

## Data Impact Challenge Answer Submission

**Question:** What portion of older adults (65+) has been prescribed antipsychotics to treat behavioural and psychological symptoms of dementia?

**Team:** interRAI Canada

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### Describing the Data and Analysis

- The data and analysis for this challenge were based entirely on assessment data from the interRAI suite of assessment systems. The interRAI assessments are utilized across multiple sectors to which older adults receive health services, including home care, complex continuing care, nursing homes, and acute hospitals. The interRAI systems are designed to use common language and common items to assess health conditions across health sectors. For this challenge, assessments utilized in all health sectors include items assessing antipsychotic medication use, dementia diagnosis, and behavioural and psychological symptoms. Specifically, data for this challenge are based on the RAI 2.0 that is mandated for use across Canada in LTC nursing homes and Ontario CCC hospitals and the RAI-Home Care (HC) that is mandated for use among all long stay clients across a number of Provinces as well as in acute hospitals among older adults designated as alternate level of care (ALC). Data Custodian Organization(s):

## Canadian Institute for Health Information (CIHI)

The CIHI is the primary data custodian for all interRAI assessments that are mandated within Canada. The Continuing Care Reporting System (CCRS) at CIHI oversees the training/implementation, collection, quality, and reporting of RAI 2.0 data from CCC and LTC Nursing Homes. After staff at specific care settings complete the RAI 2.0 assessment the data are submitted CIHI quarterly and subjected to specific reporting standards established by CIHI in consultation with the provinces and interRAI. This includes passing numerous logical checks for data submissions. Data quality of the CCRS data has been demonstrated further with evaluations of scale reliability, patterns of associations between items and scales that provide evidence about convergent validity, and measures of changes in population characteristics over time (Hirdes et al., 2013).

CIHI also maintains the home Care Reporting System (HCRS). The HCRS oversees the implementation, management, quality, and reporting of all RAI-HC data in Canada. For instance, Ontario data are submitted to the HCRS through the Ontario Association of Community Care Access Centres (OACCAC). The OACCAC is the central repository for all RAI-HC assessment completed in Ontario's 14 Community Care Access Centres (CCACs). It includes information on all publicly funded home care clients who are expected to receive services for greater than 60 days, or are being assessed for placement into LTC. In Manitoba, home care data are shared with the HCRS by the Winnipeg Regional Health Authority (WRHA). The RAI-HC is used in the WRHA to assess all clients expected to receive care for 60 days. The WRHA data represents approximately 60% of all persons receiving home care services in Manitoba.

In addition to the RAI-HC data provided to the HCRS for long stay home care clients, all acute care patients in several Provinces who are waiting for a nursing home admission, and who are not expected to go home, receive the hospital version of the RAI HC assessment to initiate their nursing home application. Given that the RAI-HC assessment instrument includes about 300 clinical variables per assessment, the RAI-HC database comprises one of the largest data holdings available to describe ALC patients in Canada.

## interRAI Canada at the University of Waterloo

The secondary data custodian for the interRAI data utilized in this challenge is interRAI Canada. The interRAI Canada group is a research, education and knowledge exchange cluster based at the School of Public Health and Health Systems, University of Waterloo, with a focus on promoting innovations in data, evidence, and application systems for the health and social service sectors. interRAI is a collaborative network of researchers in 32 countries committed to improving services for vulnerable populations including older persons, persons with disabilities and those affected by mental illness. Our goal is to promote evidence-informed clinical practice and policy decisions through the collection and interpretation of high quality data about the characteristics and outcomes of persons served across the continuum of care.

interRAI Canada maintains the largest holdings of data collected from interRAI assessment systems in Canada. The data are obtained through data sharing agreements between organizations who adopt interRAI systems and interRAI, with the majority of the data provided by CIHI. interRAI Canada utilizes

these data to carry out research on new interRAI applications as well as health services policy and evaluation research. Further detail for specific data holdings are provided below under “data sources”.

