Use of Antipsychotics Among Seniors Living in Long-Term Care Facilities, 2014

Report

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Types of Care

Canadian Institute for Health Information
Institut canadien d'information sur la santé

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To lead the development and maintenance of comprehensive and integrated health information that enables sound policy and effective health system management that improve health and health care.

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Please note that the analyses and conclusions in this document do not necessarily reflect those of the individuals or organizations mentioned above.

Key findings

- In 2014, **39.0% of seniors in long-term care (LTC) facilities had at least 1 claim for an antipsychotic**. Nearly one-quarter of residents (22.4%) were chronic users of antipsychotic medications. It is important to note that these measures include all antipsychotic use, regardless of reason for use, and that there are cases where antipsychotic use among LTC residents may be appropriate.
- **Residents with severe cognitive impairment and those exhibiting highly aggressive behaviour were more likely to have used an antipsychotic.** However, a large proportion of seniors exhibiting severe aggression were not treated with antipsychotics, suggesting that non-drug alternatives were often considered, even in the most serious cases.
- **Quetiapine was the most commonly used antipsychotic, used by 19.2% of residents, followed by risperidone, used by 14.1%.** Risperidone is the only antipsychotic approved for use in the treatment of symptoms of dementia in Canada, although treatment guidelines generally include guidance on the use of other antipsychotics.
- **Among seniors who were chronic users of an antipsychotic,** nearly **two-thirds (64.3%) were also chronic users of an antidepressant**, while roughly **1 in 6 (15.0%) were also chronic users of a benzodiazepine**. The use of more than 1 psychotropic drug increases the risk of side effects — including falls.
- **Trends in the rate of antipsychotic use varied across provinces.** The most notable change occurred **in Manitoba**, where **antipsychotic use decreased from 38.2% in 2006 to 31.5% in 2014**. This was due in part to initiatives implemented by the Winnipeg Regional Health Authority to reduce inappropriate antipsychotic use in LTC facilities.

Introduction

More than half of individuals with Alzheimer disease and related dementias experience behavioural and psychological symptoms, including delusions, aggression and agitation.[1, 2] To treat these symptoms, antipsychotics are commonly prescribed.[3, 4] The prevalence of dementia is much higher in long-term care (LTC) facilities than in the overall senior population.[5–7] Although results vary based on the data sources and methods used, previous studies have consistently shown that antipsychotics are used much more often in an LTC setting.[7, 8]

Only 1 antipsychotic, risperidone, is approved for use in the treatment of symptoms of dementia in Canada, although treatment guidelines for dementia generally include guidance on the use of other antipsychotics.[2, 5, 9] There are well-documented safety concerns with the use of antipsychotics by seniors, particularly those with dementia.[5, 9–12] Antipsychotic use is associated with an increased risk of side effects, including sedation, a sudden drop in blood pressure, falls, fractures, stroke and death.[10–12]

Health Canada has released several warnings around the risks of using antipsychotics (not specific to but including risperidone) in seniors with dementia. The most recent, released in February 2015, restricted the approved use of risperidone to "the short-term symptomatic management of aggression or psychotic symptoms in patients with severe dementia of the Alzheimer type unresponsive to non-pharmacological approaches and when there is a risk of harm to self or others."[13] This was based on evidence of a higher risk of cerebrovascular side effects in patients with other types of dementia.[13–17]

This study uses drug claims data from the National Prescription Drug Utilization Information System (NPDUIS) Database to examine the use of antipsychotics among seniors (those age 65 and older) living in LTC facilities, as well as the concurrent use of antipsychotics with other psychotropic drugs, which further increases the risk of side effects. LTC resident assessment data from the Continuing Care Reporting System (CCRS) is combined with NPDUIS Database data to provide more detailed information about the characteristics of residents treated with antipsychotics, including diagnoses, behaviours and other functional measures.

Data sources

National Prescription Drug Utilization Information System Database

The NPDUIS Database contains drug claims data from Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia, and the First Nations and Inuit Health Branch (FNIHB) provincial and federal public drug programs. The NPDUIS Database data used in this analysis is from Prince Edward Island, New Brunswick, Ontario, Manitoba and British Columbia, the 5 jurisdictions for which claims can be identified as being submitted for LTC residents. The NPDUIS Database houses pan-Canadian information related to public drug program formularies, drug claims, policies and population statistics. It was designed to provide information that supports comparative analytical

and reporting requirements for the establishment of sound pharmaceutical policies and the effective management of Canada's public drug benefit programs. The NPDUIS Database includes claims accepted by public drug programs, either for reimbursement or toward a deductible.[i, ii]

Continuing Care Reporting System

CCRS contains standardized clinical and administrative information on continuing care in Canada. All facilities in Ontario, Alberta, British Columbia and Yukon participate in CCRS, while there is partial participation in Newfoundland and Labrador, Nova Scotia, New Brunswick, Manitoba and Saskatchewan. The database includes detailed clinical, functional and service information that identifies residents' preferences, needs and strengths, and it provides a snapshot of the services they use. At the clinical level, CCRS data guides front-line care planning and quality improvement, and supports analysis of resident risks and outcomes over time. At the management and policy-making level, the data is used to support planning, quality improvement, funding and accountability. Care teams assess LTC residents quarterly, using interRAI's Resident Assessment Instrument–Minimum Data Set 2.0© (RAI-MDS 2.0).

