

March 2012



Analysis in Brief

The Use of Selected Psychotropic Drugs Among Seniors on Public Drug Programs in Canada, 2001 to 2010

Introduction

This analysis will focus on the use of three psychotropic drug classes by seniors (people age 65 and older): benzodiazepines and related drugs, antidepressants and antipsychotics.¹⁻⁶ These drug classes have been associated with an increased risk of falls, particularly when used by seniors.^{1,7} Unintentional falls are the leading cause of injury-related hospital admissions.⁸ The proportion of admissions caused by falls increases with age.^{8,9}

Drugs in these classes are used to treat a wide range of conditions, including depression, panic disorder, obsessive-compulsive disorder, schizophrenia, bipolar disorder, anxiety, chronic pain and insomnia. For seniors, antipsychotics are also commonly used to treat the behavioural and psychological symptoms of dementia, including delusions, aggression and agitation. Manufacturer and regulatory warnings have been released about the risk of antipsychotic use in elderly patients who have dementia.¹⁰

Other drug classes most often associated with falls among seniors include antiepileptic and cardiovascular drugs.^{1,7} Drugs in these classes, as well as those in the three psychotropic classes, may cause side effects such as confusion, sedation, instability, dizziness or a drop in blood pressure while standing, all of which may contribute to falls.^{2,7} It is difficult to assess whether the increase in falls is related to the use of these drugs or due to the underlying medical conditions that the drugs are treating. Other drug-related factors that can contribute to a risk of falls include the number of drugs a person is taking, whether a person has just started on a new drug and the duration of drug therapy.²⁻⁵ There are also several non-drug-related factors, including a person's vision, balance and strength; his or her history of previous falls; and the presence of an illness such as diabetes or dementia.

Types of Care

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This analysis will look at the utilization of three selected psychotropic drug classes by using drug claims data from the National Prescription Drug Utilization Information System (NPDUIS) Database. Data from more than 1 million seniors in Alberta, Saskatchewan, Manitoba, New Brunswick, Nova Scotia and Prince Edward Island—the six provinces submitting drug claims data to the NPDUIS Database at the time of analysis—will be examined. The purpose of this analysis is to identify areas where the use of these drugs may be high or increasing, for further investigation. This analysis will not assess the relationship between the use of these drugs and unintentional falls. The period of analysis will be from 2001–2002 to 2009–2010 for Alberta, Saskatchewan, Manitoba, New Brunswick and Nova Scotia; and from 2004–2005 to 2009–2010 for P.E.I.

Methods

Drugs of Interest

The psychotropic drug classes included in this analysis are benzodiazepines and related drugs, antidepressants and antipsychotics. These drug classes were identified by the drug identification numbers (DINs) assigned by Health Canada and by the World Health Organization Anatomical Therapeutic Chemical (ATC) codes N05BA—benzodiazepines (under the broader class of anxiolytics), N05CD—benzodiazepines (under the broader class of sedatives and hypnotics), N05CF—benzodiazepine-related drugs, N06A—antidepressants and N05A—antipsychotics.¹¹

All dosage forms and strengths of these chemicals that were available in Canada during the study period, with the exception of lithium (ATC code N05AN) and clobazam (ATC code N05BA09), were included. Lithium was excluded because, unlike other drugs in its ATC class, it is not used to treat behavioural and psychological symptoms of dementia in elderly persons; clobazam was excluded because, unlike other benzodiazepines, it is used primarily for epileptic seizures.

Benzodiazepines were further classified in this study as either short- or long-acting. This was done based on the short- and long-acting classifications used in the Beers list, an internationally recognized list of drugs that are identified as “potentially inappropriate” to prescribe to seniors due to an elevated risk of adverse effects.¹²

Zopiclone is treated as a separate category, as it was the only benzodiazepine-related drug with any significant use during the study period and the only one currently on the market in Canada. Based on the definitions above, zopiclone is considered short-acting. Zopiclone is approved for the treatment of insomnia only, whereas many benzodiazepines have multiple approved uses (approved uses vary by chemical).

Antidepressants were further classified into four categories. Products assigned ATC code N06AA—non-selective monoamine reuptake inhibitors—were categorized as tricyclic antidepressants (TCAs). Products assigned ATC code N06AB—selective serotonin reuptake inhibitors—were classified as selective serotonin reuptake inhibitors (SSRIs). Products assigned ATC codes N06AX16—venlafaxine, N06AX21—duloxetine and N06AX23—desvenlafaxine were classified as selective serotonin and norepinephrine reuptake inhibitors (SNRIs). All other antidepressants were classified as “other antidepressants”; trazodone, mirtazapine and bupropion accounted for the majority of use within this group.

Antipsychotics were further classified as either atypical or typical. 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; haloperidol, levomepromazine, prochlorperazine and trifluoperazine accounted for the majority of use within this group.

NPDUIS Database

The drug claims data used in this analysis comes from the NPDUIS Database, as submitted by the Alberta, Saskatchewan, Manitoba, New Brunswick, Nova Scotia and P.E.I. 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

- 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.

