

Data Impact Challenge Answer Submission

- Question: What portion of older adults (65+) has been prescribed benzodiazepine or other sedative-hypnotics for insomnia, agitation or delirium?
- Team and list of all team member names:
 - interRAlders (of the lost data)
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Describing the Data and Analysis

- **Data Custodian Organization(s) and data sources:**

The dataset used for the analysis has been sent by the Canadian Institute for Health Information (CIHI) to University of Waterloo through agreements between these two organizations. This information is stored in a secure network at University of Waterloo.
- **List of Datasets Used (e.g. names of database and/or data origins):**
 - 1) Resident Assessment Instrument Minimum Data set (RAI-MDS 2.0) in the Continuing Care Reporting System (CCRS) repository
 - 2) Resident Assessment Instrument Home Care (RAI HC) in the Home Care Reporting System (HCRS) repository
- **Selection Criteria and Exclusions:**

Within each year, a single assessment closest to the midpoint of the year was selected for each person by health care setting. Individuals younger than 65 years old were excluded from all analyses.
- **Nature and Size of Cohort (e.g. geographic area covered, number of patients included):**

The LTC cohort includes all persons admitted to long-term care whose length of stay is greater than 14 days in eight Canadian province and territories (n=799,797). The CCC cohort includes all persons admitted to a complex continuing care program or facility (a modality of post-acute or sub-acute care) whose length of stay is greater than 14 days in Ontario and Manitoba (n=83,489). The home care cohort includes all adult non-palliative long-stay (i.e., expected to be on service for greater than 60 days) home care patients in five Canadian provinces (n= 1,022,619).
- **Data timeframe:**

The LTC cohort comprises data since 2009 for British Columbia, Manitoba, Newfoundland and Labrador, Nova Scotia, Ontario, and Yukon Territory, since 2010 for

Alberta, and since 2013 for New Brunswick and Saskatchewan. All data is reported up to March 2014.

The CCC cohort comprises data since 2009 for Ontario and New Brunswick, and is reported up to March 2014.

The home care cohort comprises data since 2011 for British Columbia, Manitoba, Ontario, Saskatchewan, and Yukon Territory, and is reported up to June 2014.

- **Please provide a brief summary of the analysis methodology:**

The frequency distribution of the variables of interest such as medications used (i.e., anxiolytics and hypnotics) and clinical characteristics (i.e., delirium, agitation, insomnia) of the individuals assessed were produced using frequency analysis. Possible confounding variables such as indicators of depression and gender were used to stratify the analyses. Chi-square tests of significance were applied within strata for each year and between years.

Describing the Findings

Long-term care (LTC)

- Numerator: number of persons 65+ with insomnia, agitation, or delirium in LTC receiving anxiolytics or hypnotics
- Denominator: total number of persons 65+ with insomnia, agitation, or delirium in LTC
- Results:
 - In 2013, 25.0% of persons 65+ with insomnia, agitation, or delirium in LTC received anxiolytics or hypnotics
 - Over time, there has been a reduction in the proportion of persons with these conditions receiving anxiolytics or hypnotics
 - With a given year, persons with possible depression and/or aggressive behaviour are more likely to receive anxiolytics or hypnotics

Complex continuing care (CCC)

- Numerator: number of persons 65+ with insomnia, agitation, or delirium in CCC receiving anxiolytics or hypnotics
- Denominator: total number of persons 65+ with insomnia, agitation, or delirium in CCC
- Results:
 - In 2013, 40.9% of persons 65+ with insomnia, agitation, or delirium in CCC received anxiolytics or hypnotics
 - Over time, there has been a reduction in the proportion of persons with these conditions receiving anxiolytics or hypnotics
 - With a given year, persons with possible depression are more likely to receive anxiolytics or hypnotics
 - In most years, there was not a significant difference in prescribing patterns for persons with and without signs of aggressive behaviour

Long-stay home care

- Numerator: number of persons 65+ with agitation or delirium in long-stay home care receiving anxiolytics or hypnotics
- Denominator: total number of persons 65+ with agitation or delirium in long-stay home care
- Results:
 - In 2013, 48.4% of persons 65+ with agitation or delirium in long-stay home care received anxiolytics or hypnotics
 - Over time, there has been an increase in the proportion of persons with these conditions receiving anxiolytics or hypnotics
 - With a given year, persons with possible depression and/or aggressive behaviour are more likely to receive anxiolytics or hypnotics