Methodology

For analysis using the NPDUIS Database,

- For P.E.I., New Brunswick, Manitoba and B.C., LTC facility residents were identified as those having claims accepted by drug programs designed to provide coverage to LTC facility residents.
- For Ontario, residents are flagged in the NPDUIS Database as living in an LTC facility.
- A resident was considered to be an antipsychotic user in a given year if he or she had at least 1 claim for an antipsychotic during that year.

In analysis using CCRS,

- A senior was considered to be an LTC facility resident in a given year if he or she had at least 1 assessment from an LTC facility in that year.
- A resident was considered to be an antipsychotic user in a given year if the person had at least 1 assessment in that year in which it was indicated that he or she had used an antipsychotic in the past 7 days.

For more details on the methodology used in this analysis, including definitions and limitations, see Appendix E.

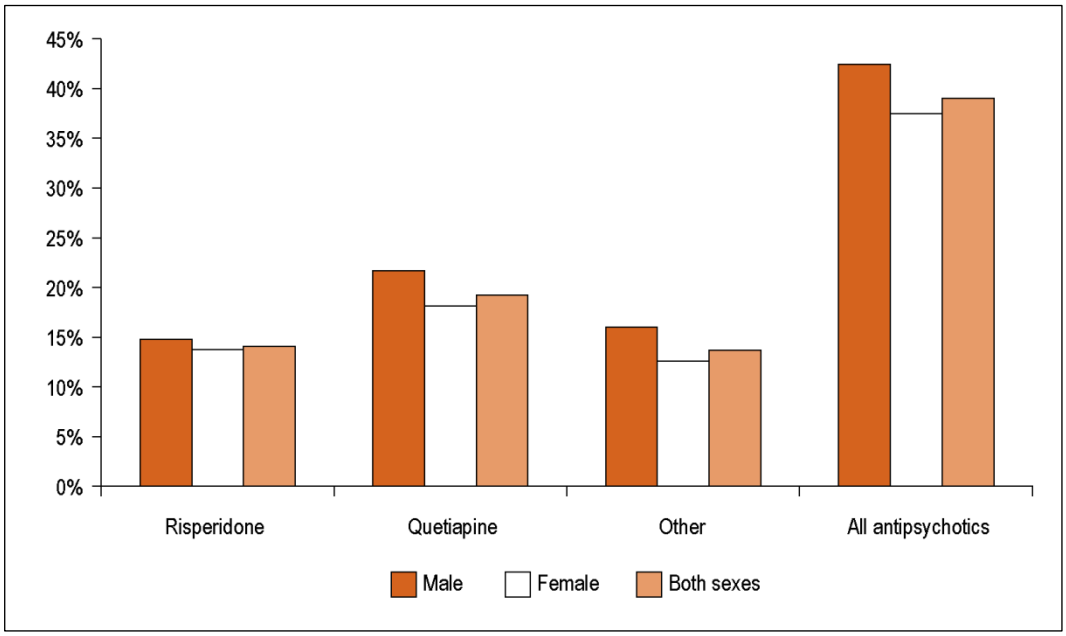
i. In Manitoba and Saskatchewan, this includes accepted claims for people who are eligible for coverage under a provincial drug program but have not submitted an application and, therefore, do not have a defined deductible.
ii. British Columbia data includes all drug claims processed for documentation under their drug information system, including those that were not accepted by or submitted to their public drug program.

Analysis

How many seniors in LTC facilities are using antipsychotics?

In 2014, 39.0% of seniors in LTC facilities had at least 1 claim for an antipsychotic (Figure 1), while almost one-quarter (22.4%) were chronic antipsychotic users (defined as having at least 2 claims and 180 days' supply, Appendix C). It is important to note that these measures include all antipsychotic use, regardless of reason for use, and that there are cases where antipsychotic use among LTC residents may be appropriate.[8] For example, CCRS data for 2014 showed that 19.9% of LTC residents taking antipsychotics experienced psychosis (Appendix B). CIHI estimated the rate of potentially inappropriate antipsychotic use among Canadian LTC residents (excluding residents with psychosis) at 30.3% in 2013–2014.[6]

Figure 1 Rate of use of antipsychotics among seniors living in a long-term care facility, by sex, selected jurisdictions,* 2014



Note

* 5 provinces submitting claims that can be identified as LTC facility data in the NPDUIS Database as of November 2015: Prince Edward Island, New Brunswick, Ontario, Manitoba and British Columbia.

Source

National Prescription Drug Utilization Information System Database, Canadian Institute for Health Information.