Data Comparability

Age Standardization

Provincial rates were age-standardized using a direct method of standardization based on the October 1, 2009, 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 affect drug utilization within the plans and, in turn, the claims submitted to the NPDUIS Database. One of the major differences is that Alberta, Saskatchewan, New Brunswick, Nova Scotia and P.E.I. all have drug plans designed specifically for seniors (though some seniors may be covered under other provincial plans, which are offered to residents of all ages), whereas seniors in Manitoba are covered under a universal drug plan that is offered to residents of all ages. Prior to July 1, 2007, seniors in Saskatchewan were also covered under a drug plan offered to residents of all ages. There are also other differences, such as how much a senior is required to pay for drugs through premiums, deductibles or copayments. Seniors not covered by the publicly funded drug plan may have private drug plan coverage or pay out of pocket.

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

ii. Population data comes from Statistics Canada, Demography Division, Special Tabulation, June 2010. The population estimates for 2001–2002 to 2005–2006 are considered final, while interim population estimates were used for 2006–2007 to 2009–2010.

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;
- First Nations, Inuit and Aboriginal Health;
- The Royal Canadian Mounted Police; and
- Veterans Affairs Canada.

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

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 benzodiazepines, antidepressants and antipsychotics as of March 31, 2010, the end of the study period.

The majority of benzodiazepines were covered as full benefits in all six jurisdictions. Midazolam and zopiclone were not listed on the formulary in Saskatchewan, and they were covered only under the nursing home program in P.E.I. Coverage of midazolam was restricted in Nova Scotia to adjunctive therapy for pain management in palliative care and cancer patients.

The most commonly used typical antipsychotics were listed as full benefits in all six jurisdictions, while there were some differences in the coverage of atypical agents. Atypical antipsychotics 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) were covered in all provinces.

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

Quetiapine and risperidone were covered as full benefits in all provinces except for P.E.I.; in this province, it was necessary for physicians to make a written request for a patient to be covered and coverage was restricted to the treatment of schizophrenia and related psychotic disorders, as well as bipolar disorder. Coverage of risperidone could also be provided for the treatment of behavioural symptoms of dementia in patients where other treatments have failed. Physicians in P.E.I. were not required to make a written request for daily doses of risperidone up to 2 milligrams for those covered under the nursing home program. Quetiapine was covered as a restricted benefit in Saskatchewan prior to April 2003.

The most commonly used antidepressants were covered as full benefits across all six jurisdictions, with the exception of bupropion. Bupropion was a full benefit in Alberta, Manitoba, New Brunswick and Nova Scotia, while coverage was restricted to the treatment of depression in P.E.I. and Saskatchewan.ⁱⁱⁱ Coverage of bupropion was also restricted to the treatment of depression in New Brunswick prior to December 2006 and in Manitoba prior to March 2007.

The fact that zopiclone was not covered in Saskatchewan clearly affects the comparability of zopiclone use in Saskatchewan with use in other provinces (there was no zopiclone use among seniors on the public drug program in Saskatchewan during the study period). It was unclear what effect this may have had on benzodiazepine use in Saskatchewan. Use of benzodiazepines was similar in other provinces where zopiclone was an available alternative therapy for insomnia.

Without further analysis, it is unclear what effect, if any, these differences in criteria may have on the use of benzodiazepines, antidepressants and antipsychotics across the provinces. Several other factors can influence drug utilization, such as the health of the population, prescribing patterns and the availability of non-drug therapies. Given the differences in use in provinces with similar criteria, factors other than formulary differences are likely contributing to provincial variation.

Definitions

1. **Claimants:** Refers to seniors who had at least one claim accepted by a public drug program, either for reimbursement or toward a deductible.^{iv}
2. **Psychotropic drug users:** Refers to seniors who had at least one claim during a given year for a benzodiazepine or related drug, antidepressant or antipsychotic. See the Drugs of Interest section of this report for more information regarding specific classes in these three categories.
3. **New starts:** Refers to seniors who had at least one claim for a psychotropic drug during a given year who did not have a claim for these drugs in the previous year but who did have a claim for another drug in the previous year.
4. **Chronic psychotropic drug users:** Refers to seniors who had at least three claims within the same psychotropic drug class in a given year for a combined quantity of at least 180 tablets or capsules.

Limitations

Since the NPDUIS Database does not contain information regarding the diagnoses or conditions for which prescriptions were written, the treatment indication cannot be confirmed.

Pan-Canadian claims-level data for those younger than 65 was unavailable for this study. However, using NPDUIS Database data from Saskatchewan and Manitoba, in 2009–2010, the rate of use of the three psychotropic drug classes among those younger than 65 was 19.1%, whereas the rate of use among seniors in those two provinces was 30.9%.

iii. As of January 2011, bupropion is covered as a full benefit in Saskatchewan.

iv. In Saskatchewan and Manitoba, this includes seniors who had accepted claims who were eligible for coverage under a provincial drug program but who had not submitted an application and, therefore, did not have a defined deductible.

