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Antipsychotic Use in Seniors: An Analysis Focusing on Drug Claims, 2001 to 2007

Introduction

Antipsychotics have been used to treat schizophrenia and bipolar disorders since the 1970s. Typical or conventional antipsychotics were first approved in the 1970s, followed by atypical agents in the 1990s.

Antipsychotics are used less frequently to treat schizophrenia and bipolar disorders in the elderly due to the lower prevalence of these disorders in this population.¹ The majority of antipsychotic use in the elderly is to treat behavioural and psychological symptoms of dementia, including delusions, aggression and agitation.^{1, 2} These symptoms affect more than half of patients with Alzheimer's disease and related dementias, and can result in harm to both patients and their caregivers.^{3, 4}

The benefits and risks of antipsychotic use in dementia patients have been examined in several studies. Modest benefits on agitation and psychosis outcomes have been reported, and atypical agents are considered to be at least as effective as typical agents, with a lower risk of some adverse effects.³⁻⁷ Most studies have focused on antipsychotic use for up to 12 weeks, and there is little information available on the efficacy of longer treatment courses.⁶

New safety information on antipsychotics began to emerge in 2000. Warnings issued by the manufacturers of thioridazine, risperidone and olanzapine identified new risks associated with the use of their products. Studies showed that the use of antipsychotics (both typical and atypical) in elderly patients with dementia may be associated with a small increase in the risk of death.⁷⁻¹² In response to this new information, Health Canada and the United States Food and Drug Administration (FDA) issued regulatory warnings.¹³⁻¹⁷ The FDA also required antipsychotics to be packaged with boxed warnings describing the risks associated with antipsychotic use in the treatment of dementia.¹⁶

Evidence-based reviews and guidelines conclude that antipsychotics can be beneficial in treating behavioural and psychological symptoms of dementia, but that their use is associated with increased risks of serious side effects.^{3-6, 17} Guidelines recommend that the benefits be weighed against the risks when considering treatment with antipsychotics.^{3, 4, 6, 17}

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Studies have shown an increase in antipsychotic use in Canada over the past 20 years, including the period following regulatory warnings.^{1, 18, 19} In 2003, a population-based study of Manitoba seniors found rates of antipsychotic use of 4.1% among male seniors and 5.8% among female seniors.¹⁸ A similar study of Ontario seniors found a rate of antipsychotic use of 3.0% in 2002.¹ Increases in antipsychotic use have also been reported in patients in long-term care facilities, where higher rates have been reported.^{20–22} Two studies using data from long-term care facilities reported rates of antipsychotic use of 30.6% in Saskatchewan in 2004 and 32.4% in Ontario in 2003.^{21, 22}

The purpose of this analysis is to look at trends in the use of antipsychotics in seniors (defined in this analysis as people 65 or older) between 2001–2002 and 2006–2007, using drug claims data from public drug programs in Alberta, Saskatchewan, Manitoba, New Brunswick, Nova Scotia and Prince Edward Island. This analysis will look at trends in use by age and sex, and compare the use of typical and atypical agents. Additional analyses will focus on atypical antipsychotics, including use and average daily dose by chemical, use in community and long-term care settings, as well as use among seniors with and without claims for anti-dementia drugs.

Methods

Drugs of Interest

Antipsychotic products were identified by the drug identification numbers (DINs) assigned by Health Canada, and by the World Health Organization Anatomical Therapeutic Chemical (ATC) classification code N05A—Antipsychotics. All dosage forms and strengths of these chemicals available in Canada during the study period, with the exception of lithium (ATC code N05AN), were included. Lithium was excluded because it is not used to treat behavioural and psychological symptoms of dementia in the elderly.

Products identified as antipsychotics were further classified as either atypical or typical antipsychotics. Introduced roughly 20 years after typical antipsychotics, atypical agents are used for the same indications, and have been shown to be at least as effective as typical agents, with a lower risk of some adverse effects.⁷ Products assigned ATC codes N05AH02—clozapine, N05AH03—olanzapine, N05AH04—quetiapine or N05AX08—risperidone were classified as atypical; all other antipsychotic products were classified as typical. Of the four atypical agents available in Canada during the study period, only risperidone was approved for dementia-related indications.²³ Two other atypical agents, ziprasidone and paliperidone, were excluded as they were not available in Canada until after the study period.

The use of cholinesterase inhibitors was used as a surrogate for the diagnosis of dementia. These products were identified by DIN and by the ATC code N06DA—Anticholinesterases. Although there are other classes of drugs used to treat dementia, in this analysis, the term “anti-dementia drugs” refers specifically to cholinesterase inhibitors.

NPDUIS Database

The drug claims data used in this analysis come from the National Prescription Drug Utilization Information System (NPDUIS) Database, as submitted by the Alberta, Saskatchewan, Manitoba, New Brunswick, Nova Scotia and Prince Edward Island provincial public drug programs. The NPDUIS Database houses pan-Canadian information related to public program formularies, drug claims, policies and population statistics. It was designed to provide information that supports accurate, timely and comparative analytic 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 Claims are included regardless of whether or not the patient actually used the drugs.

The NPDUIS Database does not include information regarding the following:

- Prescriptions that were written but never dispensed;
- Prescriptions that were dispensed but for which the associated drug costs were not submitted to, or not accepted by, the public drug programs; or
- Diagnoses or conditions for which prescriptions were written.

Calculation of Average Daily Dose

Average daily dose (ADD) was calculated for the three most commonly used atypical antipsychotics (olanzapine, quetiapine and risperidone). This analysis was based on claims for tablets only, due to known inconsistencies in the reporting of quantity units for products like liquids.²⁴ Claims for tablet forms of these three chemicals accounted for 97.7% of all atypical antipsychotic claims.