## **Data Sources**

### *Resident Assessment Instrument, 2.0 (RAI 2.0)*

The CCRS is based on data from the Resident Assessment Instrument, 2.0 (RAI 2.0). The RAI 2.0 enables comprehensive, standardized evaluation of the needs, strengths, and preferences of persons living in chronic care and nursing home institutional settings. This instrument (or previous versions) has long been mandated for use in U.S. nursing homes (first mandate was in 1987) and has been implemented for use in Ontario CCC facilities since 1996 and LTC Nursing Homes since 2005. The RAI 2.0 assessment form includes 440 items covering domains such as cognition, communication, mood and behaviour, psychosocial well-being, physical functioning, continence, health conditions, nutrition, activities, medication, treatments, procedures, and discharge potential. The RAI 2.0 is designed as a comprehensive assessment to be used as part of normal clinical practice, and assessments are done by trained health professionals working as part of a multidisciplinary team. Applications using these data include care planning protocols, the RUG-III funding system, quality indicators, and outcome measures.

### *RAI-Home Care (RAI-HC)*

As one of four interRAI instruments mandated for use across Canada, the RAI-HC reliably documents important domains of a person’s well-being, including: health, function, social support, diagnoses, service use and quality of life (Morris et al., 1997; Poss et al., 2008). The RAI-HC assessment was mandated regionally or provincially in Alberta, British Columbia, Manitoba, Newfoundland and Labrador, Nova Scotia, Ontario, Saskatchewan, and the Yukon Territory for long-stay (expected to be on service for greater than 2 months) home care clients and nursing home placement applications. Trained case managers, who usually are registered nurses or social workers, complete assessments in all jurisdictions that use the RAI-HC. Assessment information is gathered from multiple sources, including: clinical observation and discussion with the client, corroborating information sources, and available medical records.

The comprehensiveness, scale, reliability, and validity of RAI-HC assessment in home care make these data ideal for public health and health services research. Particularly, the long-stay home care clients represent an impaired, frail subgroup of community-dwelling older adults that are highly relevant to contemporary topics in health services and policy. In addition to Canada, the RAI-HC assessment is used in Estonia, Finland, Hong Kong, Iceland, Ireland, Italy, Japan, the Netherlands, New Zealand, Singapore, Spain, Switzerland, and some U.S. states. Home care case managers, who are usually registered nurses, receive assessment training in all relevant jurisdictions. RAI-HC assessment data have been used in previous clinical and epidemiological research (e.g., Fialová et al., 2005; Hirdes, Poss, & Curtin-Telegdi, 2008; Landi et al., 1999).

## **List of Datasets Used (e.g. names of database and/or data origins):**

- RAI 2.0 data from the Continuing Care Reporting System, Canadian Institute for Health Information (nursing home and CCC data)
- RAI-HC data from the Ontario Association for Community Care Access Centre database and the Winnipeg Regional Health Authority home care client database
- RAI-HC data from the Ontario Association for Community Care Access Centre database for Acute Hospital Alternate Level of Care Patients

**Exclusions:**

- Individuals who were less than 65 years of age
- Individuals who did not have a dementia diagnosis

**Nature and Size of Cohort (e.g. geographic area covered, number of patients included):**

The data presented for each sector represent population level data, i.e., data for every person receiving care within the specified jurisdiction.

- For Home Care clients, all clients who were long stay (expected to receive services for at least 60 days):
  - British Columbia (N = 13,335),
  - Manitoba, WRHA (N=2,020)
  - Newfoundland (N= 147),
  - Nova Scotia (N= 2,661),
  - Ontario (N=25,765)
- For Acute Hospital data, all patients considered Alternate Level of Care who were assessed with the RAI-HC in acute and CCC hospitals while awaiting potential placement into LTC:
  - British Columbia (N=2,121)
  - Ontario (N=5,289)
  - Newfoundland (N=59)
- For the CCC hospitals, all patients admitted for care in CCC hospitals in:
  - Ontario (N= 4,333)
  - Manitoba (N=41)
- For LTC nursing homes, all residents residing in all nursing home beds in:
  - Alberta (N= 10,605)
  - British Columbia (N=17,771)
  - Manitoba (N=4,211)
  - New Brunswick (N= 66)
  - Newfoundland (N=833)
  - Nova Scotia (N=300)
  - Ontario (N=58,175)
  - Saskatchewan (N=364)
  - Yukon (N=92)