Profile of Seniors With Drug Claims

In 2009–2010, there were 388,239 seniors (people 65 or older) living in Alberta, 152,356 in Saskatchewan, 169,356 in Manitoba, 117,285 in New Brunswick, 148,970 in Nova Scotia and 21,822 in P.E.I.^v

The proportion of seniors who had drug claims accepted by the public drug programs in these provinces varied from 56.3% in New Brunswick to 90.7% in Manitoba. The lower percentages in New Brunswick (56.3%) and Nova Scotia (67.4%) 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. There may be differences in population characteristics (such as age and health status) between seniors with and without public coverage. In provinces where a lower proportion of seniors have claims accepted by the public plan, drug utilization patterns among those with public coverage are more likely to be affected by these differences and, therefore, may be less reflective of utilization patterns among all seniors in the province.

It should be noted that the total population figures included seniors who were 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 in the six provinces. Saskatchewan had the highest proportion of claimants older than 85, at 17.9%, while Alberta had the smallest proportion of claimants older than 85, at 12.3% (see Appendix A). Provincial rates of use are age–sex-standardized to account for variations in demographics.

Analysis

Overview of Psychotropic Drug Classes

The following analysis will look at the utilization of selected psychotropic drug classes in seniors (people 65 and older) covered by public drug programs in Alberta, Saskatchewan, Manitoba, New Brunswick, Nova Scotia and P.E.I. between 2001–2002 and 2009–2010.

Expenditures on Selected Psychotropic Drug Classes

Based on claims by seniors in five provinces,^{vi} total drug program expenditures on the selected psychotropic drugs increased at an average annual rate of 6.4% over the study period, from \$37.8 million in 2001–2002 to \$62.2 million in 2009–2010 (Table 1). These expenditures accounted for 6.9% of total drug program expenditures in 2001–2002 and 5.9% of total drug program expenditures in 2009–2010.

v. Population data comes from Statistics Canada, Demography Division, Special Tabulation, June 2010. The population estimates for 2001–2002 to 2005–2006 are considered final, while interim population estimates were used for 2006–2007 to 2009–2010.

vi. These figures do not include P.E.I., as data for that province is not available prior to 2004–2005.

Table 1: Public Drug Program Expenditure on Selected Psychotropic Drugs Used by Seniors in Selected Provinces,* by Drug Class and Type, 2009–2010

Drug Class	Type	Drug Program Spending on Seniors (\$ Millions)	Percentage of Total Drug Program Spending on Seniors	Percentage of Drug Program Spending on Drug Class
Benzodiazepines and Related Drugs	Long-Acting	0.6	0.1	4.7
	Short-Acting	5.2	0.5	39.7
	Zopiclone	7.2	0.7	55.6
	Total	13.0	1.2	100.0
Antidepressants	TCAs	3.1	0.3	9.2
	SSRIs	18.6	1.8	54.4
	SNRIs	7.7	0.7	22.5
	Other	4.8	0.5	13.9
	Total	34.2	3.2	100.0
Antipsychotics	Atypical	13.8	1.3	92.2
	Typical	1.2	0.1	7.8
	Total	15.0	1.4	100.0
Selected Psychotropic Drugs	Total	62.2	5.9	100.0

Notes

* Five provinces submitting claims data to the NPDUIS Database as of December 2010: Alberta, Saskatchewan, Manitoba, New Brunswick and Nova Scotia.

TCAs: tricyclic antidepressants.

SSRIs: selective serotonin reuptake inhibitors.

SNRIs: selective serotonin and norepinephrine reuptake inhibitors.

Source

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

Antidepressants accounted for the highest proportion of program expenditure among the selected classes examined in 2009–2010 (3.2%), followed by antipsychotics (1.4%) and benzodiazepines (1.2%).

Within the drug classes, spending patterns largely aligned with utilization patterns. There were, however, some notable exceptions. For example, zopiclone accounted for 55.6% of drug program spending on benzodiazepines and related drugs, while short-acting benzodiazepines accounted for 39.7%, even though they were more commonly used. Among antidepressants, TCAs accounted for the lowest proportion of drug program spending on the drug class (9.2%), despite being the second most commonly used type of antidepressant among seniors. Alternatively, SNRIs were the least commonly used type of antidepressant but accounted for the second-highest proportion of drug program spending on antidepressants (22.5%). The majority of antipsychotic spending for seniors (92.2%) was on atypical antipsychotics, which also accounted for the majority of use within the class.