The dispensed dose for each claim was calculated as the quantity dispensed (assumed to be measured in the number of tablets) multiplied by the strength of the product. Claims with quantities of either zero, or greater than 365 tablets were excluded (roughly 0.1% of all claims). The expected duration of each claim was then calculated as the difference between its service date and the service date of the next claim for the same patient and chemical. Each patient's last claim for each chemical, as well as cases where the difference between two adjacent claims for the same patient and chemical was greater than 365 days, were excluded (6.0% of all claims).

Claim-level dose and duration were then summed at the fiscal year and chemical level. Average daily dose for each fiscal year and chemical was calculated as the total dose divided by the total duration for each group. Because duration was calculated across

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.

years in some cases, average daily dose for 2006–2007 was not reported, as duration could not be calculated in the same fashion (there was no “next” year to draw claims from). Claims from 2006–2007 were included in the analysis, however, as they were used to calculate duration for claims from 2005–2006, where applicable.

Data Comparability

Age-Standardization

Provincial rates were age-standardized using a direct method of standardization based on the October 1, 2006, Canadian senior population. The age groups used for standardization were 65 to 74, 75 to 84 and 85 and older.ⁱⁱ

Drug Plan Comparison

Although public drug coverage is available to seniors (people 65 and older) in all six provinces included in the analysis, each of the drug plans is designed differently. These differences may impact drug utilization within the plans and, in turn, the claims submitted to the NPDUIS Database. One main difference is that seniors in Manitoba and Saskatchewan are covered under universal drug plans, offered to residents of all ages, whereas Alberta, New Brunswick, Nova Scotia and P.E.I. all have drug plans designed specifically for seniors. There are also other differences, such as how much a senior is required to pay for drugs through premiums, deductibles or co-payments. Seniors not covered by the publicly funded drug plan may have private drug plan coverage or pay out of pocket.

Common to all six provinces, seniors covered by provincial workers’ compensation boards or federal drug programs are not eligible for coverage under provincial drug programs. Federal drug programs include those delivered by:

- The Canadian Forces;
- The Correctional Service of Canada;
- The First Nations and Inuit Health Branch;
- The Royal Canadian Mounted Police; and
- Veterans Affairs Canada.

Further information about public drug programs in Canada can be found in the *NPDUIS Plan Information Document*, available at www.cihi.ca/drugs.

ii. Population data come from Statistics Canada, Demography Division, Special Tabulation, June 2007. The population estimates for 2000–2001 to 2002–2003 are considered final, while interim population estimates were used for 2003–2004 to 2006–2007.

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Formulary Comparison

Differences in the coverage of drugs on provincial formularies can lead to differences in drug utilization and are identified to provide context when conducting interprovincial comparisons. This comparison describes the formulary coverage of antipsychotics and cholinesterase inhibitors as of March 31, 2007, the end of the study period.

Overall, the coverage of typical antipsychotics is similar across all six jurisdictions, with the most common agents listed as full benefits. There were some differences in the coverage of atypical antipsychotics, which were listed as full benefits in Alberta and Manitoba, and as both full and restricted benefits in the other four provinces. The three most commonly used atypical agents (olanzapine, quetiapine and risperidone) are covered in all provinces.

Olanzapine is covered as a full benefit in Alberta and Manitoba. In the other four provinces, a physician must submit a patient-specific request to obtain coverage, and coverage is restricted to the treatment of schizophrenia and related psychotic disorders, or for the treatment of mania or bipolar disorder where other treatments have failed (treatment failure is not a criterion in P.E.I.). In New Brunswick, prescriptions written by psychiatrists do not require a written request.

Quetiapine and risperidone are covered as full benefits in all provinces except for New Brunswick and P.E.I. (low-strength risperidone is a full benefit in New Brunswick). In these two provinces, physicians must make a written request for a patient to be covered, and coverage is restricted to the treatment of schizophrenia and related psychotic disorders, and the management of symptoms of dementia. In New Brunswick, prescriptions written by psychiatrists do not require a written request.

Cholinesterase inhibitors are listed as restricted benefits in all six jurisdictions. The three most commonly used chemicals (donepezil, rivastigmine and galantamine) are covered in all provinces.

Although differences in formulary coverage do not appear to have contributed significantly to the differences in antipsychotic use between provinces, without further analysis, it is unclear what effect, if any, these differences may have had. Several other factors can influence drug utilization, such as the health of the population and prescribing patterns of physicians.

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Definitions

1. **Claimants** refers to seniors (people 65 or older) with at least one claim accepted by public drug programs, either for reimbursement or toward a deductible.ⁱⁱⁱ
2. **Antipsychotic users** refers to seniors (people 65 or older) with at least one claim for an antipsychotic product during a given year.
3. **Atypical antipsychotic users** refers to seniors (people 65 or older) with at least one claim for clozapine, olanzapine, quetiapine or risperidone during a given year.^{iv}
4. **Typical antipsychotic users** refers to seniors (people 65 or older) with at least one claim for an antipsychotic other than clozapine, olanzapine, quetiapine or risperidone during a given year.^{iv}
5. **Anti-dementia users** refers to seniors (people 65 or older) with at least one claim for a cholinesterase inhibitor during a given year.

Limitations

Since the NPDUIS Database does not contain information regarding diagnoses or the conditions for which prescriptions were written, it is not known whether the antipsychotic was used for schizophrenia, bipolar disorder, the treatment of behavioural and psychological symptoms of dementia or another indication. The use of cholinesterase inhibitors, a class of anti-dementia drugs, was used as a surrogate for a diagnosis of dementia, though it is recognized that only a portion of seniors with dementia are treated with these drugs. In 2006–2007, 1.9% of senior claimants had a claim for a cholinesterase inhibitor, which represents roughly a quarter of the approximately 8% of seniors in Canada estimated to be affected by dementia.²⁶

Pan-Canadian claims-level data for those younger than 65 were unavailable for this study. However, using NPDUIS Database data from Saskatchewan and Manitoba, the rate of antipsychotic use among those younger than 65 was found to be 2.6%, less than half of the rate among seniors in those two provinces (5.8%).

