorbidities)</li> <li>• Functional status</li> </ul>	<ul style="list-style-type: none"> <li>• Emergency vs elective status</li> </ul>
Utilisation of services	<ul style="list-style-type: none"> <li>• Operating theatre use</li> <li>• Intensive care use</li> </ul>	<ul style="list-style-type: none"> <li>• Procedures/interventions</li> <li>• Tests (pathology, imaging)</li> </ul>	<ul style="list-style-type: none"> <li>• Medications</li> <li>• Medical consultations</li> <li>• Length of stay</li> </ul>

# Information for DRG grouping

Hospital characteristics	<ul style="list-style-type: none"> <li>• Size ✗</li> <li>• Specialisation/teaching status ✗</li> </ul>	<ul style="list-style-type: none"> <li>• Accreditation status/level ✗</li> <li>• Calibre of medical staff ✗</li> </ul>	<ul style="list-style-type: none"> <li>• Location (metro/rural/remote) ✗</li> </ul>
Patient demographics	<ul style="list-style-type: none"> <li>• Age ✓</li> <li>• Sex ?</li> </ul> <p>But prefer clinical factors Used for data validation only</p>	<ul style="list-style-type: none"> <li>• Socioeconomic status ✗</li> <li>• Residence (metro/rural/remote) ✗</li> </ul>	<ul style="list-style-type: none"> <li>• Race/ethnicity ✗</li> <li>• Socioeconomic status ✗</li> </ul>
Patient clinical factors	<ul style="list-style-type: none"> <li>• Reason for admission (diagnosis) ✓</li> </ul>	<ul style="list-style-type: none"> <li>• Other diagnoses (complications or comorbidities) ✓</li> <li>• Functional status ?</li> </ul>	<ul style="list-style-type: none"> <li>• Emergency vs elective status ✗</li> </ul>
Utilisation of services	<ul style="list-style-type: none"> <li>• Operating theatre use ✗</li> <li>• Intensive care use ?</li> </ul>	<ul style="list-style-type: none"> <li>• Procedures/interventions ✓</li> <li>• Tests (pathology, imaging) ✗</li> </ul>	<ul style="list-style-type: none"> <li>• Medications ✗</li> <li>• Medical consultations ✗</li> <li>• Length of stay ?</li> </ul>

# Principles for selecting variables for DRG grouping

## Base classification on patient factors, not hospital factors.

- DRGs are designed to reflect the clinical characteristics of patients that drive resource use, not characteristics of the hospital (e.g. size, specialisation, staff calibre).

## Avoid using patient demographics that don't directly drive clinical resource use.

- While socioeconomic status or ethnicity may influence cost, this would ideally be reflected in the needs of the patients (i.e. their clinical conditions, incl comorbidities). If it is assessed that they are not, adjustments can be applied in pricing/ funding.

## While some factors influence cost, they are not necessarily suitable for grouping.

- Emergency vs elective status is used in some DRG systems, but only for selected DRGs. Using it across all DRGs is not necessary (does not always drive cost) and could create a risk of over-splitting.
- Factors such as rural location of a hospital may contribute to higher costs that are outside of the control of hospital management. However, they often sit outside patient-level resource needs and are better handled as adjustment factors in pricing, not as part of DRG logic.
- Functional status, while important in some contexts, is less relevant in acute inpatient care (the focus of DRGs) and is not a primary driver of cost.

# What not to use – Avoiding perverse incentives

## Don't group on inputs or processes – group on the treated patient.

- Grouping based on tests, imaging, or medications can incentivise over-servicing. DRGs should reflect the underlying need for care, not the inputs or processes of care.
- Length of stay or number of consultations often reflect provider practices or efficiency, not the patient's inherent resource needs.
- However, length of stay is sometimes used as a grouping variable (e.g. when the patient's stay in hospital is unexpectedly short, such as due to transfer or death)

## Use only major procedures that genuinely impact resource use.

- Operating theatre use alone isn't a sufficient marker – focus on specific, high-resource procedures such as coronary artery bypass graft or appendectomy.
- Avoid incentivising use of the operating theatre when it's not clinically required. Include significant procedures regardless of setting, as long as they materially influence resource consumption.

## Be cautious with ICU use

- Including ICU use as a grouping factor may encourage unnecessary utilisation.
- Instead, DRGs should aim to infer resource need from clinical characteristics, with ICU sometimes treated separately as a pricing adjustment (e.g. in DRGs where it may be highly variable) rather than for grouping.

# Examples of variables used in DRG grouping

Data item	Patient 1	Patient 2	Patient 3	Patient 4
Admission date	21-Jun	16-Jun	30-Jun	17-Jun
Separation date	22-Jun	20-Jun	1-Jul	2-Aug
Length of stay	1	4	1	46
Same day flag	1		1	
Age years	40	67	3	80
Age days				
Sex	2	1	1	2
Separation mode	9	9	9	9
Admission weight	4280			0
Hours of mechanical ventilation				14
Principal diagnosis	2P92.9	2M16.1	2K42.9	2K40.90
Additional diagnosis 1	2Z38.0	2Z86.43		1T88.6
Additional diagnosis 2		2E11.9		1Y48.2
Additional diagnosis 3		2U82.3		1Y92.24
Additional diagnosis 4				1F05.9
Additional diagnosis 5				2U86.3
Additional diagnosis 6				2U82.3
Additional diagnosis 7				2U79.3
Additional diagnosis 8-99				
Procedure 1	95550-06	49318-00	30617-00	30614-02
Procedure 2		92515-39	92514-19	92514-30
Procedure 3		92508-39		13882-00
Procedure 4		92512-39		92515-99
Procedure 5		95550-03		95550-03
Procedure 6		95550-02		95550-12
Procedure 7-49				

## Admission details and length of stay

**Age** (mostly used for data validation, sometimes used for grouping, but prefer clinical factors instead)

**Sex** (used for data validation, not for grouping)

**Separation mode** (transfers and death that may change the expected length of stay for the DRG)

**Weight at admission** (mostly baby birth weight is used, but there could be a difference)

## Principal diagnosis

- Used to derive the Major Diagnostic Category (MDC)
- Some classes may fall into a “Pre-MDC” category, where other characteristics override the principal diagnosis.