Antipsychotic use was higher among males (42.5%) than among females (37.5%). Men taking antipsychotics are at higher risk than women of developing a serious side effect (defined as a side effect that resulted in a hospitalization or death).[18, 19]

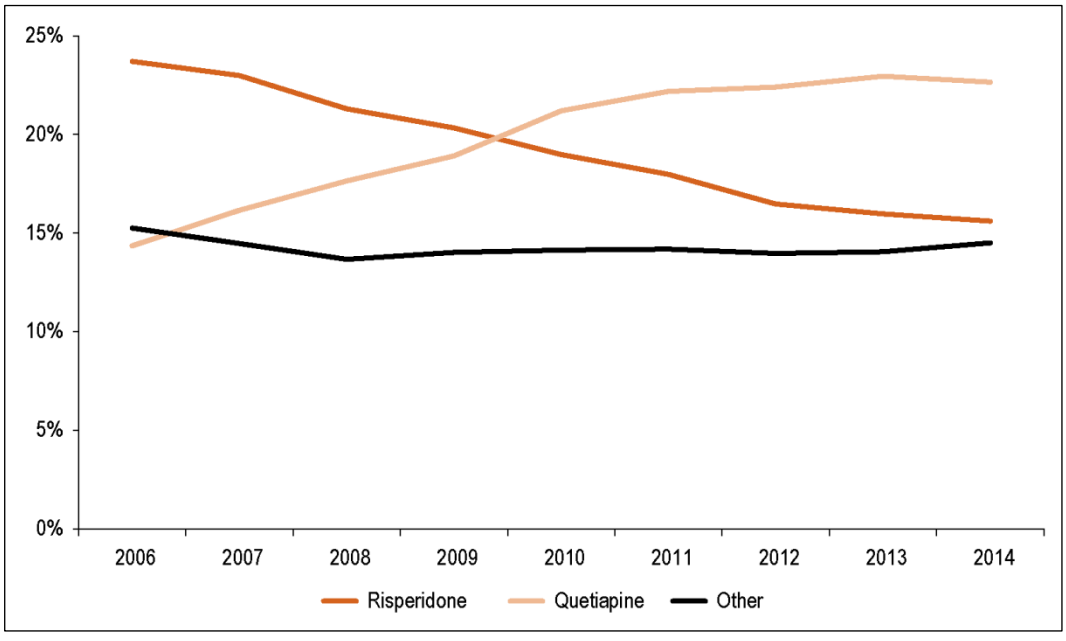
The rate of antipsychotic use decreased with age. Nearly half (48.4%) of seniors age 65 to 74 had a claim for at least 1 antipsychotic in 2014, compared with about one-third (35.1%) of seniors age 85 and older.

Which antipsychotics are seniors using most often?

In 2014, quetiapine was the most commonly used antipsychotic, used by 19.2% of seniors in LTC facilities, followed by risperidone, used by 14.1%. The use of olanzapine (5.4% of seniors in LTC facilities) and haloperidol (5.3% of seniors in LTC facilities) accounted for the majority of the "other antipsychotic use" category. Previous reports have found that quetiapine is often used to treat insomnia, for which it is neither approved nor recommended.[20–22] Analysis of a subset of the data from Manitoba and B.C. did not find a large difference in the prevalence of insomnia among seniors in LTC facilities using quetiapine (20.5%) and those using risperidone (20.1%); however, it is possible that in cases where insomnia was being controlled by either drug, it would not be recorded in the resident's assessment.

Between 2006 and 2014, the mix of antipsychotics used in LTC facilities changed significantly. The rate of risperidone use, based on data from 4 of the 5 provinces (excluding Ontario), decreased from 23.7% in 2006 to 15.6% in 2014, while the rate of use of quetiapine increased from 14.4% to 23.0% in 2013, before decreasing to 22.7% in 2014 (Figure 2). The same trends were observed in risperidone and quetiapine use in Ontario for the 4 years where data was available.

Figure 2 Rate of use of antipsychotics among seniors living in a long-term care facility, selected jurisdictions,* 2006 to 2014



Note

* 4 provinces submitting claims that can be identified as LTC facility data in the NPDUIS Database as of November 2015: Prince Edward Island, New Brunswick, Manitoba and British Columbia. Ontario data is not included because it was not submitted to the NPDUIS Database prior to 2010.

Source

National Prescription Drug Utilization Information System Database, Canadian Institute for Health Information.

Health Canada has issued warnings about the use of both risperidone and quetiapine in seniors with dementia. If quetiapine is being predominantly used to treat insomnia, this may explain why these warnings impacted the use of 1 drug and not the other. The significant increase in quetiapine use relative to other antipsychotics in recent years has been observed in all age groups and is not unique to LTC facilities.[23]

How does resident function and behaviour impact antipsychotic use?

Data from CIHI's CCRS for 2014 shows that antipsychotic use was higher among residents with severe cognitive impairment (36.5%) compared with those with mild and moderate levels of impairment (28.7%) and those with no impairment (15.6%, Table 1).