**Data timeframe:**

- **Home Care**
  - Nova Scotia (Jan 1, 2009 to Dec 31, 2009)
  - British Columbia, Newfoundland, Ontario, Yukon (Jan 1, 2014 to Dec 31, 2014)
  - Manitoba: WRHA (October 1, 2013 to Sept 30, 2014)
- **Home Care- Hospital ALC**
  - British Columbia, Newfoundland, Ontario, Yukon (Jan 1, 2014 to Dec 31, 2014)
- **Complex Continuing Care**
  - Manitoba, Ontario (Jan 1, 2013 to Dec 31, 2013)
- **Long Term Care**
  - Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland, Nova Scotia, Ontario, Saskatchewan, Yukon (Jan 1, 2013 to Dec 31, 2013)

**Brief Summary of the Analysis Methodology:**

Since the RAI 2.0 and RAI-HC are completed every 90 days we created a point prevalence sample by selecting the person's assessment that was closest to June 1 for the calendar year of each dataset. For LTC and CCC, the most recent calendar year was 2013 for all the provinces included in the analysis. For HC Hospital, the year was 2014 for all the provinces. For Home Care, the year was also 2014, with the exception of Nova Scotia whose most recent assessment calendar year was 2009. Additionally, for Manitoba, the timeframe was Oct 2013 to Sept 2014; as such the date of April 1, 2014 was chosen to select the person's assessment.

The RAI 2.0 and RAI-HC include specific items assessing whether a person has been prescribed an antipsychotic medication, whether the person has been diagnosed with dementia, and the presence of a variety of mental status and behaviour conditions. Specifically, psychotic symptoms of hallucinations and delusions are assessed based on the presence of these symptoms over a 7 day period. The items are coded "0" when the symptom is not present in the last 7 days, or "1" when the symptom is present in the last 7 days. Aggressive behaviour such as verbally abusive behaviour, physically abusive behaviour, socially inappropriate behaviour, and resisting care are assessed based on the frequency observed over a 7 day period. The items were recoded as 0 if the behavior was not exhibited and 1 if present in the prior 7 days. An "aggressive behavior" variable was created and coded as 1 if any of the behavior items were present in the prior 7 days or 0 if not.

The numerator for our analysis was:

- The number of individuals aged 65 or older taking antipsychotic medication at the time of assessment

The denominator for our analysis was:

- The number of individuals aged 65 or older with a diagnosis of dementia

We calculated the prevalence of antipsychotic use among persons with dementia within each health care sector stratified by the presence of behaviour and/or psychological symptoms. Specifically, the numerator and denominator were calculated within the following strata:

- no behaviours or psychotic symptoms present,
- psychotic symptoms present,
- aggressive behaviour present,
- Psychotic symptoms and aggressive behaviour symptoms present.

This stratification was necessary to improve the interpretation of the quality indicator among individuals with and without behaviour and psychological symptoms of dementia.

The results for each of these strata are then reported within each health sector within each Province.

## Findings

Table 1 provides the numerators and prevalence of antipsychotic use among individuals with dementia across four health settings by Province (where available). Antipsychotic use is high across all sectors and Provinces including in the analysis. Variability between health settings and Provinces was found in the rate of antipsychotic use among older adults with dementia. For instance, across all LTC residents the average rates of antipsychotic use was 34% and ranged from 22%-47% among adults 65 years and older with a dementia diagnosis and who are not experiencing aggressive or psychotic symptoms were prescribed antipsychotics. The range among older adults with aggressive behaviour rises from 38% to 63%, with an average of 56% when either aggressive symptoms or psychosis were present. Finally, the average rate of antipsychotic prescribing among residents with both psychosis and aggression was 75%, with a Provincial range of 58% to 100%.