## Additional diagnoses

- Typically used to determine complexity

## Hours of mechanical ventilation

## Resource intensive procedures/interventions

# Terminology

### Terms for **paying providers**:

- Reimbursement
- Payment
- Funding
- Budget allocation

### Terms for **patient counts**:

- Activity
- Admissions
- Discharges
- Treated cases/episodes/patients
- Episodes
- Episodes of care
- Stays
- Spells
- Patients
- Patient episodes
- Inpatients

### Terms to **patient mix in care provision**:

- Case Mix/ Casemix
- Patient classification
- Case classification

### Terms for **case mix-based funding approaches**:

- Activity based funding
- case mix funding
- Output based funding
- DRG funding
- Payment by results
- Patient-focused funding

### Terms for **main reason for a patient's encounter** with a health service:

- Principal diagnosis
- Primary diagnosis
- Presenting diagnosis
- Main condition
- Main diagnosis

### Terms for **relative values** of case mix classes:

- Cost weights
- Resource weights
- Cost relativities
- DRG relativities
- Price weights

### Terms for **case mix pricing**:

- Base price
- Price
- Tariff
- Reference cost
- Contract price

### Terms for **other diagnoses**:

- Secondary diagnoses
- Additional diagnoses
- Comorbidities
- Complications
- Other conditions
- Hospital acquired conditions

# Breaktime

- 10 mins

## Part 2: Overview on case mix in the Canadian context

Rachel Zhang, Program consultant, CIHI

# Outline

- About Canadian health systems
- Case mix methodologies at CIHI
- Exercises

## Canada's 14+ health systems



- 1 Federal government
- 10 Provincial governments
- 3 Territorial governments
- Plus independent Indigenous health services

## Canada Health Act

- Public Administration
- Comprehensiveness
- Universality
- Portability
- Accessibility

# Case mix systems in Canada

Case mix systems CIHI developed and maintains:



**CMG+**  
(Inpatient)



**CACS**  
(ED, clinics,  
day surgery)



**POP Grouper**  
(Population  
based)

Case mix systems CIHI supports:



**SCIPP**  
(Inpatient  
mental health)



**RUGs**  
(LTC/CCC and  
home care)



**RPGs**  
(Inpatient  
rehab)

# Case Mix tools developed at CIHI

- CMG/Plx 1993
- CMG+ 2007
- RIW/ELOS 2009
- HL CMG and CMG care level 2020
- HIG for Ontario HBAM

**CMG**



- Developed in 2011

**CACS**



- V1.0 in 2016
- V1.4 in 2023
- V2.0 scheduled in 2025 (OSS version)

**POP**



# Case Mix Groups+ (CMG+) for in-patient care



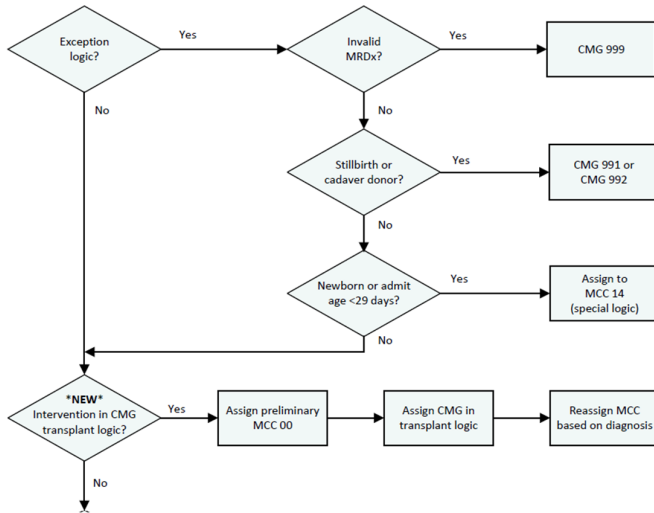
- 21 major clinical categories (MCC's)
  - Mostly based on body system
- Diagnosis partition
- Intervention partition
- Other variables used for grouping:
  - Gender or entry code
  - Additional significant diagnosis/interventions
  - Birth weight and gestational age for newborn/neonates



## CMG+ Major Clinical Categories (MCCs)

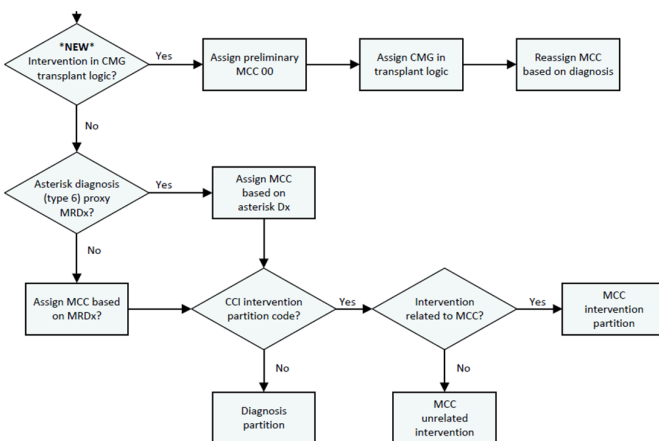
Major clinical category	Description
MCC 01	Diseases and Disorders of the Nervous System
MCC 02	Diseases and Disorders of the Eye
MCC 03	Diseases and Disorders of the Ear, Nose, Mouth and Throat
MCC 04	Diseases and Disorders of the Respiratory System
MCC 05	Diseases and Disorders of the Circulatory System
MCC 06	Diseases and Disorders of the Digestive System
MCC 07	Diseases and Disorders of the Hepatobiliary System and Pancreas
MCC 08	Diseases and Disorders of the Musculoskeletal System and Connective Tissue
MCC 09	Diseases and Disorders of the Skin, Subcutaneous Tissue and Breast
MCC 10	Diseases and Disorders of the Endocrine System, Nutrition and Metabolism
MCC 11	Diseases and Disorders of the Kidney, Urinary Tract and Male Reproductive System
MCC 12	Diseases and Disorders of the Female Reproductive System
MCC 13	Pregnancy and Childbirth
MCC 14	Newborns and Neonates With Conditions Originating in the Perinatal Period
MCC 15	Diseases and Disorders of the Blood and Lymphatic System
MCC 16	Multisystemic or Unspecified Site Infections
MCC 17	Mental Diseases and Disorders
MCC 18	Burns
MCC 19	Significant Trauma, Injury, Poisoning and Toxic Effects of Drugs
MCC 20	Other Reasons for Hospitalization
MCC 99	Miscellaneous CMGs and Ungroupable Data