Profile of Seniors With Drug Claims

In 2006–2007, there were 356,290 seniors (people 65 or older) living in Alberta, 159,986 in Manitoba, 147,268 in Saskatchewan, 106,995 in New Brunswick, 136,600 in Nova Scotia and 19,993 in P.E.I.²⁵

The proportion of seniors who had drug claims accepted by the public drug programs in these provinces varied from 58.2% in New Brunswick to 90.8% in Manitoba (see Appendix A). The lower percentages in New Brunswick (58.2%) and Nova Scotia

iii. In Manitoba and Saskatchewan, this includes seniors with accepted claims who are eligible for coverage under a provincial drug program but have not submitted an application and, therefore, do not have a defined deductible.

iv. See Drugs of Interest section for more detail.

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(69.3%) are likely related to plan design. Seniors not covered by the publicly funded drug plan may have a private drug plan or pay out of pocket. It should be noted that the total population figures include seniors who are not eligible for provincial coverage, such as those covered under federal drug plans. It should also be noted that, whereas total population figures are meant to reflect the population at a single point in time, claimant population figures reflect the number of people who made claims throughout a given year.

There was variation in the age distribution of senior claimant populations of the six provinces. Saskatchewan had the highest proportion of claimants older than 85, at 17.6%, while Alberta had the smallest proportion of claimants older than 85, at 11.7% (see Appendix A).

Analysis

Overview of Antipsychotic Claim Trends

The following analysis examines trends in the use of both typical and atypical antipsychotics in seniors (people 65 or older) covered by public drug programs in Alberta, Saskatchewan, Manitoba, New Brunswick, Nova Scotia and P.E.I. between 2001–2002 and 2006–2007. The analysis looks at trends in use by age and sex, the use of typical and atypical agents and the use of atypical antipsychotics among nursing home residents and patients with claims for anti-dementia drugs.

Antipsychotic Expenditures

Total drug program expenditures on antipsychotics based on paid claims in five provinces^v increased at an average annual rate of 13.1% over the study period, from almost \$9.4 million in 2001–2002 to more than \$17.3 million in 2006–2007 (Table 1). These expenditures accounted for 1.7% of total drug program expenditures on seniors in 2001–2002 and 2.0% of total drug program expenditures on seniors in 2006–2007.

Atypical antipsychotics accounted for the highest proportion of drug program antipsychotic expenditure in 2006–2007 (94.5%), with typical antipsychotics making up the remainder (5.5%).

v. These figures do not include P.E.I., as data are not available prior to 2004–2005.

Table 1 Public Drug Program Expenditure on Antipsychotics Used by Seniors in Select Provinces,* by Class, 2006–2007

Class	Drug Program Expenditure (\$ Millions)	Percent of Total Drug Program Expenditure on Seniors
Atypical	16.4	1.9
Typical	1.0	0.1
Total	17.3	2.0

Note

* Five provinces submitting claims data to the NPDUIS Database as of March 2009: Alberta, Saskatchewan, Manitoba, New Brunswick and Nova Scotia.

Source

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

Antipsychotic Utilization

The age–sex standardized rate of antipsychotic use among seniors on public drug programs increased in each of the five provinces^{vi} during the study period, with the overall rate of use increasing from 4.3% in 2001–2002 to 5.0% in 2006–2007. Previous studies of antipsychotic use in Canada during similar time periods have also reported increases in antipsychotic use among seniors.^{18, 19}

During the study period, there were three warnings released in Canada about the use of atypical antipsychotics in seniors with dementia. The first two, in October 2002 and March 2004, were released by drug manufacturers and focused on specific chemicals, while the third was released by Health Canada in 2005 and was related to all atypical antipsychotics. Although this study did not look specifically at the effect of these warnings, there was a reduction in the growth of antipsychotic use during the study period. Between 2001–2002 and 2003–2004, the rate of use grew at an annual average rate of 5.2%. Between 2003–2004 and 2006–2007, antipsychotic use among senior claimants continued to grow, but at an average annual rate of 1.0%. This trend is consistent with the finding of a previous study that indicated that, although the use of antipsychotics did not decrease following the release of the warnings, the rate of increase did decline.¹⁹

When comparing rates of antipsychotic use between provinces, it is important to note that claims data for Alberta do not include claims for residents in nursing homes or auxiliary hospitals. Based on data from other provinces, this exclusion likely reduces the rate of antipsychotic use among seniors in Alberta and, in turn, the overall rate of antipsychotic use among seniors in all provinces (see Appendix B). Antipsychotic use among nursing home residents is examined in more detail later in this analysis.