Table 1 Rate of antipsychotic use among seniors in LTC facilities, by Cognitive Performance Scale category, selected jurisdictions,* 2014

	Fully/Relatively Intact (95% confidence interval)	Mild/Moderate Impairment (95% confidence interval)	Severe Impairment (95% confidence interval)
Rate of antipsychotic use	15.6% (15.1%–16.1%)	28.7% (28.4%–29.0%)	36.5% (36.0%–37.0%)

Note

* 9 provinces/territories submitting data to CCRS as of November 2015: Newfoundland and Labrador, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia and Yukon. Only partial coverage is available for Newfoundland and Labrador, Nova Scotia, New Brunswick, Manitoba and Saskatchewan.

Source

Continuing Care Reporting System, Canadian Institute for Health Information.

Antipsychotic use also increased with the level of aggression. More than half (51.3%) of seniors with highly aggressive behaviour were taking antipsychotics, compared with 34.6% of seniors with moderate aggression and 20.2% of seniors showing no aggression (Table 2). The use of antipsychotics among residents without behavioural symptoms may suggest use contrary to treatment guidelines, although a resident may not be exhibiting aggressive behaviours because they are taking an antipsychotic. However, the rate of use among seniors exhibiting highly aggressive behaviours suggests that even in the most severe cases, where residents or caregivers may be at risk of harm, non-drug treatment options are being considered.

Table 2 Rate of antipsychotic use among seniors in LTC facilities, by Aggressive Behaviour Scale category, selected jurisdictions,* 2014

	No Signs of Aggression (95% confidence interval)	Mild to Moderate Signs of Aggression (95% confidence interval)	More Severe Aggression (95% confidence interval)
Rate of antipsychotic use	20.2% (19.9%–20.5%)	34.6% (34.2%–35.1%)	51.3% (50.5%–52.1%)

Note

* 9 provinces/territories submitting data to CCRS as of November 2015: Newfoundland and Labrador, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia and Yukon. Only partial coverage is available for Newfoundland and Labrador, Nova Scotia, New Brunswick, Manitoba and Saskatchewan.

Source

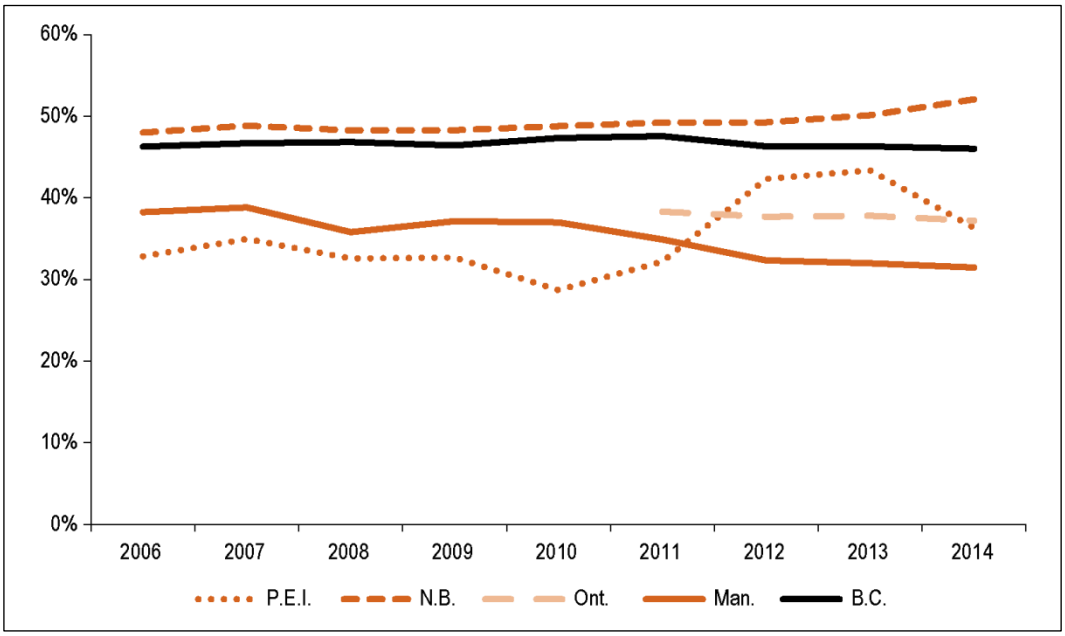
Continuing Care Reporting System, Canadian Institute for Health Information.

It is important to note that rates in this section were measured as a percentage of assessments rather than a percentage of residents, as in other sections. As a result, a resident is counted once for each assessment he or she had during the year and may appear in multiple categories if his or her function, behaviour or antipsychotic use changed during the year.

How has antipsychotic use in LTC facilities changed over time?

Trends in the rate of antipsychotic use varied across provinces, with the rate decreasing slightly in B.C. and Ontario, while increasing in New Brunswick and P.E.I. The most notable changes in antipsychotic use occurred in Manitoba, where it decreased from 38.2% to 31.5%, and in P.E.I., where it increased from 32.8% to 43.4% in 2013 before decreasing to 36.3% in 2014 (Figure 3).

Figure 3 Rate of use of antipsychotics among seniors living in a long-term care facility, by province,* 2006 to 2014



Note

* 5 provinces submitting claims that can be identified as LTC facility data in the NPDUIS Database as of November 2015: Prince Edward Island, New Brunswick, Ontario, Manitoba and British Columbia.