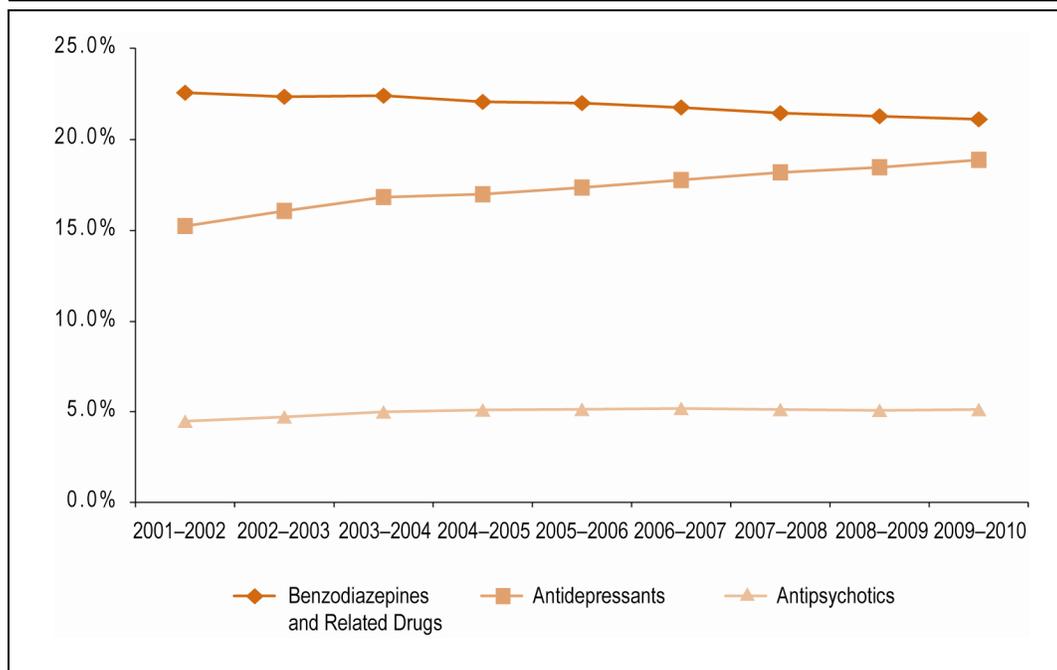
Utilization of Selected Psychotropic Drug Classes

The age–sex-standardized rate of selected psychotropic drug use increased slightly during the study period, from 32.1% in 2001–2002 to 33.5% in 2009–2010. Among seniors with claims for a selected psychotropic drug, 26.5% were using more than one of the selected drug classes in 2001–2002, and 28.9% were using more than one in 2009–2010.

There were some differences in the trends in use among the classes of psychotropic drugs selected for this analysis. The percentage rate of benzodiazepine and related drug use across the five provinces decreased slightly, from 22.6% in 2001–2002 to 21.1% in 2009–2010 (Figure 1). During the same period, there was an increase in antidepressant use, from 15.2% to 18.9%. These trends may have been due in part to switching

between the two classes, with 11.3% of benzodiazepine users in 2001–2002 switching to antidepressants by 2009–2010. In some cases, antidepressants and benzodiazepines may be used to treat the same condition (for example, some drugs from each class are used to treat insomnia).¹³ However, without diagnostic information, it is unclear whether patients truly switched or whether different drugs were used for different conditions. Antipsychotic use among seniors on public drug programs increased slightly, from 4.5% in 2001–2002 to 5.1% in 2009–2010.

Figure 1: Percentage Rate of Selected Psychotropic Drug Use Among Seniors on Public Drug Programs in Selected Provinces,* by Drug Class, 2001–2002 to 2009–2010



Note

* Five provinces submitting claims data to the NPDUIS Database as of December 2010: Alberta, Saskatchewan, Manitoba, New Brunswick and Nova Scotia.

Source

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

Within the psychotropic drug classes, trends differed among types of drugs (Figure 2). Use of both short- and long-acting benzodiazepines slowly decreased during the study period, while the use of zopiclone, which is considered short-acting, increased. Switching seemed to play only a small role in this trend. Of seniors taking benzodiazepines in 2001–2002 who were still taking a benzodiazepine or zopiclone in 2009–2010, 11.2% were taking zopiclone. This number excludes seniors who used both zopiclone and benzodiazepines in the same year (10.4% of benzodiazepine and related drug users in 2009–2010).

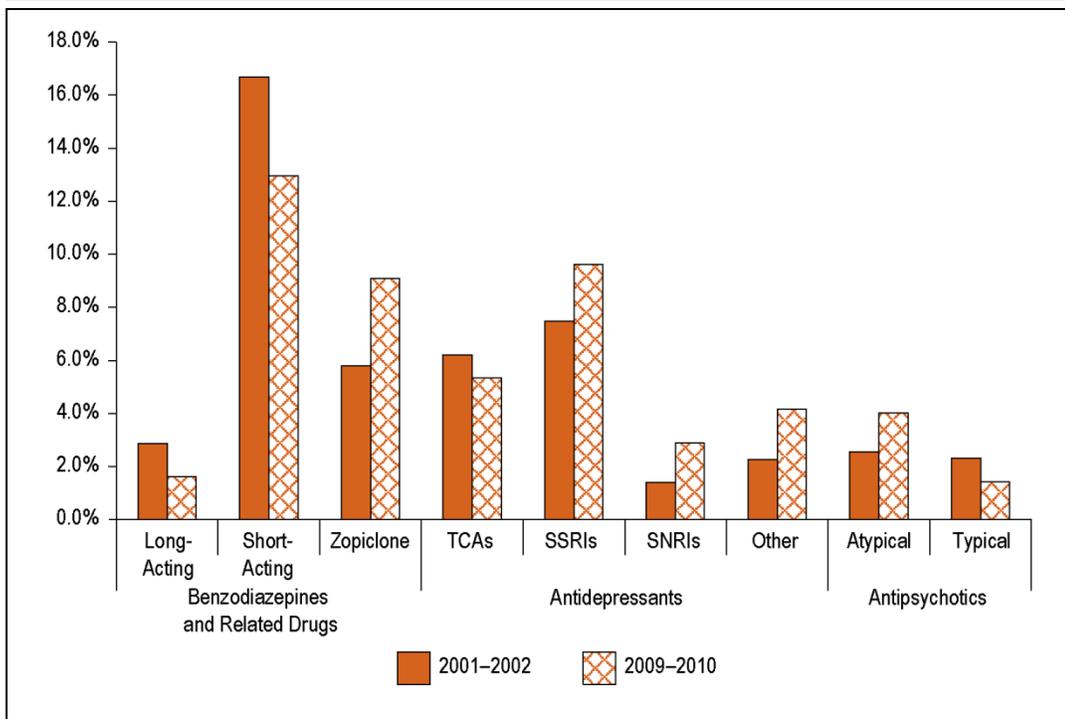
Studies comparing the risk of falls between short- and long-acting benzodiazepines have found differing results.^{5, 7, 14} Short-acting agents are often preferred because there is less risk that their sedative effects will persist during the day.¹⁵ Studies have not found significant differences in adverse events between benzodiazepines and benzodiazepine-related drugs, including zopiclone.^{15, 16}