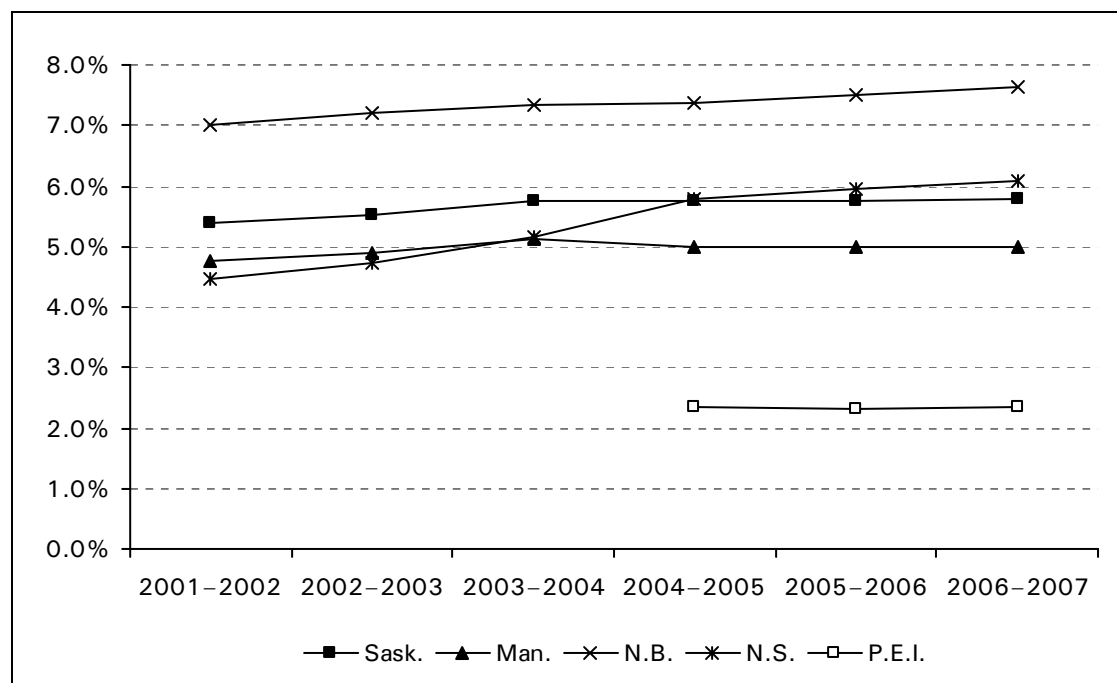
vi. These figures do not include P.E.I., as data are not available prior to 2004–2005.

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In 2001–2002, among provinces whose data included claims for nursing home residents, the age–sex standardized rate of antipsychotic use among senior claimants varied from 4.5% in Nova Scotia to 7.0% in New Brunswick (Figure 1). In 2006–2007, the rate varied from 2.3% in P.E.I. to 7.6% in New Brunswick.

Figure 1 Age–Sex Standardized Percentage Rate of Antipsychotic Use Among Seniors on Public Drug Programs (Including Nursing Home Residents) in Select Provinces,* by Province, 2001–2002 to 2006–2007



Note

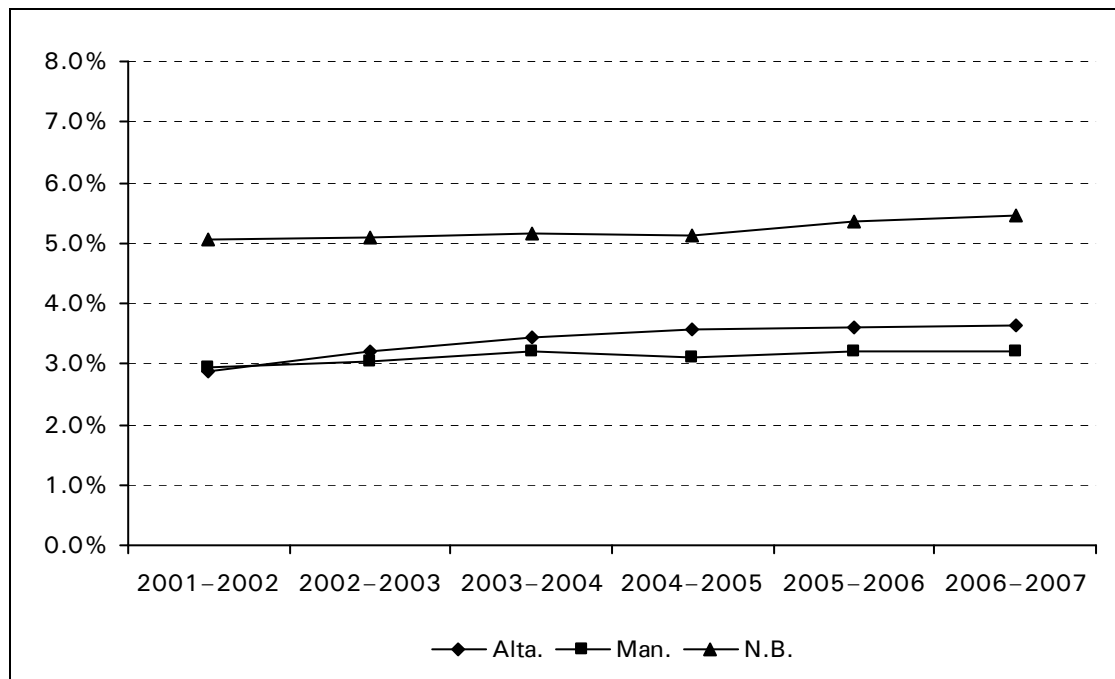
* Five provinces submitting claims data to the NPDUIS Database as of March 2009: Saskatchewan, Manitoba, New Brunswick, Nova Scotia and Prince Edward Island.

Source

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

In 2001–2002, the age–sex standardized rate of antipsychotic use among senior claimants not residing in a nursing home varied from 2.9% in Alberta and Manitoba to 5.0% in New Brunswick (Figure 2). In 2006–2007, the rates were 3.2% in Manitoba, 3.6% in Alberta and 5.5% in New Brunswick. Claims for nursing home residents cannot be identified in the NPDUIS Database for Saskatchewan or Nova Scotia. Only a portion of nursing home residents can be identified in P.E.I.

Figure 2 Age–Sex Standardized Percentage Rate of Antipsychotic Use Among Seniors on Public Drug Programs (Excluding Nursing Home Residents) in Select Provinces,* by Province, 2001–2002 to 2006–2007



Note

* Three provinces submitting claims data to the NPDUIS Database as of March 2009: Alberta, Manitoba and New Brunswick.