Source

National Prescription Drug Utilization Information System Database, Canadian Institute for Health Information.

The decline in Manitoba was due at least in part to initiatives implemented by the Winnipeg Regional Health Authority (RHA) to reduce inappropriate antipsychotic use in LTC facilities after a review of resident assessment data revealed significant variation across facilities, and an opportunity to identify best practices and to share lessons learned.[21]

First piloted in 2009, and adopted across the entire region in 2011, Winnipeg RHA initiatives included encouraging staff to spend some time each week discussing resident care, and uptake of a program called P.I.E.C.E.S.™ (Physical, Intellectual, Emotional, Capabilities, Environment and Social).[20–22] The program stresses creative solutions to managing dementia behaviours,

with medication to be used only as a last resort. In 1 home, the number of residents taking antipsychotics dropped by 25% within 1 month of implementing the P.I.E.C.E.S.™ program without an observed increase in behavioural symptoms or the use of physical restraints.[20–22]

The Canadian Foundation for Healthcare Improvement (CFHI) is currently supporting the adoption of similar initiatives in the Reducing Antipsychotic Medication Use in Long-Term Care collaborative in several health care organizations across Canada.[24] Evidence suggests that although the reduction of antipsychotic use in LTC facilities can be challenging, the behavioural symptoms of dementia can be managed without the use of antipsychotics, and in many cases residents can be taken off antipsychotics without a negative impact on their behaviour.[20–22, 25, 26]

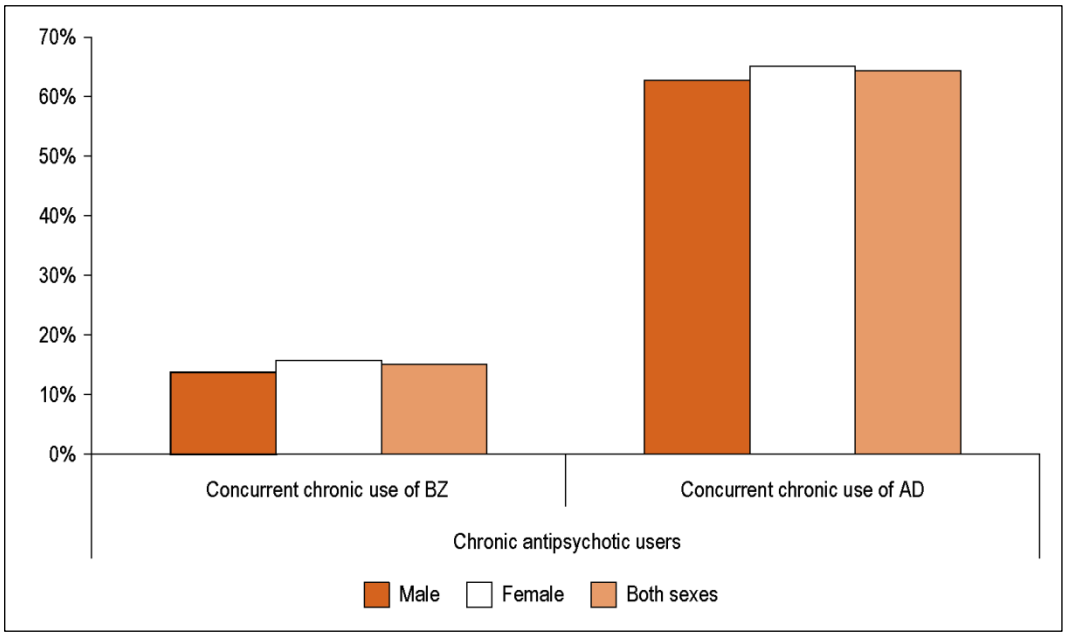
It should be noted that the CFHI initiative began in September 2014, so any impact will not be reflected here. For example, because the rate of use is measured as the proportion of LTC residents who had a claim at any point during the year, any resident who stopped using an antipsychotic partway through the year would still be counted as having used antipsychotics, so that decrease in use would not be measured until the following year.

How many seniors concurrently use an antipsychotic and another psychotropic drug?

Each commonly used class of psychotropic drugs (antipsychotics, antidepressants, and benzodiazepines and related drugs) contains chemicals that are considered potentially inappropriate for use by seniors.[27] Psychotropic drugs are associated with a high number of side effects among seniors — including falls.[10] The use of more than 1 psychotropic drug increases the chances of these side effects.[28–30] Benzodiazepines are commonly used to treat a range of conditions, including anxiety, agitation and insomnia.

In 2014, nearly two-thirds (64.3%, Figure 4) of seniors who were chronic users of an antipsychotic were also chronic users of an antidepressant. Roughly 1 in 6 (15.0%) chronic antipsychotic users were also chronic users of a benzodiazepine. Concurrent use (i.e., the person was defined as a chronic user for both drug classes within the same year) of antipsychotics with both benzodiazepines and antidepressants was higher among women than men.