Antipsychotic use among Hospital ALC patients was similar to that of LTC. The Provincial average rate was 33% among adults 65+ with dementia but no aggressive or psychotic symptoms. Average rates were much higher among patients with aggression (56%), psychosis (67%), and those experiencing both aggression and psychosis (82%).

Antipsychotic use in HC was lower than any other setting. The average for those without any symptoms was 14% and ranged from 6% to 18%. However, the prevalence was much higher among home care clients experiencing behavioural and/or psychological symptoms. The average was 28% for those experiencing either aggression or psychosis. Additionally, the average prevalence increased to 37% when both symptoms were present.

The prevalence of antipsychotic use among individuals who exhibited wandering in the 7 days prior to assessment was also assessed. The use of antipsychotics among individuals who wandered but did not have psychotic or behaviour symptoms present was 6% in the LTC sample and 11% in the HC sample.

It is important to note that these findings are not adjusted for factors such as the presence of delirium. In our analysis we found that the prevalence of antipsychotic use increased slightly among individuals experiencing delirium. For instance, in Ontario LTC the prevalence increased by 3% for those no

symptoms, and by 4% with those with aggressive symptoms. However, there was a 6% decrease among those with psychosis and a 3% decrease among those with both aggressive and psychotic symptoms. Adjustment was also not performed for issues such as case mix complexity. Such adjustment may not be warranted given the consistent recommendations that the use of antipsychotic medications should be avoided in the treatment of behavioural and psychological symptoms of dementia.

Overall, our results provide a comprehensive snapshot of the status of antipsychotic prescribing among individuals with dementia across several health sectors and Provinces. The picture created by this snapshot is not encouraging. The patterns suggest a high degree of prescribing among individuals experiencing behaviour and psychological symptoms of dementia. Even more discouraging are the patterns of prescribing among individuals not experiencing any symptoms.

Table 1: Proportion of individuals 65 years of age or older taking an antipsychotic by Province, Health Sector, and Symptom Status.

Province	Behavioural and Psychological Symptoms	% (n) Numerator by Dataset			
		HC	HC-Hospital ALC	CCC	LTC
Ontario	None	14%(18121)	27%(3220)	30%(3101)	35%(49653)
	Aggression	23%(4761)	54%(1366)	45%(561)	56%(5415)
	Psychosis	30%(1239)	50%(342)	50%(485)	55%(2343)
	Both*	37%(1239)	69%(361)	70%(186)	61%(764)
Manitoba	None	13%(1650)		30%(37)	25%(3609)
	Aggression	24%(240)		--	49%(394)
	Psychosis	29%(87)		50%(2)	47%(170)
	Both	28%(43)		--	58%(38)
Saskatchewan	None				44%(293)
	Aggression				63%(54)
	Psychosis				57%(14)
	Both				67%(3)
Alberta	None				30%(8202)
	Aggression				54%(1377)
	Psychosis				54%(703)
	Both				68%(323)
British Columbia	None	17%(8623)	4 0%(1304)		36%(14895)
	Aggression	29%(2292)	65%(597)		63%(1473)
	Psychosis	35%(649)	59% (111)		59%(1088)
	Both	45%(537)	77%(109)		70%(315)
Newfoundland	None	6%(65)	30%(27)		47%(661)
	Aggression	13%(15)	48%(23)		62%(79)
	Psychosis	11%(9)	60%(5)		63%(82)
	Both	42%(12)	--		64%(11)
New Brunswick	None				47%(49)
	Aggression				38%(8)
	Psychosis				29%(7)
	Both				100%(2)
Nova Scotia	None	18%(1732)			22%(230)
	Aggression	27%(523)			61%(31)
	Psychosis	34%(204)			72%(25)
	Both	32%(202)			86%(36)
Yukon	None	--	33%(3)		23%(66)
	Aggression	43%(7)	--		60%(5)
	Psychosis	--	100%(1)		53%(17)
	Both	--	100%(1)		100%(4)

\* Both indicates presence of aggressive and psychosis; HC = Home Care, ALC=Alternate level of Care, CCC=Complex Continuing Care, LTC = Long term care nursing home, NFLD= Newfoundland



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