Source

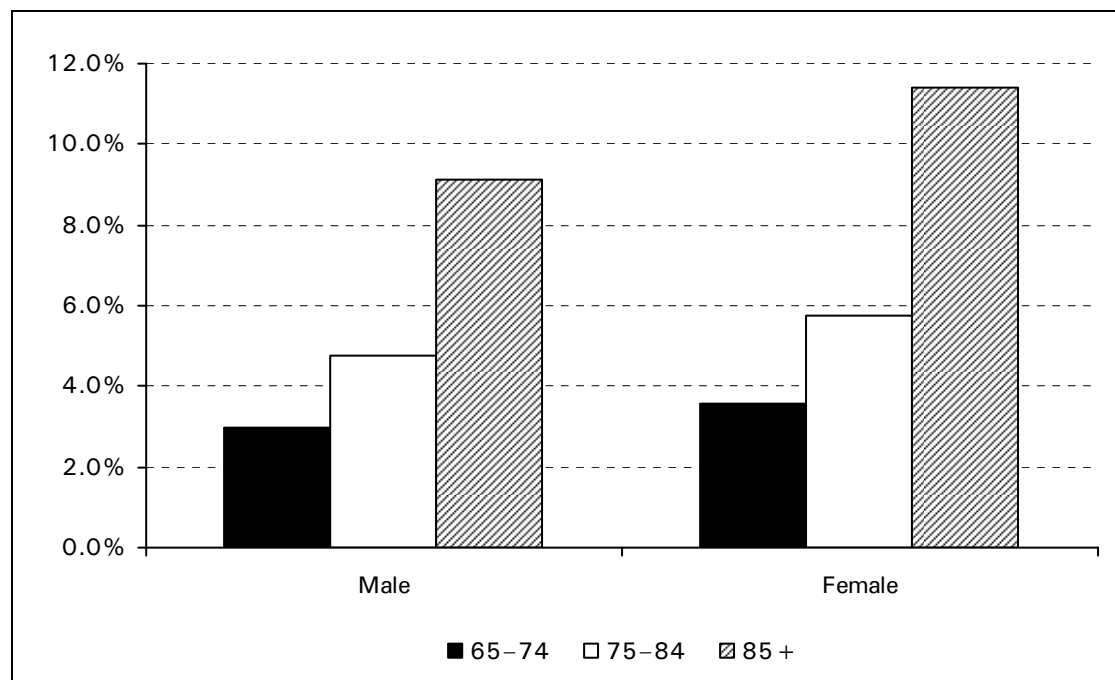
National Prescription Drug Utilization Information System Database, Canadian Institute for Health Information.

For the remainder of the analysis, all seniors will be included, regardless of whether or not they live in a nursing home, except where otherwise noted. P.E.I. data will be excluded from all aggregate analyses (that is, analyses not at the provincial level) including years prior to 2004–2005, as its data were not available for those years.

Antipsychotic Claim Trends: Age and Sex

The use of antipsychotics was highest among females and older seniors (Figure 3). In 2006–2007, the rate of antipsychotic use among female seniors was 5.8%, compared with 4.2% among male claimants. Among both male and female seniors, the lowest rate of antipsychotic use was among those between the ages of 65 and 74 (3.0% in males and 3.6% in females), and the highest rate was found in those 85 and older (9.1% in males and 11.4% in females). This is likely due, in part, to the fact that the prevalence of dementia increases with age. The prevalence of dementia in Canada has been estimated at 2.5% among seniors between the ages of 65 and 74, compared to 34.5% among those 85 and older.²⁶

Figure 3 Percentage Rate of Antipsychotic Use Among Seniors on Public Drug Programs in Select Provinces,* by Age Group and Sex, 2006–2007



Note

* The six provinces submitting claims data to the NPDUIS Database as of March 2009: Alberta, Saskatchewan, Manitoba, New Brunswick, Nova Scotia and Prince Edward Island.

Source

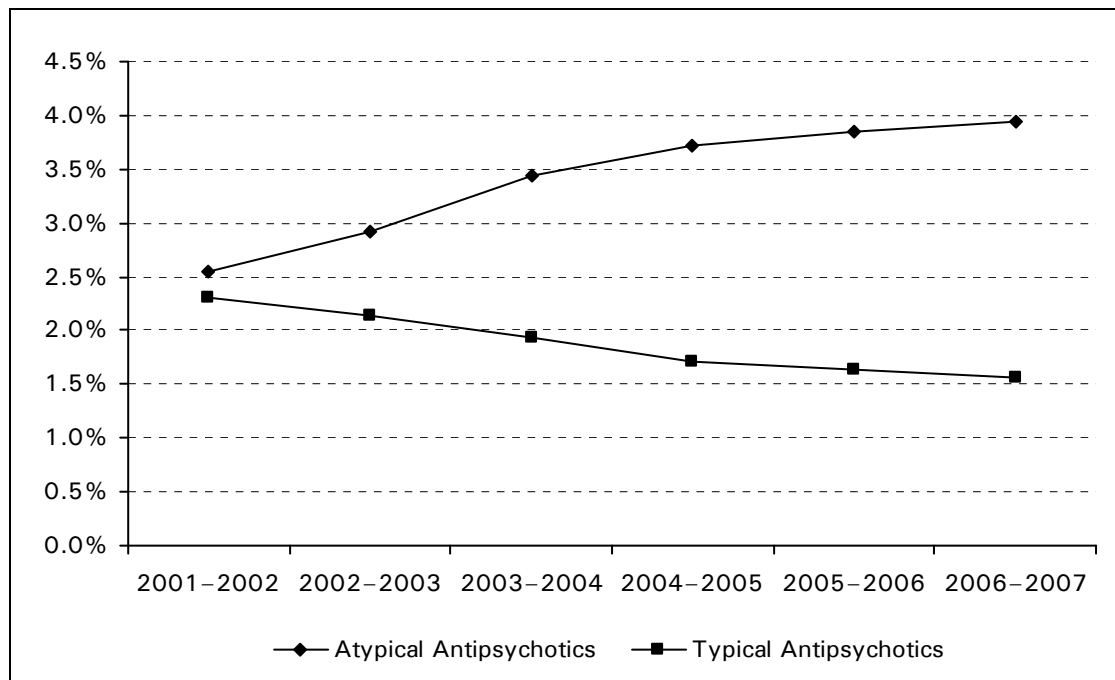
National Prescription Drug Utilization Information System Database, Canadian Institute for Health Information.