# CMG+ High level business rules



MCC 14 is the first major clinical category being assigned if applicable

# CMG+ High level business rules (cont'd)

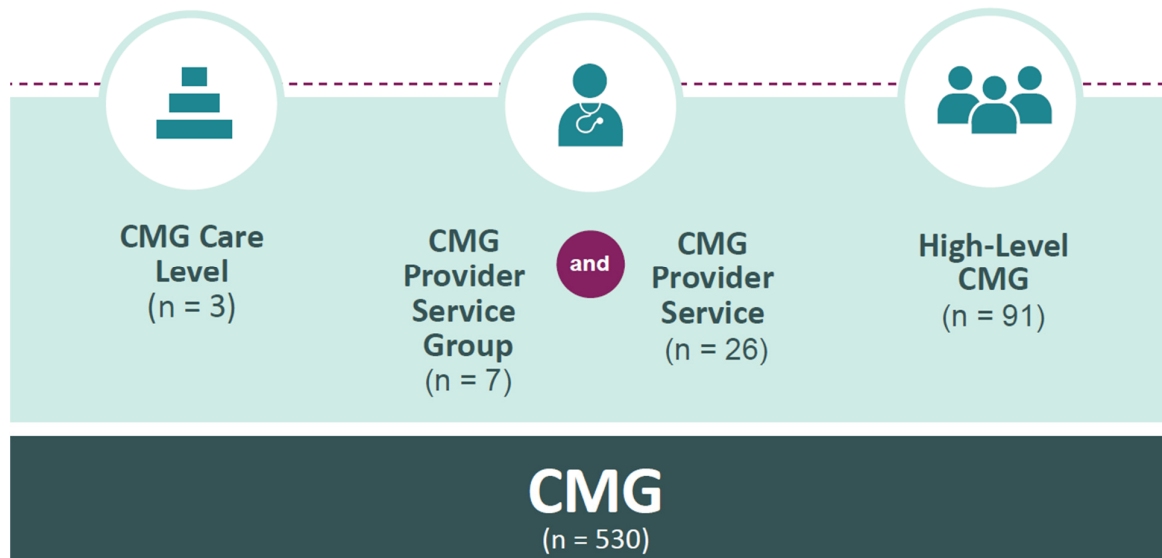


Transplants are all assigned to preliminary MCC 00.

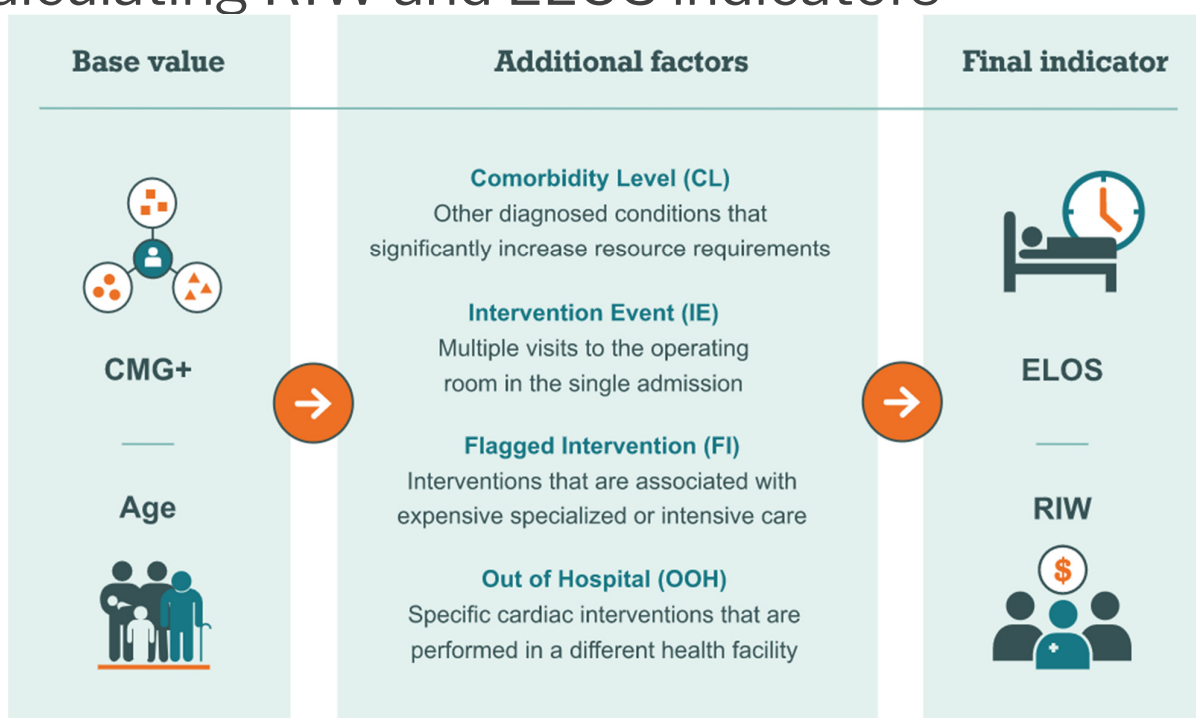
CMG+ assigns cases to an MCC using either the MRDx or proxy MRDx.