Among antidepressants, the use of TCAs decreased, while the use of SSRIs, SNRIs and other antidepressants^{vii} increased. These trends seemed to be due, in part, to seniors switching between types of antidepressants. Of seniors taking TCAs in 2001–2002 who were still taking antidepressants in 2009–2010, 18.3% were taking SSRIs, 5.7% were taking SNRIs and 10.3% were taking other types of antidepressants.

Although considered equally effective in treating depression, TCAs are associated with a greater risk of certain side effects, such as cognitive impairment and sudden drops in blood pressure, and have been shown to be more dangerous when taken in overdose.^{17, 18} As with benzodiazepines, studies comparing the risk of falls between groups of antidepressants have found differing results.^{5, 7, 19, 20}

Among antipsychotics, the use of atypical antipsychotics is increasing, while the rate of typical antipsychotic use is decreasing. These trends also seemed to be due, in part, to seniors switching between therapies. Of seniors taking typical antipsychotics in 2001–2002 who were still taking antipsychotics in 2009–2010, 35.3% had switched to atypical antipsychotics. Atypical agents are considered to be at least as effective as typical agents, with a lower risk of some adverse effects.^{21, 22} There is no clear difference in the risk of falls between typical and atypical antipsychotics.^{23, 24}

Figure 2: Percentage Rate of Selected Psychotropic Drug Use Among Seniors on Public Drug Programs in Selected Provinces,* by Drug Class, 2001–2002 and 2009–2010



Notes

* Five provinces submitting claims data to the NPDUIS Database as of December 2010: Alberta, Saskatchewan, Manitoba, New Brunswick and Nova Scotia.

TCAs: tricyclic antidepressants.

SSRIs: selective serotonin reuptake inhibitors.

SNRIs: selective serotonin and norepinephrine reuptake inhibitors.

Source

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

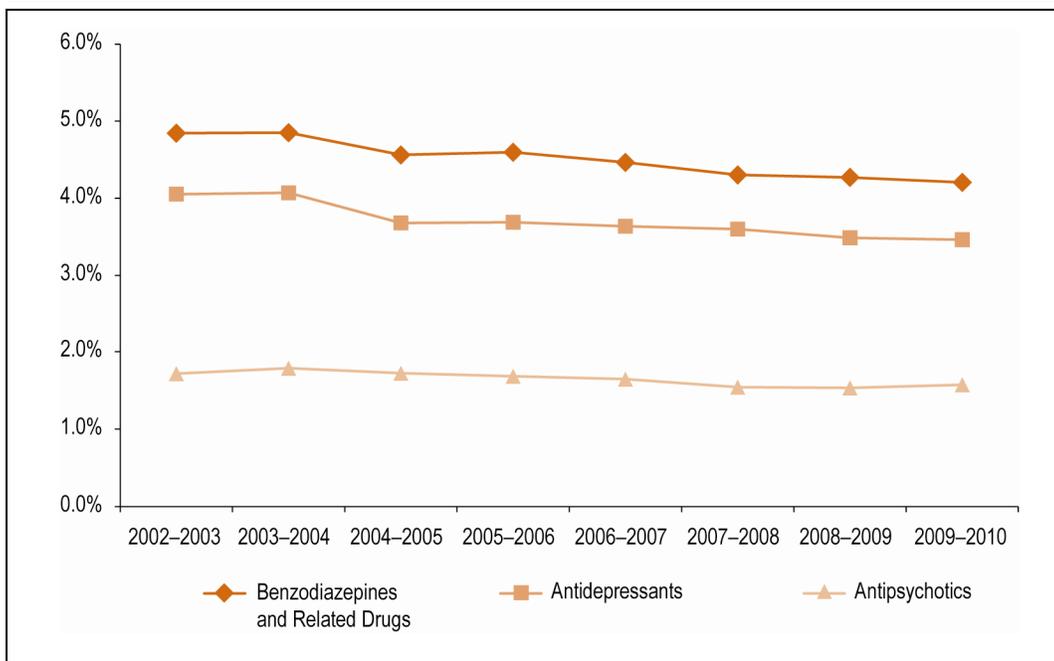
vii. Trazodone, mirtazapine and bupropion accounted for the majority of use within this group.