Figure 4 Concurrent chronic use of antipsychotics with chronic use of benzodiazepines and antidepressants by seniors in LTC facilities, by sex, selected jurisdictions,* 2014



Notes

* 5 provinces submitting claims that can be identified as LTC facility data in the NPDUIS Database as of November 2015: Prince Edward Island, New Brunswick, Ontario, Manitoba and British Columbia.

BZ = Benzodiazepines and related drugs.

AD = Antidepressants.

Source

National Prescription Drug Utilization Information System Database, Canadian Institute for Health Information.

There was no difference in concurrent use of benzodiazepines and related drugs among seniors taking risperidone and those taking quetiapine. If a significant proportion of quetiapine users were being prescribed the drug for insomnia, a lower rate of use of benzodiazepines might be expected, as they are also commonly prescribed for insomnia.

Summary

There are well-documented safety concerns about the use of antipsychotics by seniors, particularly those with dementia.[5, 9–12] Antipsychotic use is associated with an increased risk of side effects, including sedation, a sudden drop in blood pressure, falls, fractures, stroke and death.[10–12]

This study uses drug claims data from the NPDUIS Database to examine the use of antipsychotics among seniors (those age 65 and older) living in LTC facilities. LTC resident assessment data from CCRS was used to provide more detailed information about the characteristics of residents treated with antipsychotics, including diagnoses, behaviours and other functional measures.

In 2014, 39.0% of seniors in LTC facilities had at least 1 claim for an antipsychotic, while almost one-quarter (22.4%) were chronic users of antipsychotic medication. It is important to note that these measures include all antipsychotic use, regardless of reason for use, and that there are cases where antipsychotic use among LTC residents may be appropriate.[8]

Antipsychotic use was much higher among residents with severe cognitive impairment and those exhibiting highly aggressive behaviour. The use of antipsychotics among residents without behavioural symptoms (20.2%) may suggest use contrary to treatment guidelines, although a resident may not be exhibiting aggressive behaviours because they are taking an antipsychotic. However, the rate of use among seniors exhibiting highly aggressive behaviours (51.3%) suggests that even in the most severe cases, where residents or caregivers may be at risk of harm, non-drug treatment options are being considered.

Antipsychotic use was higher among males (42.5%) than among females (37.5%). Men taking antipsychotics are at higher risk than women of developing a serious side effect (defined as a side effect that resulted in a hospitalization or death).[18, 19]

Quetiapine was the most commonly used antipsychotic among seniors in LTC facilities, followed by risperidone. Risperidone is the only antipsychotic approved for use in the treatment of symptoms of dementia in Canada, although treatment guidelines generally include guidance on the use of other antipsychotics. Previous reports have suggested that quetiapine use has increased as a result of its increased use to treat insomnia, for which it is neither approved nor recommended.[20–22] However, there was no significant difference in the prevalence of insomnia among residents taking quetiapine and those taking risperidone.

Trends in the rate of antipsychotic use varied across provinces. The most notable change occurred in Manitoba, where antipsychotic use decreased from 38.2% in 2006 to 31.5% in 2014. This was due, in part, to initiatives implemented by the Winnipeg RHA to reduce inappropriate antipsychotic use in LTC facilities, first piloted in 2009. The CFHI is currently supporting several health care organizations across Canada to adopt similar initiatives in the Reducing Antipsychotic Medication Use in Long-Term Care collaborative.[24]

Appendix A

Table A1 Proportion of assessments for antipsychotic users and all seniors living in LTC facilities, by CPS and ABS category, selected jurisdictions,* 2014

Scale	Category	Antipsychotic users	All LTC
Cognitive Performance Scale (CPS)	Fully/Relatively Intact	10.6%	19.3%
	Mild to Moderate Impairment	51.5%	51.1%
	Severe Impairment	37.9%	29.5%
	All CPS categories	**100.0%**	**100.0%**
Aggressive Behaviour Scale (ABS)	No Signs of Aggression	40.8%	57.4%
	Mild to Moderate Signs of Aggression	36.7%	30.2%
	More Severe Aggression	22.5%	12.5%
	All ABS categories	**100.0%**	**100.0%**

Note

* 9 provinces/territories submitting data in CCRS as of November 2015: Newfoundland and Labrador, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia and Yukon. Only partial coverage is available for Newfoundland and Labrador, Nova Scotia, New Brunswick, Manitoba and Saskatchewan.

Source

Continuing Care Reporting System, Canadian Institute for Health Information.

Appendix B

Table B1 Proportion of antipsychotic users and all seniors living in LTC facilities with selected diagnoses/symptoms, selected jurisdictions,* 2014

	Antipsychotic users	All LTC
Dementia (excl. Alzheimer disease)	66.3%	56.7%
Alzheimer disease	22.0%	16.8%
Dementia (incl. Alzheimer)	79.4%	66.5%
Schizophrenia	6.5%	2.6%
Huntington chorea	0.3%	0.1%
Delusions or hallucinations	14.6%	8.9%
Psychosis (schizophrenia, Huntington chorea, delusions or hallucinations)	19.9%	11.1%
Bipolar disorder	4.5%	2.1%
Depression	37.1%	32.8%
Anxiety	13.4%	10.0%
Insomnia	30.4%	25.2%

Note

* 9 provinces/territories submitting data in CCRS as of November 2015: Newfoundland and Labrador, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia and Yukon. Only partial coverage is available for Newfoundland and Labrador, Nova Scotia, New Brunswick, Manitoba and Saskatchewan.