After MCC, it then assigns the case to a CMG using either a CCI intervention code or the diagnosis code

# CMG+ enhancement – new aggregation variables



# Calculating RIW and ELOS indicators



# Comprehensive Ambulatory Classification System (CACS)

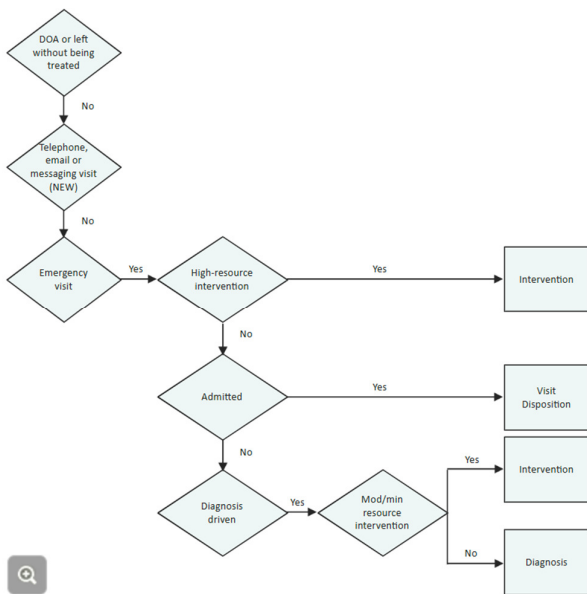


- Ambulatory care groupers in Canada: CACS – National Ambulatory Care Reporting System (NACRS)
- Based on ICD-10-CA/CCI
- Created in 2011
- Weight factors applied after terminal cell

## Main components in CACS

1. CACS cell
  - 265 cells
2. Patient age
  - 4 age categories
3. Anaesthetic
  - 5 anaesthetic categories
4. Investigative technology
  - 16 IT categories for NACRS level 3
  - 9 IT categories for NACRS level 2

# CACS high level business rules

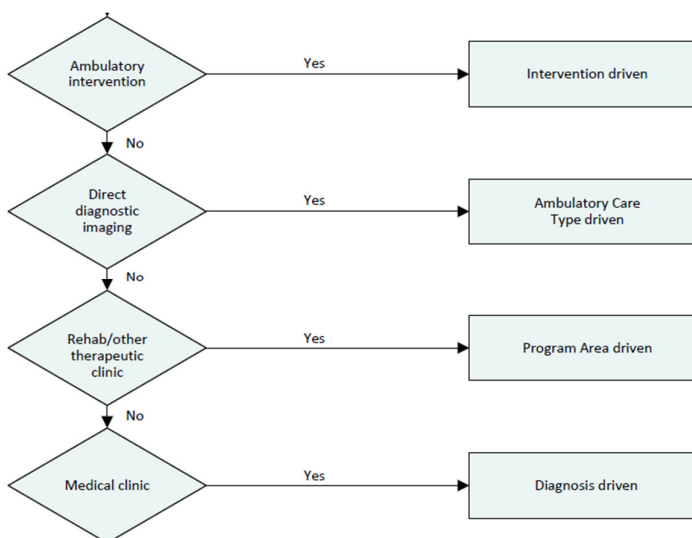


## Emergency visits (ED)

- The methodology assigns unplanned and emergent visits using the Emergency visit logic.
- Within this logic flow, the methodology has specific logic for
  - High-resource interventions, to identify the most costly cases
  - Patients being admitted or transferred to an acute care bed

As illustrated through the various logic flow pathways, ED visits can vary greatly in their resource use, so we developed the CACS methodology to accommodate the variety of ED patients.

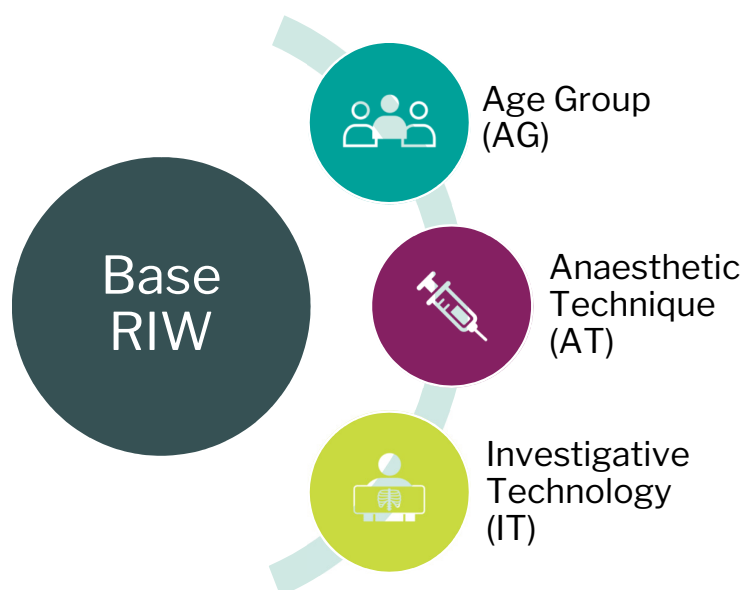
# CACS high level business rules (cont'd)



## Other ambulatory Visits

MAC	Major Ambulatory Cluster
AA	Exception Logic
EV	Emergency Visit
RE	Rehabilitation
01	Diseases and Disorders of the Nervous System
02	Diseases and Disorders of the Eye
03	Diseases and Disorders of the Ear, Nose, Mouth, and Throat
04	Diseases and Disorders of the Respiratory System
05	Diseases and Disorders of the Circulatory System
06	Diseases and Disorders of the Digestive System
07	Diseases and Disorders of the Hepatobiliary System and Pancreas
08	Diseases and Disorders of Musculoskeletal System and Connective Tissue
09	Diseases and Disorders of Skin, Subcutaneous Tissues and Breast
10	Endocrine, Nutritional and Metabolic Diseases and Disorders
11	Diseases and Disorders of Kidney and Genitourinary System
13	Maternal Care
14	Neonates, Infants and Non-specific Paediatric Conditions
15	Diseases and Disorders of the Blood and Lymphatic System
16	Multisystemic or Unspecified site Infections
17	Mental Diseases and Disorders
20	Examinations and Other Health Factors
21	Oncological Diseases and Disorders
ZZ	Miscellaneous Ungroupable

## CACS RIW calculation



### Additionally ...

- CACS and age category interaction
- CACS and anaesthetic interaction
- Multiple investigative technologies may also have an adjustment based on interactions

## Quiz #1

In CMG+ , which elements are used to group a patient?

- A. Comorbidities
- B. Diagnoses
- C. Interventions
- D. Gestational age and weight
- E. All of above



## Quiz #2

In CMG+ , which one or more factor(s) adjusts the resource intensity weight (RIW) downward?

- A. Comorbidity level (CL)
- B. Flagged intervention (FI)
- C. Out of hospital flag (OOH)
- D. Intervention Event (IE)



## Quiz #3

What types of visits the CACS grouping methodology applies to?