Psychotropic Use: New Starts

Studies have shown that the risk of falls is highest in the days following initiation of therapy.^{2, 4, 19, 25} In this analysis, a patient was defined as having started psychotropic therapy in a given year if he or she had at least one psychotropic claim in that year but not in the previous year and had claims for drugs other than a psychotropic in the previous year.

Between 2002–2003 and 2009–2010, the proportion of seniors on public drug programs who started psychotropic therapy decreased slightly for antidepressants and benzodiazepines and related drugs (from 4.1% to 3.5% and from 4.8% to 4.2%, respectively; see Figure 3), while the rate of new antipsychotic starts among seniors remained relatively stable (1.7% in 2002–2003 and 1.6% in 2009–2010). Further analysis showed that although a lower proportion of seniors were starting antidepressant therapy each year, the percentage of those seniors who discontinued antidepressant therapy in subsequent years also decreased, which led to an increase in antidepressant use despite a decrease in starts.

Figure 3: Percentage Rate of New Starts of Psychotropic Drug Use Among Seniors on Public Drug Programs in Selected Provinces,* by Drug Class, 2002–2003 to 2009–2010



Note

* Five provinces submitting claims data to the NPDUIS Database as of December 2010: Alberta, Saskatchewan, Manitoba, New Brunswick and Nova Scotia.

Source

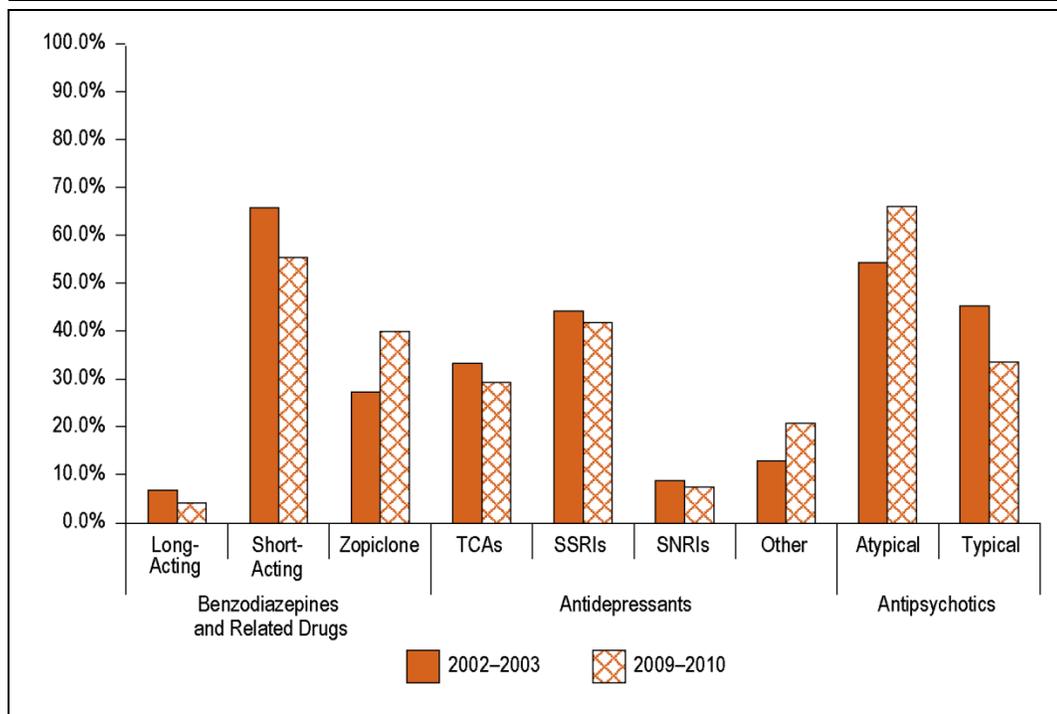
National Prescription Drug Utilization Information System Database, Canadian Institute for Health Information.

Within the drug classes, the proportions of new benzodiazepine and related drug users starting on short- and long-acting agents decreased from 2002–2003 to 2009–2010, from 65.8% to 55.5% and from 7.0% to 4.2%, respectively, while the proportion of new zopiclone users increased from 27.2% to 40.3% over the same time period (Figure 4). Among antidepressant users, there has been a shift toward the use of other antidepressants.^{viii} The proportion of new users starting on drugs from this category increased from 13.2%

viii. Trazodone, mirtazapine and bupropion accounted for the majority of use within this group.

in 2002–2003 to 20.9% in 2009–2010. Trends in new antipsychotic starts were similar to those of overall antipsychotic use, with the proportion of new antipsychotic users using atypical antipsychotics increasing from 54.5% to 66.3% during the same period.