Antipsychotic Claim Trends: By Class

The rate of atypical antipsychotic use among senior claimants was higher than the rate of typical antipsychotic use throughout the study period (Figure 4). In 2001–2002, 2.5% of senior claimants had claims for atypical agents, compared to 2.3% who had claims for typical agents. The difference between the rates of use of the two classes grew during the study period, as atypical use grew while typical use declined. In 2006–2007, 3.9% of senior claimants had claims for atypical antipsychotics, while only 1.6% had claims for typical antipsychotics.

The shift from typical to atypical antipsychotics seems to be due in part to switching between classes. Of typical antipsychotic users in 2001–2002 who were still taking an antipsychotic in 2006–2007, 27.0% were on an atypical antipsychotic in 2006–2007. Only 2.1% of atypical users in 2001–2002 who were still taking an antipsychotic in 2006–2007 had switched to a typical antipsychotic. These numbers exclude users with claims for both classes in either year (8.3% of antipsychotic users in 2001–2002, 6.2% in 2006–2007).

Figure 4 Percentage Rate of Antipsychotic Use Among Seniors on Public Drug Programs in Select Provinces,* by Class, 2001–2002 to 2006–2007



Note

* Five provinces submitting claims data to the NPDUIS Database as of March 2009: Alberta, Saskatchewan, Manitoba, New Brunswick and Nova Scotia.

Source

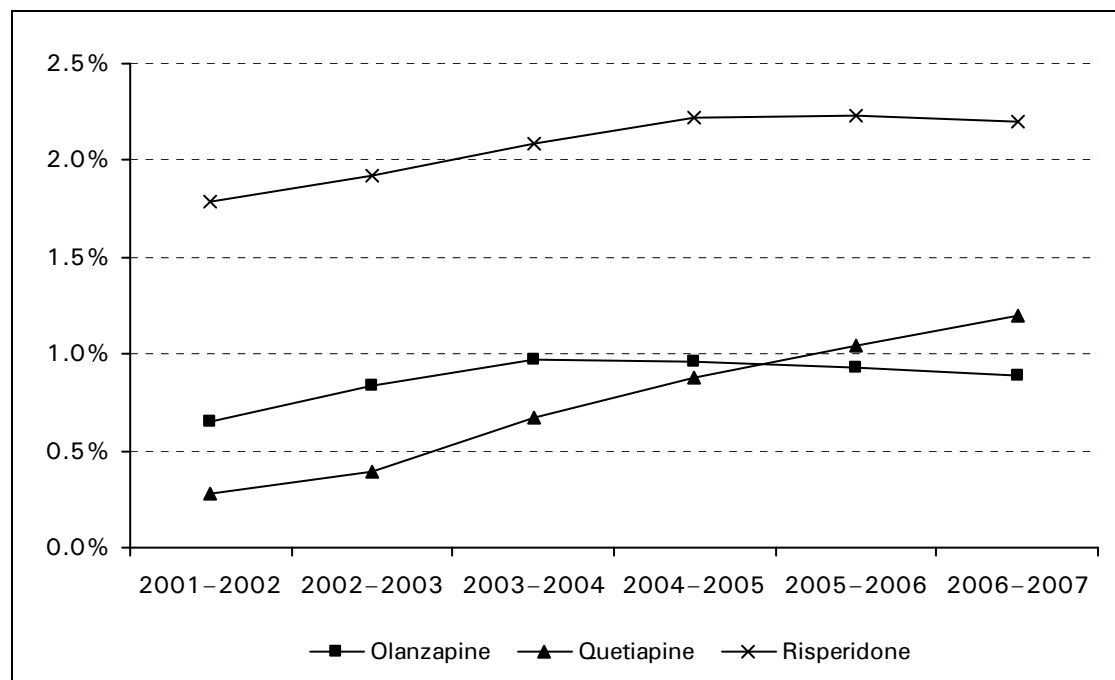
National Prescription Drug Utilization Information System Database, Canadian Institute for Health Information.

Atypical Antipsychotic Claim Trends: By Chemical

Risperidone had the highest rate of use among the four atypical antipsychotics in every year between 2001–2002 and 2006–2007 (Figure 5). Olanzapine had the second highest rate of use among seniors in the first four years of the study period, but was surpassed by quetiapine in both 2005–2006 and 2006–2007. Clozapine (not shown in Figure 5) had the lowest rate of use, at less than 0.1% in each year during the study period.

Although the rates of use of all four chemicals increased among seniors on public drug programs during the study period, the rate of olanzapine use decreased slightly during the last three years of the study period, while risperidone use remained relatively stable. Although some switching between chemicals was observed, it did not seem to be a major factor in the observed trends. For example, only 4.7% of seniors using olanzapine in 2003–2004, who were still on an atypical antipsychotic in 2006–2007, had switched to quetiapine, while 3.5% of seniors using quetiapine in 2003–2004 had switched to olanzapine by 2006–2007.