- A. Emergency visit
- B. Day surgery
- C. Medical clinic
- D. Rehab /other therapeutic clinic
- E. Direct diagnostic imaging
- F. Exception logic (i.e. DOA, left without being treated, etc.)
- G. All of above



## Quiz #4

What are the factors impacting ambulatory resource intensity weights (RIW)?

- A. Anaesthetic Technologies (AT)
- B. Investigative Technology (IT)
- C. Age group category (AG)
- D. All of above



Inputs →

**POP**  
Grouper

→ Outputs



**Inpatient care**



**Ambulatory care**



**Residential care**



**Community care**



**Comprehensive clinical profile**

Information on 226 health conditions, including longitudinal chronic diseases



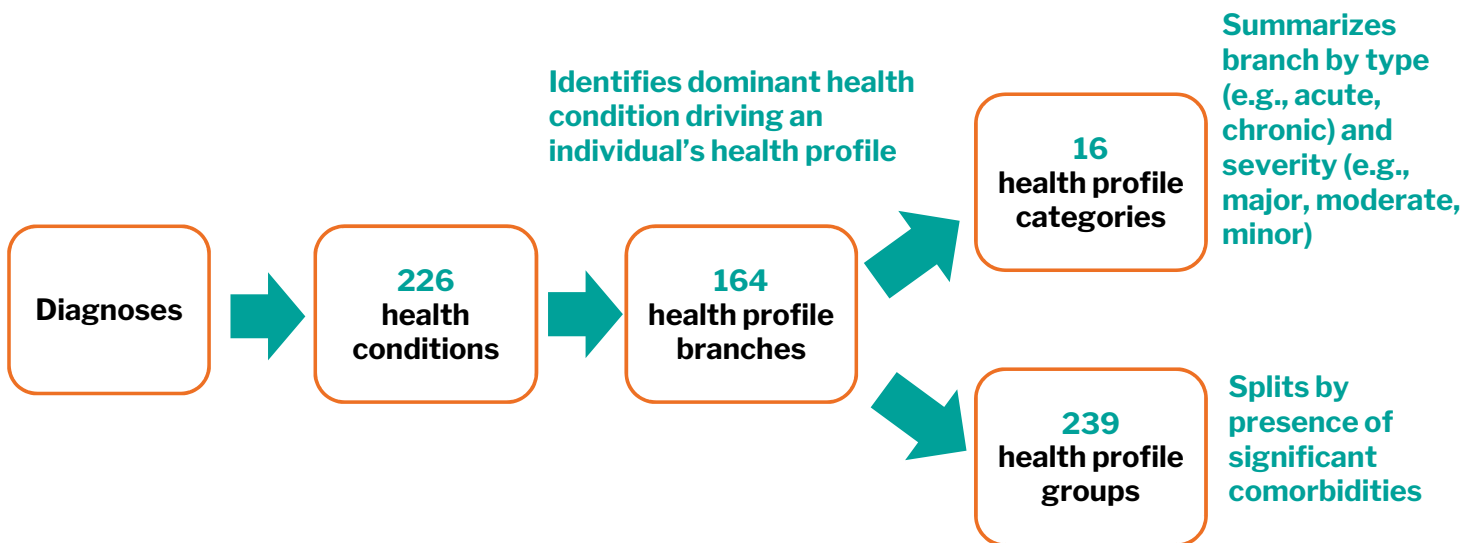
**Predictive indicators**

- Cost weights
- Number of primary care visits
- Number of emergency department visits
- Probability of admission to long-term care
- Risk of inpatient hospitalization for pneumonia or acute infectious/parasitic respiratory disease

