

Integrating pharmaceutical data into CIHI POP Grouper – a pilot study

Jing Jin, Debra Chen, Yvonne Rosehart

Case Mix Department

Canadian Institute for Health Information

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casemix@cihi.ca

cihi.ca

[@cihi_icis](https://twitter.com/cihi_icis)



Project Goals



To assess whether integrating pharmaceutical data into the CIHI POP Grouper:

- Can help confirm health conditions captured in physician billing data
- Can help enhance population clinical profiles

Inputs →

POP
Grouper

→ Outputs



Hospital 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

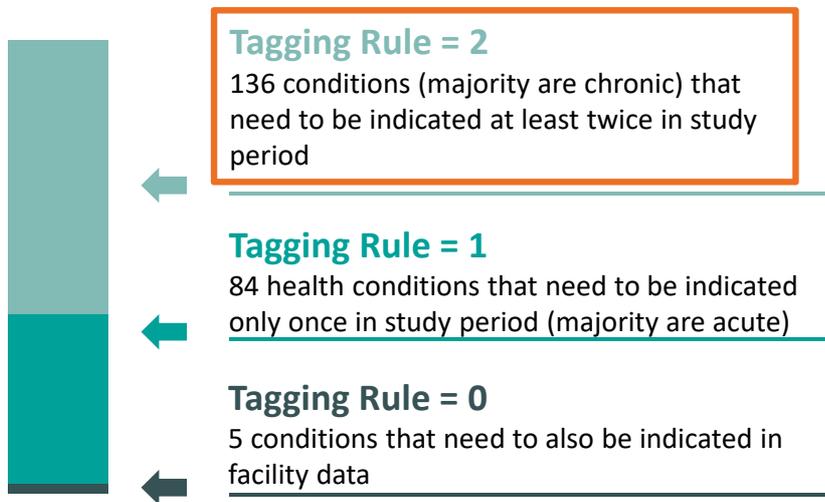


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Classifications for building population clinical profile: all starts with diagnoses



Tagging rules applied to physician visit data

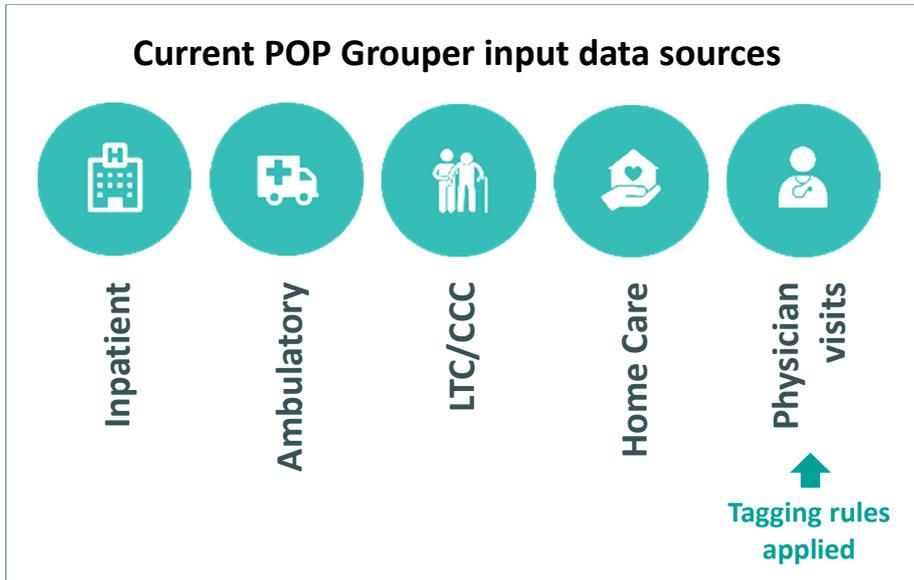


Employing tagging rules helps to increase confidence in the diagnosis information used from the physician billing data.