Conclusions

- The proportion of persons with insomnia, agitation, or delirium (agitation or delirium in home care) receiving anxiolytics or hypnotics decreased over time in LTC and CCC but increased over time in long-stay home care from 2009–2014
- Persons who show symptoms of possible depression are more likely to receive anxiolytics or hypnotics across all three settings
- Persons with signs of aggressive behaviour are more likely to receive anxiolytics or hypnotics in LTC and long-stay home care

Key Limitations / Interpretation Issues

- Only the general type and not the name of the medication could be determined from the assessment
- Reasons for prescribing could not be determined; therefore, one cannot conclude the appropriateness of prescribing patterns
- There is no item capturing insomnia or other aspects of sleep in the RAI HC; therefore, this condition could not be reported on in the long-stay home care cohort
- The RAI HC is not completed for short-stay (i.e., expected to be on service for fewer than 60 days) home care patients; therefore, this population was not included in this analysis
- The data is reported up to March 2014; therefore, data for year 2014 do not represent a full calendar year
- These findings are not wholly representative of these settings because not all provinces and territories are represented in the CCRS and HCRS datasets used in this analysis

Proportion of older adults (65+) with insomnia, agitation or delirium who received anxiolytics or hypnotics in three Canadian health care settings

		Year						
		2009	2010	2011	2012	2013	2014	
Long-term care	n, 65+ with insomnia, agitation, or delirium	27,970	35,904	37,922	39,573	41,700	33,021	
	% receiving anxiolytic or hypnotic	29.4%	29.2%	27.7%	27.3%	25.0%	23.8%	
	by gender	female	*29.4%	29.6%	28.1%	*26.5%	25.4%	*24.1%
		male	*29.5%	28.3%	26.8%	*25.9%	24.1%	*23.1%
	by possible depression ¹	yes	33.7%	33.8%	32.0%	29.7%	28.3%	26.2%
		no	25.5%	24.9%	23.6%	22.9%	21.7%	21.2%
	by aggressive behaviour ²	yes	30.7%	30.5%	28.8%	27.7%	26.7%	24.8%
no		28.7%	28.5%	27.1%	25.5%	24.2%	23.3%	
Complex continuing care	n, 65+ with insomnia, agitation, or delirium	5,270	4,892	5,236	5,551	5,459	1,831	
	% receiving anxiolytic or hypnotic	46.6%	44.5%	42.6%	39.5%	40.9%	39.9%	
	by gender	female	^48.1%	*^45.3%	^44.1%	^41.2%	^43.2%	*^42.0%
		male	^44.8%	*^43.6%	^40.8%	^37.4%	^38.2%	*^37.4%
	by possible depression ¹	yes	55.1%	52.4%	48.5%	47.6%	46.7%	45.9%
		no	41.5%	39.9%	39.1%	35.4%	37.9%	36.4%
	by aggressive behaviour ²	yes	*^48.7%	*^44.3%	*^45.4%	^43.4%	*^43.1%	^44.6%
no		*^46.0%	*^45.4%	*^42.0%	^38.5%	*^40.4%	^38.7%	
Long-stay home care	n, 65+ with agitation or delirium	11,252	12,457	13,990	14,828	14,584	9,131	
	% receiving anxiolytic or hypnotic	34.0%	38.3%	43.3%	45.8%	48.4%	49.8%	
	by gender	female	*34.2%	*38.6%	*43.3%	*46.3%	49.3%	*50.7%
		male	*33.6%	*37.8%	*43.2%	*45.1%	47.0%	*48.7%
	by possible depression ¹	yes	40.9%	43.6%	49.2%	51.1%	53.7%	55.4%
		no	30.8%	35.6%	40.4%	42.9%	45.3%	46.4%
	by aggressive behaviour ²	yes	^37.6%	^39.9%	^45.4%	^47.9%	^50.8%	^51.1%
no		^32.2%	^37.5%	^42.2%	^44.7%	^47.1%	^49.2%	

¹Possible depression measured as scoring 3+ on the Depression Rating Scale

²Aggressive behaviour measured as scoring 3+ on the Aggressive Behaviour Scale

All statistics not significant within years ($p \leq 0.05$) are denoted by an *

All statistics not significant across years ($p \leq 0.05$) are denoted by an ^