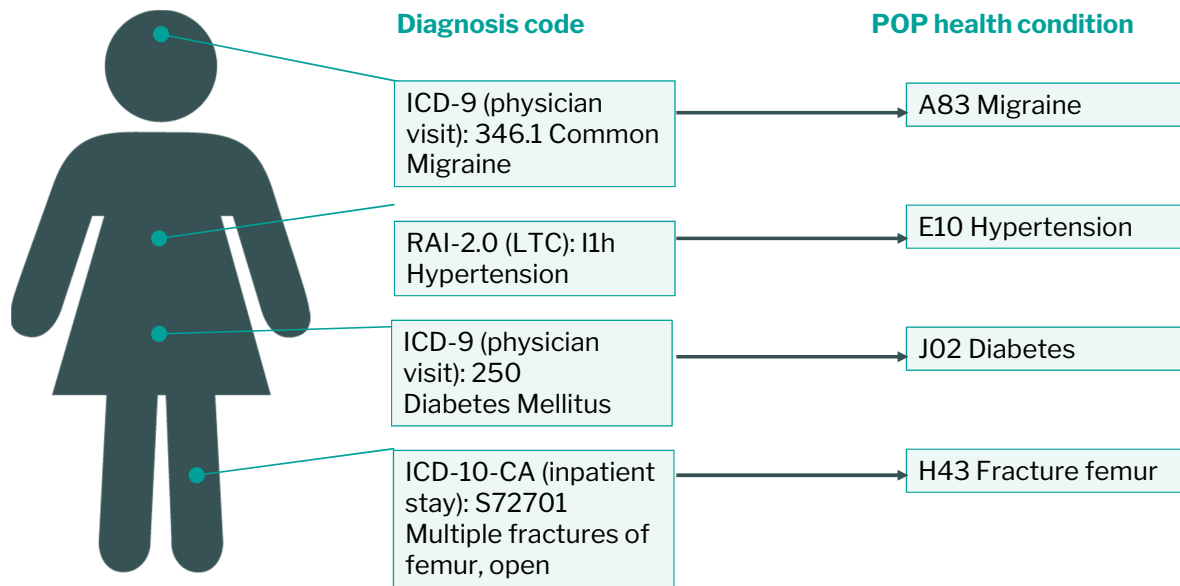


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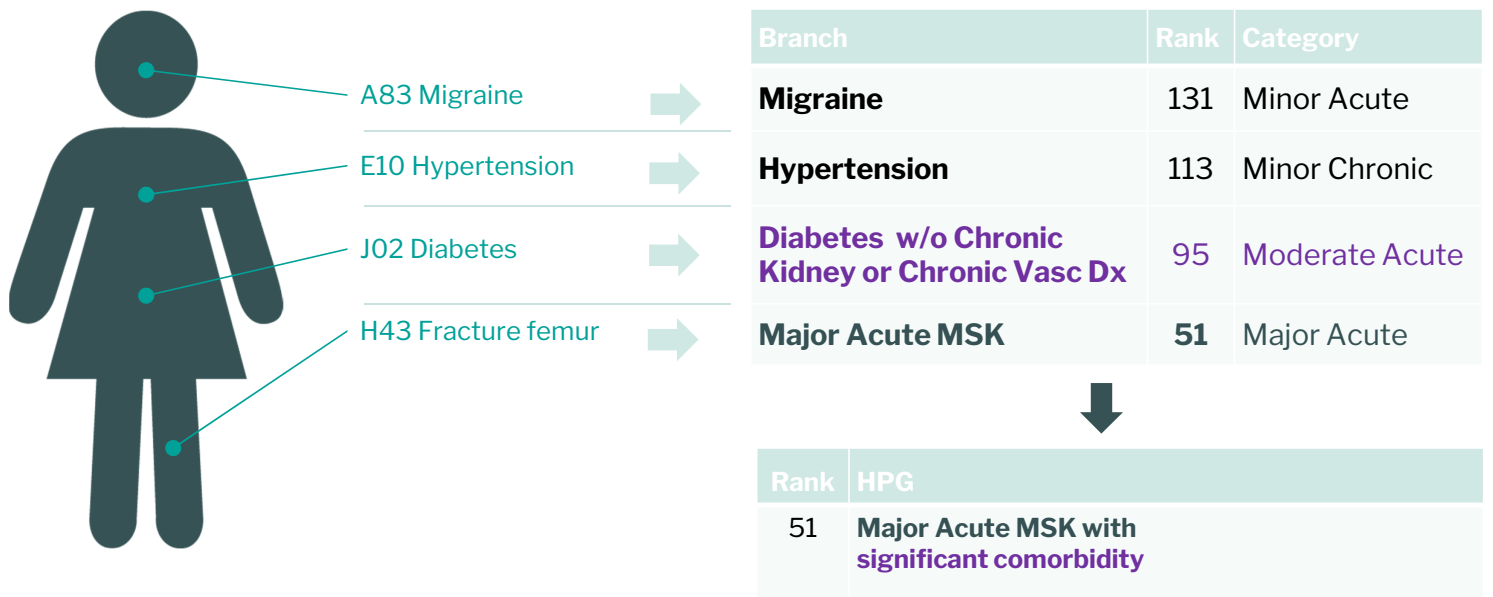
## Clinical profile: from health conditions to health profile groups (HPGs)



# Assigning Health Conditions to a person



# Assigning a health profile group to a person



## Beyond predicting cost...

**Use 226 Health condition flags, age and sex to predict:**



**Expected number of visits to a family physician**



**Probability of admission into long-term care**



**Risk of hospitalization for pneumonia or acute infectious/parasitic respiratory disease**



**Expected number of visits to an emergency department**

## Quiz #5

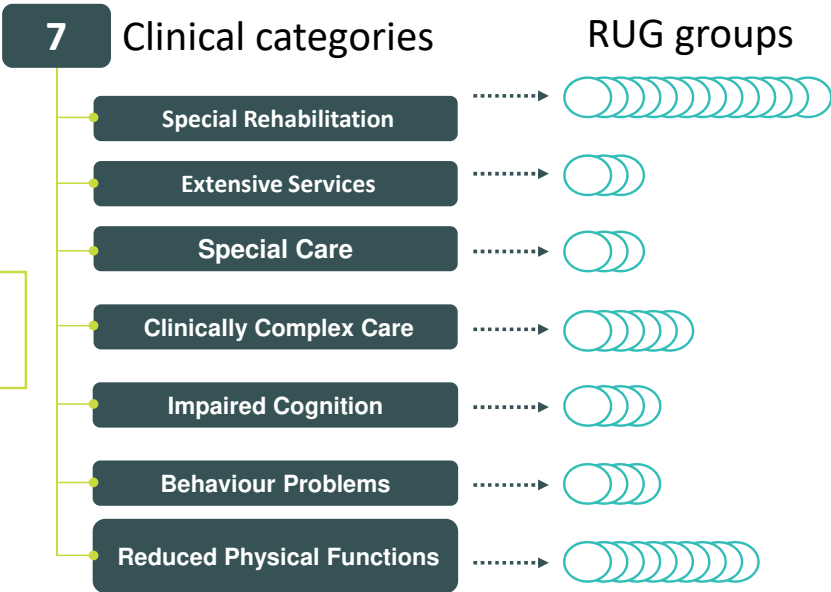
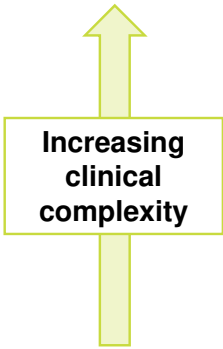
**What can the Population Grouping methodology be used for?**

- A. Profiling the overall health of the population
- B. Predict future health care costs and prioritize health resource use
- C. Identify healthcare high-cost users
- D. All of the above