Data and methods



Input data sources



Pharmaceutical

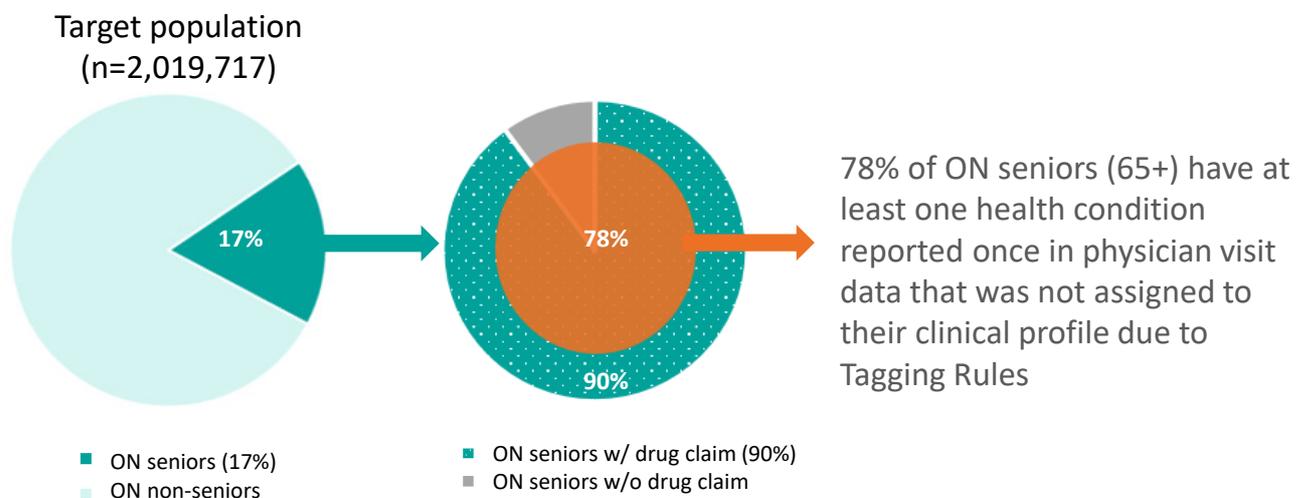
- No Dx information
- Includes claims from public drug programs
- Excludes drug dispensed in hospitals
- Limited data on specialty drugs (e.g., cancer, outpatient clinic)

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Data year: April 1, 2015 – March 31, 2017 (i.e., 2-year window to build a person's clinical profile)



Population of interest



Notes: Ontario population (n=14,987,397): Ontario residents with a valid health card between April 1, 2015 – March 31, 2017 (i.e., 2-year window to build clinical profiles)

Source: Population Grouping Methodology, 2023, Canadian Institute for Health Information



Method for drug-disease mapping

 **Challenge**

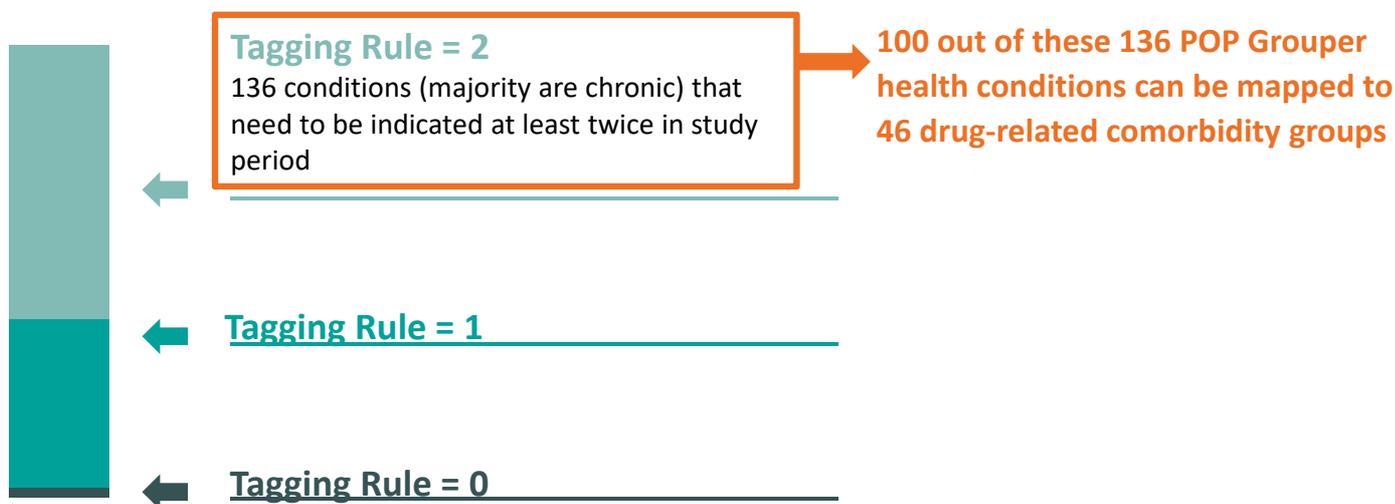
- No diagnostic information is available in NPDIUS (i.e., drug data) while POP Grouper is mainly health condition driven
- Drugs can be used off-label and for multiple purposes, and no golden standards for drug-disease mapping