Figure 5 Percentage Rate of Atypical Antipsychotic Use Among Seniors on Public Drug Programs in Select Provinces,* by Chemical, 2001–2002 to 2006–2007



Note

* Five provinces submitting claims data to the NPDUIS Database as of March 2009: Alberta, Saskatchewan, Manitoba, New Brunswick and Nova Scotia.

Source

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

Atypical Antipsychotic Claim Trends: Average Daily Dose

Guidelines recommend that antipsychotics used in the treatment of behavioural and psychological symptoms of dementia be prescribed at the lowest effective dose.^{4, 6} By examining trends in average daily dose, it is possible to gain some insight into how atypical antipsychotics are being used. It should be noted that atypical antipsychotics are typically prescribed at lower doses when used to treat symptoms of dementia, compared with doses used to treat schizophrenia and bipolar disorder. Without information regarding diagnosis, it is not possible to determine whether there were any changes in the mix of indications being treated during the study period. It is also not possible to measure what impact such changes might have had on trends in average daily dose.

The average daily dose of olanzapine used by seniors on public drug programs increased slightly in every year between 2001–2002 and 2005–2006, while the average daily dose of risperidone remained relatively constant during the study period (Table 2). The average daily dose of quetiapine used by senior claimants increased slightly in every year but 2003–2004. The decline in this year led to a slight overall

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decrease in the average daily dose of quetiapine used during the study period. Average daily dose could not be calculated for 2006–2007 due to the method that was used. For more information on the calculation of average daily dose, see the Methods section of this analysis.

Table 2 Average Daily Dose of Atypical Antipsychotics Used by Seniors on Public Drug Programs in Select Provinces,* by Chemical, 2001–2002 to 2005–2006

Chemical	Daily Dose [†]	2001–2002	2002–2003	2003–2004	2004–2005	2005–2006
Olanzapine	2.5–10 mg	6.1 mg	6.2 mg	6.2 mg	6.3 mg	6.5 mg
Quetiapine	25–150 mg	111.3 mg	113.3 mg	104.5 mg	105.2 mg	106.6 mg
Risperidone	0.25–2 mg	1.1 mg	1.1 mg	1.0 mg	1.0 mg	1.0 mg

Notes

* Five provinces submitting claims data to the NPDUIS Database as of March 2009: Alberta, Saskatchewan, Manitoba, New Brunswick and Nova Scotia.

† Common daily dosage range used in treatment of dementia.²⁷

Source

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

The average daily dose used for all atypical antipsychotics declined with age (Table 3). The average daily dose used by seniors on each chemical was highest among those age 65 to 74, and lowest among those age 85 and older.

Table 3 Average Daily Dose of Atypical Antipsychotics Used by Seniors on Public Drug Programs in Select Provinces,* by Chemical and Age Group, 2005–2006

Chemical	Daily Dose [†]	65–74	75–84	85+
Olanzapine	2.5–10 mg	8.1 mg	5.8 mg	5.0 mg
Quetiapine	25–150 mg	140.7 mg	101.1 mg	78.4 mg
Risperidone	0.25–2 mg	1.5 mg	0.9 mg	0.7 mg

Notes

* Five provinces submitting claims data to the NPDUIS Database as of March 2009: Alberta, Saskatchewan, Manitoba, New Brunswick and Nova Scotia.

† Common daily dosage range used in treatment of dementia.²⁷

Source

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

Atypical Antipsychotic Claim Trends: Nursing Home Residents and Dementia Patients

Previous studies have reported high rates of antipsychotic use in nursing homes, most often thought to be associated with the treatment of dementia-related disorders.²⁰⁻²² Using data from Manitoba, New Brunswick and P.E.I., it was possible to compare the use of atypical antipsychotics among nursing home residents with use among those residing in the community. It should be noted that, in P.E.I., only seniors whose long-term care is subsidized by the government can be identified as nursing home residents. Nursing home residents whose care is paid for either out of pocket or through private insurance are classified as non-nursing home residing seniors in the NPDUIS Database. It is expected that this will increase the rate of use among non-nursing home residents in P.E.I., though it is unclear what effect this will have on the rate of use among nursing home residents. Because of P.E.I.'s relatively small population, it is not expected that this will have a great effect on the overall rates of use in the three provinces.

In 2006–2007, 37.7% of senior nursing home residents on public drug programs in Manitoba, New Brunswick and P.E.I. had claims for antipsychotics, compared to only 2.6% of senior claimants living in the community. These results are similar to those of two Canadian studies using data from long-term care facilities, which reported rates of antipsychotic use of 30.6% in Saskatchewan in 2004 and 32.4% in Ontario in 2003, respectively.^{21, 22} A study that included international comparisons of antipsychotic use in nursing homes reported rates of 11% in Hong Kong, 26% in Canada, 27% in the United States, 34% in Switzerland and 38% in Finland.²³

The higher rate of antipsychotic use in nursing homes is likely due in part to a higher prevalence of dementia among nursing home residents. Ontario data for 2007–2008 from CIHI's Continuing Care Reporting System (CCRS) showed that roughly 55% of senior nursing home residents had a reported diagnosis of dementia.^{vii} This is far greater than the estimated prevalence of dementia among the total Canadian senior population of 8%.²⁶

The use of anti-dementia drugs (that is, cholinesterase inhibitors) was used as a surrogate for a diagnosis of dementia. Although it is recognized that many dementia patients are not treated with anti-dementia drugs, examining claims in this manner may provide some insight into the use of antipsychotic drugs in dementia patients. In 2006–2007, 1.5% of community-based senior claimants, and 6.9% of nursing home residents on public drug programs, had a claim for an anti-dementia drug.

In 2006–2007, 52.2% of senior nursing home residents with claims for anti-dementia drugs also had claims for atypical antipsychotics, compared with 21.3% of senior claimants living in the community with claims for anti-dementia drugs. The higher rate of antipsychotic use among seniors using anti-dementia drugs in nursing homes may suggest that there are factors in addition to differences in the prevalence of dementia that contribute to variation in the rates of antipsychotic use.

vii. For more information on the CCRS, please visit <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=services_ccrs_e>.