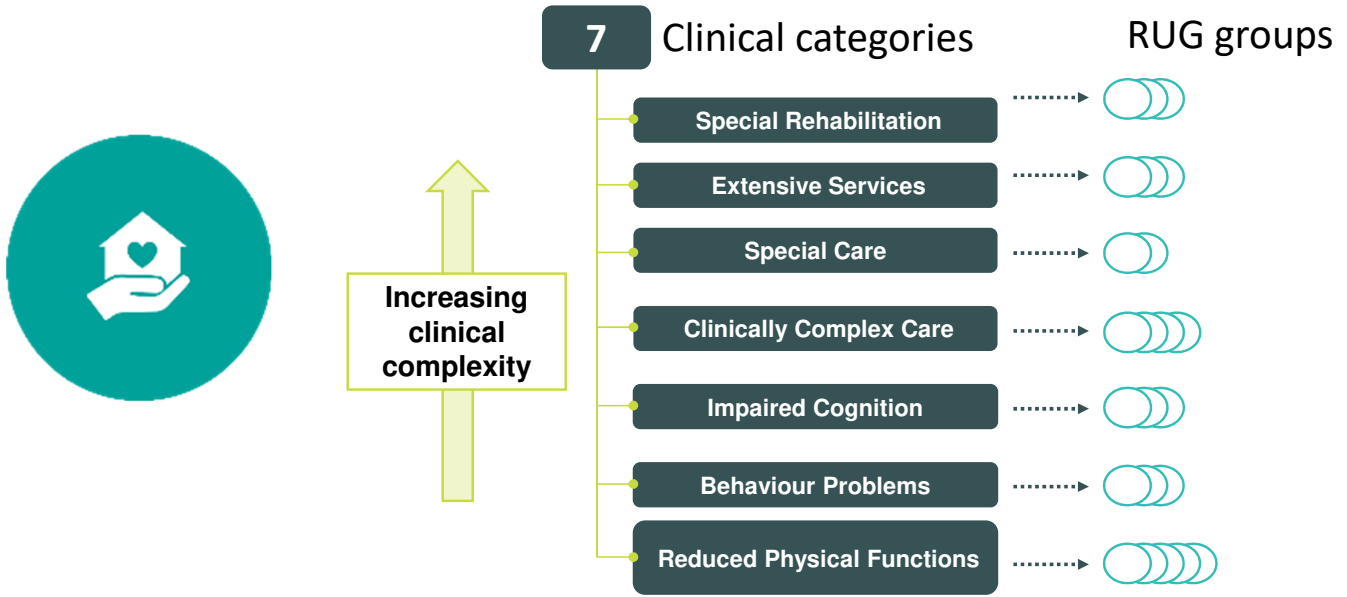


# InterRAI and other instrument-based groupers

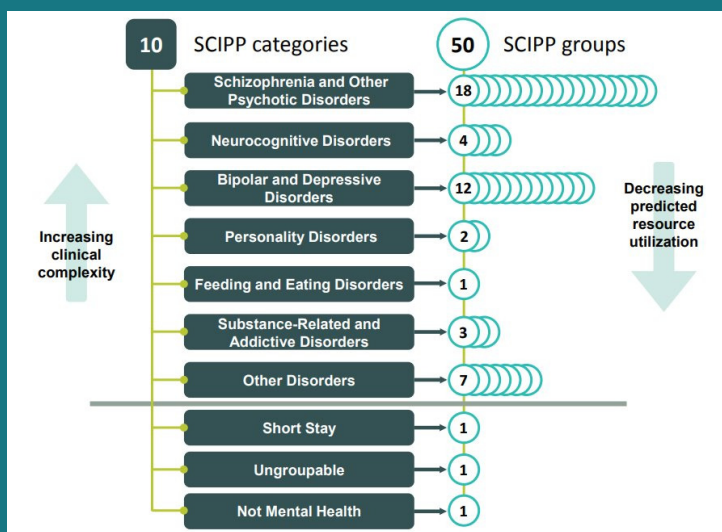
## RUG-III Groups



# RUG-III-HC Groups



# Ontario Inpatient Mental Health System for Classification of In-Patient Psychiatry (SCIPP) DSM-5



# Rehabilitation Patient Grouper (RPG)



# Rehabilitation Cost Weights (RCW)

- Resource Utilization Weighting Variables
- Types of NRS RPG episodes
  - Typical stay
  - Short stay
  - Long stay

Variable	Description
<b>RCW</b> Rehabilitation Cost Weight	<ul style="list-style-type: none"> <li>• Represents the average relative resource utilization for inpatients in a given RPG</li> <li>• Used to weight NRS <b>Typical Stay</b> and <b>Long-Stay</b> episodes</li> </ul>
<b>Trim<sub>ss</sub></b> Short-Stay Trim Point	<ul style="list-style-type: none"> <li>• Number of days below which an episode is considered a Short Stay for a given RPG</li> <li>• Lengths of stay less than or equal to this trim value will be considered Short-Stay episodes</li> </ul>
<b>PDRCW<sub>ss</sub></b> Short-Stay per Diem Rehabilitation Cost Weight	<ul style="list-style-type: none"> <li>• Used to weight each patient day for NRS <b>Short-Stay</b> episodes</li> </ul>
<b>Trim<sub>ls</sub></b> Long-Stay Trim Point	<ul style="list-style-type: none"> <li>• Number of days beyond which an episode is considered a Long Stay for a particular RPG</li> <li>• Lengths of stay greater than this trim value will be considered Long-Stay episodes</li> </ul>
<b>PDRCW<sub>ls</sub></b> Long-Stay per Diem Rehabilitation Cost Weight	<ul style="list-style-type: none"> <li>• Used to weight patient days that go beyond the long-stay trim point for NRS <b>Long-Stay</b> episodes</li> </ul>
<b>RPG LOS</b> RPG Length of Stay	<ul style="list-style-type: none"> <li>• The length of a rehabilitation episode</li> <li>• Calculated as the number of days from admission to discharge</li> </ul>

# Breaktime

- 10 mins

## Part 3: Interactive Session

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# Outline

- Case Mix tools in action
- Breakout groups - share challenges and innovations  
Thematic Synthesis (facilitators to summarize key themes)
- Wrap-up & Next Steps