 **Solution**

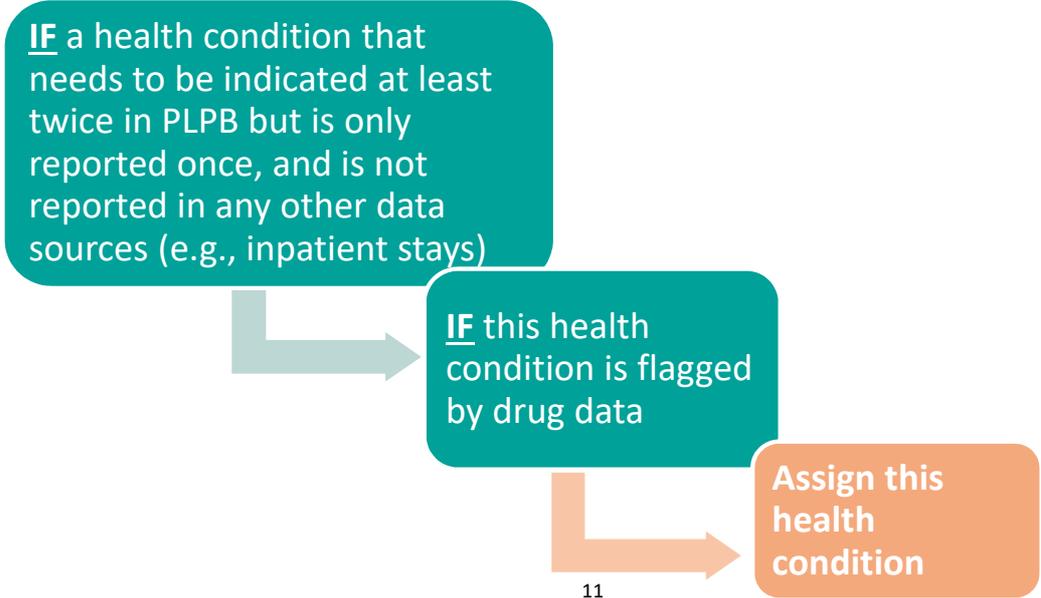
- Used an existing drug-disease mapping study* to provide a proxy map of drugs to POP Grouper health conditions
- In the existing study, 46 comorbidities in the Rx-Risk Index were mapped to dispensing's indicative of each condition using ATC codes
- In our study, we mapped these 46 comorbidities to POP Grouper health conditions

* "The validity of the Rx-Risk Comorbidity Index using medicines mapped to the Anatomical Therapeutic Chemical (ATC) Classification System" by Nicole L Pratt, Mhairi Kerr, John D Barratt, Anna Kemp-Casey, Lisa M Kalisch Ellett, Emmae Ramsay, Elizabeth Ellen Roughead 

Method for mapping 46 comorbidity groups to POP Grouper health conditions



Method for using drug data to confirm health conditions in physician billing data

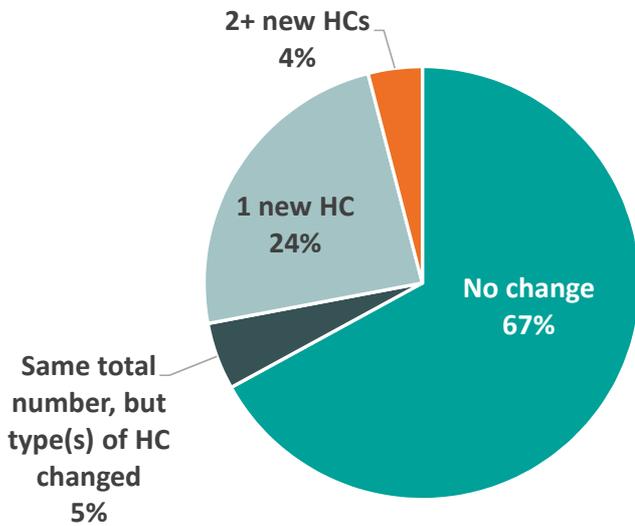


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Study results



Adding drug data helps to confirm health conditions



- **28%** of seniors in the study* now have at least 1 new health condition assigned to their clinical profile after adding drug data
- **5%** of seniors have no change in # of health conditions, but now have a different set of health conditions

Notes: Seniors in study (n=2,019,717). * Seniors with a health condition reported once in PLPB and not reported in other sources.
 Source: Population Grouping Methodology, 2023, Canadian Institute for Health Information



Health conditions most frequently added once drug data included

- Hypercholesterolemia/other dyslipidemia
- Hypertension
- Osteoarthritis
- Eczema/dermatitis/hives
- Other bone disease
- Asthma
- Hypothyroidism
- Neurotic/anxiety/obsessive compulsive disorder
- Chronic obstructive pulmonary disease (COPD)
- Other heart disease



Adding drug data complements seniors' clinical profiles

•Drug data adds about **1** new health condition to senior's clinical profile

•**30%** of seniors experiencing a change to their health condition profile are now assigned to a different HPG (dominant health condition)

•On average, adding drug data increased senior's cost weight by **14%**

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Conclusion and discussion



It is feasible to incorporate drug data into the POP Grouper, however a more comprehensive methodology is needed to accurately and fully map drug data to health conditions

Despite the sample limitation (e.g., publicly funded and seniors only), the drug data enhances population clinical profiles and provides additional information about health care resource requirements

Assessing the impact of adding drug data on predictive indicators will need to wait until we have a solid drug-health condition mapping methodology

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