Conclusion

Antipsychotics are commonly used in the elderly to treat behavioural and psychological symptoms of dementia including delusions, aggression and agitation.^{1, 2} Modest benefits have been reported with their use, most often with shorter treatment courses.³⁻⁶

New information on the safety of antipsychotic use in the elderly was released between 2000 and 2005, in the form of published studies and regulatory and manufacturers' warnings. Current guidelines recommend that the clinical benefits of using an antipsychotic be weighed against its potential risks, and that when used, it be at the lowest effective dose.^{3, 4, 6, 17}

This analysis of NPDUIS Database data from Alberta, Saskatchewan, Manitoba, New Brunswick, Nova Scotia and P.E.I. examines trends in the use of antipsychotics in seniors between 2001–2002 and 2006–2007.

The age–sex standardized rate of antipsychotic use among seniors on public drug programs increased from 4.3% in 2001–2002 to 5.0% in 2006–2007. The rate of growth of antipsychotic use slowed during the study period. Antipsychotic use was highest among females and seniors 85 and older. The increased use in seniors over the age of 85 is likely due, in part, to the fact that the prevalence of dementia increases with age.

There were only slight changes in the average daily dose of atypical antipsychotics used by seniors on public drug programs during the study period. The average daily dose used by senior claimants on each chemical was highest among those age 65 to 74, and lowest among those age 85 and older.

Senior claimants residing in nursing homes were more likely to use atypical antipsychotics than those living in the community. In 2006–2007, 37.7% of senior nursing home residents on public drug programs had claims for antipsychotics, compared to only 2.6% of senior claimants living in the community. When looking at only seniors with claims for anti-dementia drugs, use of atypical antipsychotics was higher among nursing home residents.

Further analysis is needed to understand the cause of the observed trends in antipsychotic use among seniors, including variations in use between provinces. The inclusion of diagnosis and outcome data would support further study of how antipsychotics are used in the elderly population, as well as the impact of antipsychotic use on patient outcomes.

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About CIHI

The Canadian Institute for Health Information (CIHI) collects and analyzes information on health and health care in Canada and makes it publicly available. Canada's federal, provincial and territorial governments created CIHI as a not-for-profit, independent organization dedicated to forging a common approach to Canadian health information. CIHI's goal: to provide timely, accurate and comparable information. CIHI's data and reports inform health policies, support the effective delivery of health services and raise awareness among Canadians of the factors that contribute to good health.

Appendix A: Distribution of Total Senior Population^{viii} and Senior Claimants on Public Drug Programs in Select Provinces,^{ix} by Age, 2006–2007

Alberta

Group	Senior Population (n = 356,290)	Senior Claimants (n = 318,521)
Male	44.8%	44.1%
Female	55.2%	55.9%
65–74	53.5%	52.8%
75–84	34.4%	35.5%
85 +	12.1%	11.7%

Saskatchewan

Group	Senior Population (n = 147,268)	Senior Claimants (n = 132,534)
Male	43.5%	41.8%
Female	56.5%	58.2%
65–74	47.1%	45.1%
75–84	36.6%	37.3%
85 +	16.3%	17.6%

Manitoba

Group	Senior Population (n = 159,986)	Senior Claimants (n = 145,263)
Male	42.8%	41.6%
Female	57.2%	58.4%
65–74	48.6%	46.9%
75–84	36.4%	37.0%
85 +	15.0%	16.1%

New Brunswick

Group	Senior Population (n = 106,995)	Senior Claimants (n = 62,267)
Male	43.0%	37.6%
Female	57.0%	62.4%
65–74	52.4%	46.7%
75–84	34.3%	36.2%
85 +	13.3%	17.1%

viii. Population data come from Statistics Canada, Demography Division, Special Tabulation, June 2007.

The population estimates for 2000–2001 to 2002–2003 are considered final, while interim population estimates were used for 2003–2004 to 2006–2007.

ix. The six provinces submitting claims data to the NPDUIS Database as of March 2009.

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Nova Scotia

Group	Senior Population (n = 136,600)	Senior Claimants (n = 94,730)
Male	43.4%	37.9%
Female	56.6%	62.1%
65-74	53.0%	48.5%
75-84	33.3%	35.1%
85 +	13.7%	16.4%

Prince Edward Island

Group	Senior Population (n = 19,993)	Senior Claimants (n = 16,256)
Male	43.2%	41.0%
Female	56.8%	59.0%
65-74	53.5%	51.3%
75-84	32.8%	34.9%
85 +	13.6%	13.8%

Canada: Standard Population

Group	Senior Population (n = 4,340,661)	Senior Claimants (N/A)
Male	43.7%	N/A
Female	56.3%	N/A
65-74	52.6%	N/A
75-84	35.2%	N/A
85 +	12.2%	N/A

Appendix B: Age–Sex Standardized Percentage Rate of Antipsychotic Use Among Seniors on Public Drug Programs in Select Provinces (Both Including and Excluding Nursing Home Residents),* by Province, 2006–2007

Province	All Claimants (Including Nursing Home Residents)	All Claimants (Excluding Nursing Home Residents)
Alberta	N/A	3.6%
Saskatchewan	5.8%	N/A
Manitoba	5.0%	3.2%
New Brunswick	7.6%	5.5%
Nova Scotia	6.1%	N/A
Prince Edward Island	2.3%	N/A

Note

* The six provinces submitting claims data to the NPDUIS Database as of March 2009: Alberta, Saskatchewan, Manitoba, New Brunswick, Nova Scotia and Prince Edward Island.

Source

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

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