Figure 4: Percentage Rate of Use Among New Senior Psychotropic Drug Users on Public Drug Programs in Selected Provinces,* by Drug Class, 2002–2003 and 2009–2010



Notes

* Five provinces submitting claims data to the NPDUIS Database as of December 2010: Alberta, Saskatchewan, Manitoba, New Brunswick and Nova Scotia.

TCA: tricyclic antidepressants.

SSRI: selective serotonin reuptake inhibitors.

SNRI: selective serotonin and norepinephrine reuptake inhibitors.

Source

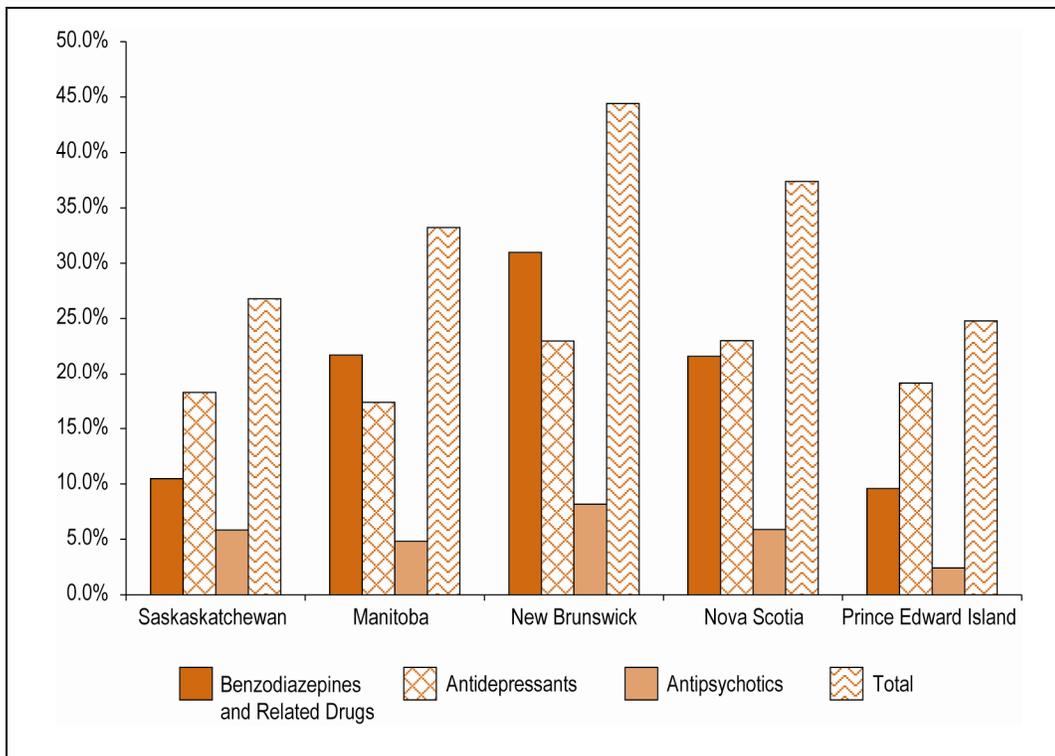
National Prescription Drug Utilization Information System Database, Canadian Institute for Health Information.

Psychotropic Use: Provincial Comparison

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

In 2009–2010, among provinces where data includes claims for nursing home residents, psychotropic drug use among seniors varied from 24.8% in P.E.I. to 44.4% in New Brunswick (Figure 5). Benzodiazepine and related drug use among seniors in the five provinces decreased during the study, while the rate of antidepressant use increased. The proportion of senior claimants using antipsychotics remained relatively stable in all provinces, except for Nova Scotia, which had an increase in the rate of senior claimants using antipsychotics between 2001–2002 and 2009–2010.

Figure 5: Age–Sex-Standardized Percentage Rate of Psychotropic Drug Use Among Seniors on Public Drug Programs (Including Nursing Home Residents) in Selected Provinces,* by Drug Class and Province, 2009–2010



Note

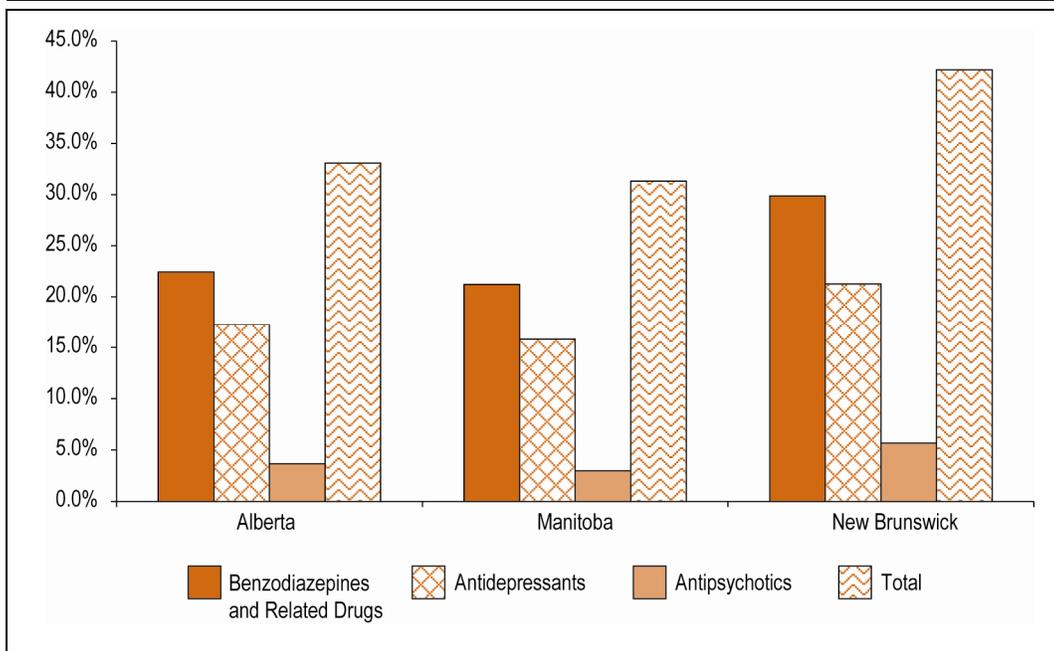
* Five provinces submitting claims data to the NPDUIS Database as of December 2010: Saskatchewan, Manitoba, New Brunswick, Nova Scotia and Prince Edward Island.