## Case Mix tools in action




Describe and compare client cohorts and organizations




Plan for new services, programs and policies



Evaluate and monitor services, programs and policies



Risk adjust patients to better reflect their resource needs

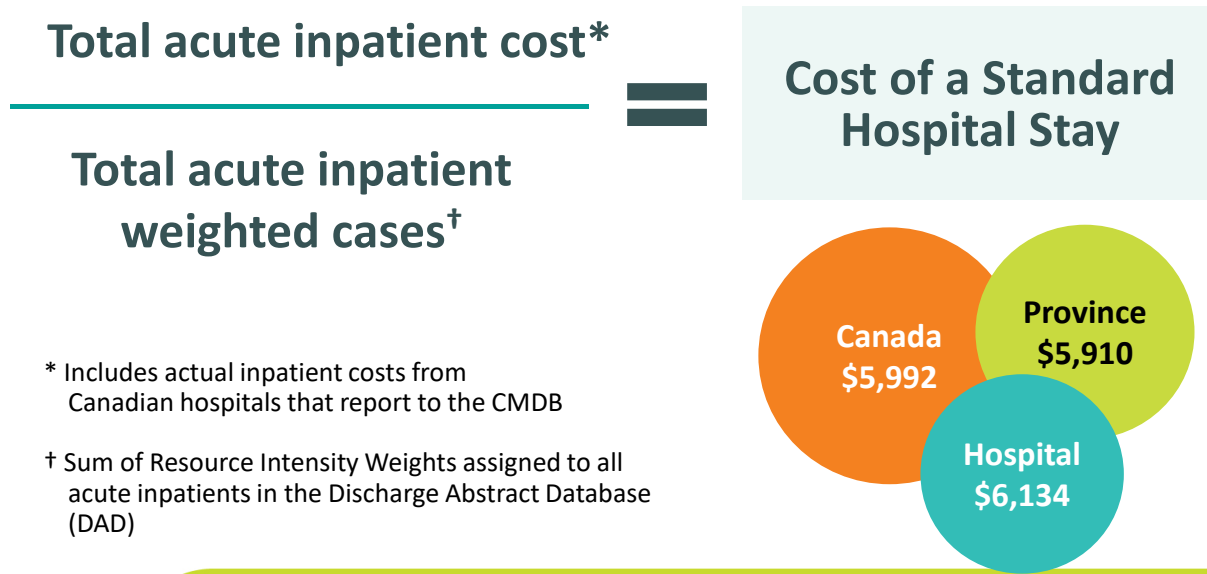


Monitor care delivery – resource use and length of stay



Manage resources required – forecast/monitor budgets; allocate funding

# Weighted cases/RIW and cost of a standard hospital stay (CSHS)



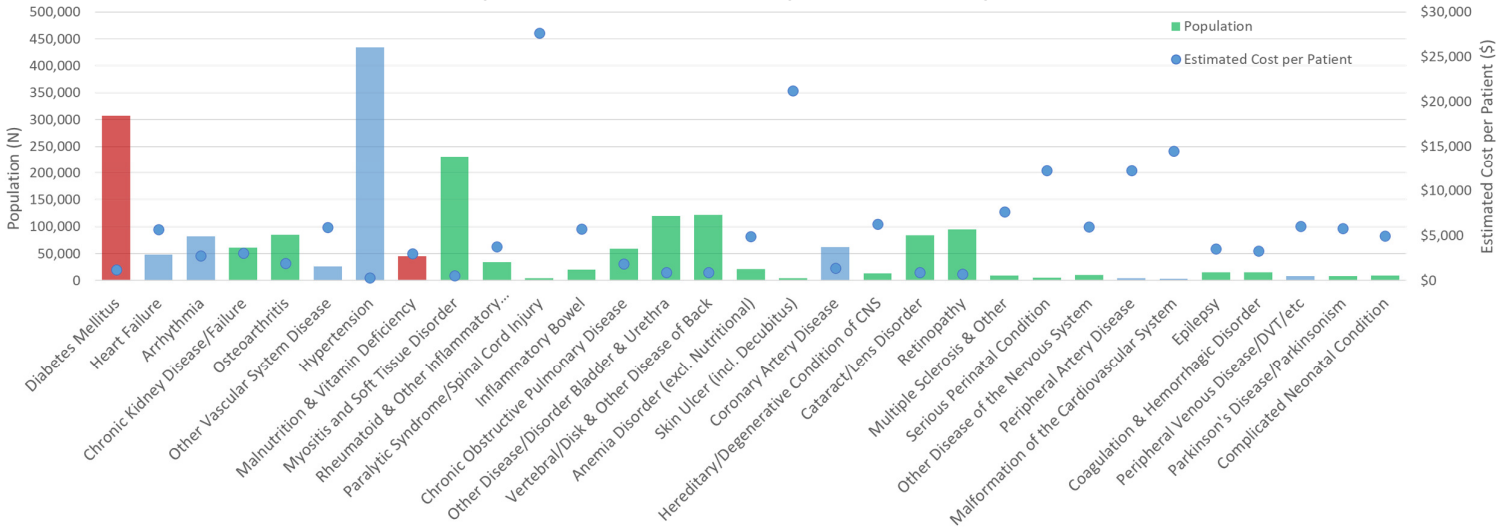
# LTC admission indicator

Ventile	POP grouper prediction		Actual	
	Number of people	Predicted number of admissions	Actual number of admissions	Proportion of admissions
1	153K	63	93	0.3%
2	153K	133	52	0.1%
3	153K	173	82	0.2%
4	153K	201	125	0.3%
17	153K	1,922	1,923	5.4%
18	153K	2,643	3,066	8.6%
19	153K	4,263	6,063	17.0%
20	153K	18,994	18,845	<b>52.7%</b>
All	3M	36,000	36,000	100%

**53% of LTC admissions in the top 5%**

# Burden of Chronic Disease: Cost

Population Size and Estimated Cost per Patient for the Top 30 Chronic Diseases



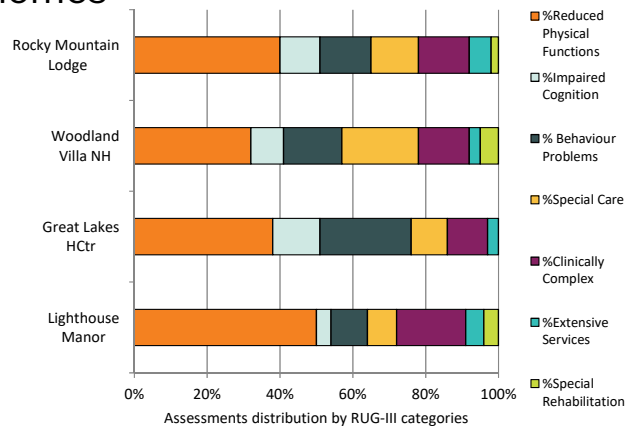
# Case Mix in residential care

Compare relative resource use using facility CMI values



- CMI's can be compared over time in a particular facility or across facilities
- Can look to resident mix to understand changes in CMIs

Describe residents in LTC homes



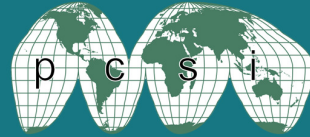
## Group discussions

- Self introduction
- 1-2 topics to pick from right
- Summary with key take-aways



**Better data. ”**  
**Better decisions.**  
**Healthier Canadians.**

This isn't just our mission —  
it's our commitment to Canada.



# Thank you

For more information, visit

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