Source

Continuing Care Reporting System, Canadian Institute for Health Information.

Appendix C

Table C1 Rate of use of antipsychotics among seniors living in a long-term care facility, by sex and age group, selected jurisdictions,* 2014

Sex	Age group	Risperidone		Quetiapine		Other antipsychotics		All antipsychotics	
		Any use	Chronic use	Any use	Chronic use	Any use	Chronic use	Any use	Chronic use
Male	65–74	17.1%	10.9%	22.6%	13.7%	24.5%	12.6%	50.1%	32.9%
	75–84	16.0%	8.5%	24.3%	13.6%	16.9%	5.9%	46.0%	26.2%
	85+	13.1%	6.3%	19.4%	9.7%	12.5%	2.8%	37.3%	18.0%
	65+	**14.8%**	**7.9%**	**21.7%**	**11.7%**	**16.0%**	**5.5%**	**42.5%**	**23.4%**
Female	65–74	16.4%	10.3%	21.7%	13.9%	21.8%	12.6%	46.8%	32.1%
	75–84	15.6%	9.0%	20.8%	12.7%	15.2%	6.7%	42.6%	26.6%
	85+	12.7%	6.8%	16.7%	9.6%	10.5%	3.3%	34.3%	19.0%
	65+	**13.7%**	**7.6%**	**18.2%**	**10.7%**	**12.6%**	**4.9%**	**37.5%**	**22.0%**
Both sexes	**65+**	**14.1%**	**7.7%**	**19.2%**	**11.1%**	**13.7%**	**5.1%**	**39.0%**	**22.4%**

Note

* 5 provinces submitting claims that can be identified as LTC facility data in the NPDUIS Database as of November 2015: Prince Edward Island, New Brunswick, Ontario, Manitoba and British Columbia.

Source

National Prescription Drug Utilization Information System Database, Canadian Institute for Health Information.

Appendix D

Table D1 Concurrent chronic use of antipsychotics with chronic use of benzodiazepines and antidepressants by seniors in LTC facilities, by sex and age group, selected jurisdictions,* 2014

Sex	Age group	Risperidone		Quetiapine		Other antipsychotics		All antipsychotics	
		BZ	AD	BZ	AD	BZ	AD	BZ	AD
Male	65–74	16.4%	65.6%	18.5%	67.1%	22.1%	60.4%	18.3%	64.1%
	75–84	11.4%	65.5%	13.8%	64.3%	14.7%	64.0%	13.1%	64.2%
	85+	12.0%	59.9%	10.7%	60.4%	12.1%	61.5%	11.2%	60.4%
	65+	**12.7%**	**63.4%**	**13.5%**	**63.3%**	**16.8%**	**62.0%**	**13.6%**	**62.8%**
Female	65–74	20.3%	66.7%	21.1%	70.1%	24.4%	64.9%	21.4%	68.0%
	75–84	16.2%	65.8%	16.3%	69.3%	18.2%	66.9%	16.3%	67.5%
	85+	13.1%	60.9%	14.9%	63.5%	14.7%	67.4%	14.1%	63.2%
	65+	**14.8%**	**63.0%**	**16.0%**	**65.9%**	**17.9%**	**66.7%**	**15.6%**	**65.1%**
Both sexes	**65+**	**14.2%**	**63.1%**	**15.1%**	**65.1%**	**17.6%**	**65.1%**	**15.0%**	**64.3%**

Notes

* 5 provinces submitting claims that can be identified as LTC facility data in the NPDUIS Database as of November 2015: Prince Edward Island, New Brunswick, Ontario, Manitoba and British Columbia.

BZ = Benzodiazepines and related drugs.

AD = Antidepressants.

Source

National Prescription Drug Utilization Information System Database, Canadian Institute for Health Information.

Appendix E: Methodology

Definitions

1. **Chronic drug use:** A person having at least 2 claims and 180 days' supply for a given drug class in a given year.
2. **Claimants:** Seniors who had at least 1 claim for any drug accepted by a public drug program, either for reimbursement or toward a deductible.
3. **Drug class:** A subgroup of chemicals classified by the World Health Organization (WHO) at the fourth level of the Anatomical Therapeutic Chemical (ATC) classification system, 2013 version. At this level, subgroups are, in theory, regarded as groups of different chemicals that work in the same way to treat similar medical conditions.
4. **Resident:** An individual living in a long-term care facility (see the section Long-term care residents, below, for more detail).

Drugs of interest

Antipsychotics were identified by the drug identification numbers assigned by Health Canada and by the WHO ATC code N05A — Antipsychotics. All dosage, forms and strengths of these chemicals that were available in Canada during the study period were included, with the exception of lithium and prochlorperazine (ATC codes N05AN and N05AB04, respectively). Lithium and prochlorperazine were excluded because they are not used to treat behavioural and psychological symptoms of dementia in elderly persons. Lithium is used to treat the manic episodes of manic depression and prochloperazine is used to treat severe nausea and vomiting.

Benzodiazepines were identified by the ATC codes N05BA — Benzodiazepines (under the broader class of anxiolytics), N05CD — Benzodiazepines (under the broader class of sedatives and hypnotics) and N05CF — Benzodiazepine-related drugs, while antidepressants were identified by the ATC code N06A — Antidepressants. All dosage forms and strengths of these chemicals that were available in Canada during the study period were included, with the exception of clobazam (ATC code N05BA09). Clobazam was excluded because, unlike other benzodiazepines, it is used primarily for epileptic seizures.

Antipsychotic use

The NPDUIS Database contains information on the specific chemical, strength and form of antipsychotic that was used, while CCRS collects information at the drug class level (i.e., where a resident is identified as using an antipsychotic or not).

The NPDUIS Database contains all claims paid through the public drug programs, while CCRS contains information taken from a quarterly assessment where drug use is captured for the 7 days leading up to the assessment date. In analyses using the NPDUIS Database, a resident was considered to be an antipsychotic user in a given year if he or she had at least 1 claim for an antipsychotic during that year.

In analyses using CCRS, a resident was considered to be an antipsychotic user in a given year if the person had at least 1 assessment during a given year where it was indicated that he or she had used an antipsychotic in the past 7 days.

As a result of the difference in observation periods, CCRS has a lower annual rate of use of antipsychotics among residents of LTC facilities (34.6%) compared with the NPDUIS Database (39.0%). For example, if a LTC resident took an antipsychotic 30 days before the CCRS assessment was completed, he or she would be identified as an antipsychotic user in the NPDUIS Database but not in CCRS.

Long-term care residents

For analyses using the NPDUIS Database,

- For P.E.I., New Brunswick, Manitoba and B.C., LTC facility residents were identified as those having claims accepted by drug programs designed to provide coverage to LTC facility residents.
- For Ontario, residents are flagged in the NPDUIS Database as those living in an LTC facility.

For analyses using CCRS, a senior was considered to be an LTC facility resident in a given year if he or she had at least 1 assessment from an LTC facility in that year.

Aggressive Behaviour Scale

The Aggressive Behaviour Scale (ABS) is derived from the RAI-MDS 2.0 assessment items regarding the resident's behavioural symptoms. A score is assigned based on the frequency of a resident's

- Use of verbal or physical abuse;
- Use of socially inappropriate or disruptive behaviour; and
- Resistance to care.

For analysis, scores are added and assigned to 3 groups: No Signs of Aggression; Mild to Moderate Signs of Aggression; and More Severe Aggression (Appendix A).

Cognitive Performance Scale

The Cognitive Performance Scale (CPS) is derived from the RAI-MDS 2.0 assessment items regarding the resident's cognitive patterns. A score is assigned based on a resident's consciousness, memory, decision-making, ability to communicate and eating.

For analysis, scores are added and assigned to 3 groups: Fully/Relatively Intact; Mild/Moderate Impairment; and Severe Impairment (Appendix A).

Limitations

It should be noted that in P.E.I., only seniors whose long-term care is subsidized by the government can be identified as LTC facility residents. It is expected that this will increase the rate of use among seniors living in the community in P.E.I., though it is unclear what effect this will have on the rate of use among LTC facility residents. Because of P.E.I.'s relatively small population, it is not expected that this will have a significant effect on the overall rates of use in the 5 provinces. In Manitoba, residents of LTC facilities that obtain their drugs from hospital-based pharmacies are not included in this analysis, as data from hospital-based pharmacies is not available in the NPDUIS Database.

As claims data indicates only that a drug was dispensed and not that it was taken, it may not always reflect utilization. A patient may take all, some or none of a dispensed prescription. Antipsychotics and benzodiazepines may be prescribed on an as needed basis for patients, creating some uncertainty about whether a patient has taken some or all of what has been dispensed. In cases where drugs were dispensed but not taken, rates of use may be overestimated.

The NPDUIS Database does not include information on claims that were not accepted by the public drug program (i.e., claims paid by private insurers or out of pocket by individuals). Therefore, rates of use may be underestimated. However, for seniors, this underestimation applies mainly to drugs not covered by public drug programs and to those with restrictive coverage policies and is not expected to be a significant limitation of this analysis.

The NPDUIS Database does not contain information regarding diagnoses or the conditions for which prescriptions were written.

CCRS captures drug use over 4 7-day periods during the course of the year and therefore may not capture all antipsychotic use. Analysis of cross-sectional data from CCRS does not assess the causal relationship between the data elements being examined. When examining the use of antipsychotics by level of aggressive behaviour using a single assessment, it is not possible to determine whether a resident's behaviour was impacted by his or her use of an antipsychotic, or vice versa. For example, it is not possible to determine whether a resident using an antipsychotic while not exhibiting aggressive behaviour was prescribed an antipsychotic without exhibiting this behaviour, or whether the person is not exhibiting aggressive behaviours because he or she is taking an antipsychotic.

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