Source

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

In 2009–2010, among seniors not residing in nursing homes, psychotropic drug use varied from 31.3% in Manitoba to 42.2% in New Brunswick (Figure 6). 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 for P.E.I.

Figure 6: Age–Sex-Standardized Percentage Rate of Psychotropic Drug Use Among Seniors on Public Drug Programs (Excluding Nursing Home Residents) in Selected Provinces,* by Drug Class and Province, 2009–2010



Note
 * Three provinces submitting claims data to the NPDUIS Database as of December 2010: Alberta, Manitoba and New Brunswick.

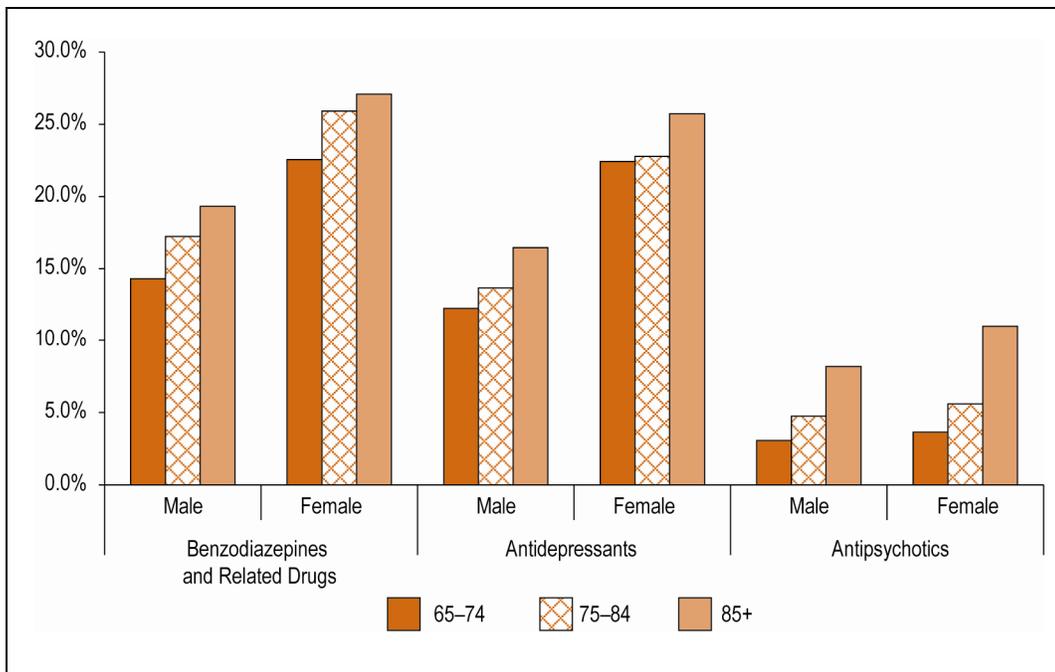
Source
 National Prescription Drug Utilization Information System Database, Canadian Institute for Health Information.

Psychotropic Use by Age and Sex

Psychotropic drug use was highest among females and older seniors (Figure 7). In 2009–2010, the rate of benzodiazepine and related drug use was 24.6% among women, compared with 15.8% among men. The rate of antidepressant use was 23.2% among women, compared with 13.2% among men, while the rate of antipsychotic use was 5.7% among women, compared with 4.2% among men.

For both men and women, psychotropic drug use was highest among older seniors. The rate of benzodiazepine and related drug use ranged from 18.7% among seniors age 65 to 74 to 24.9% among those age 85 and older, while antidepressant use ranged from 17.6% to 23.1% and antipsychotic use ranged from 3.4% to 10.2%.

Figure 7: Percentage Rate of Psychotropic Drug Use Among Seniors on Public Drug Programs in Selected Provinces,* by Age Group and Sex, 2009–2010



Note

* Six provinces submitting claims data to the NPDUIS Database as of December 2010: Alberta, Saskatchewan, Manitoba, New Brunswick, Nova Scotia and Prince Edward Island.

Source

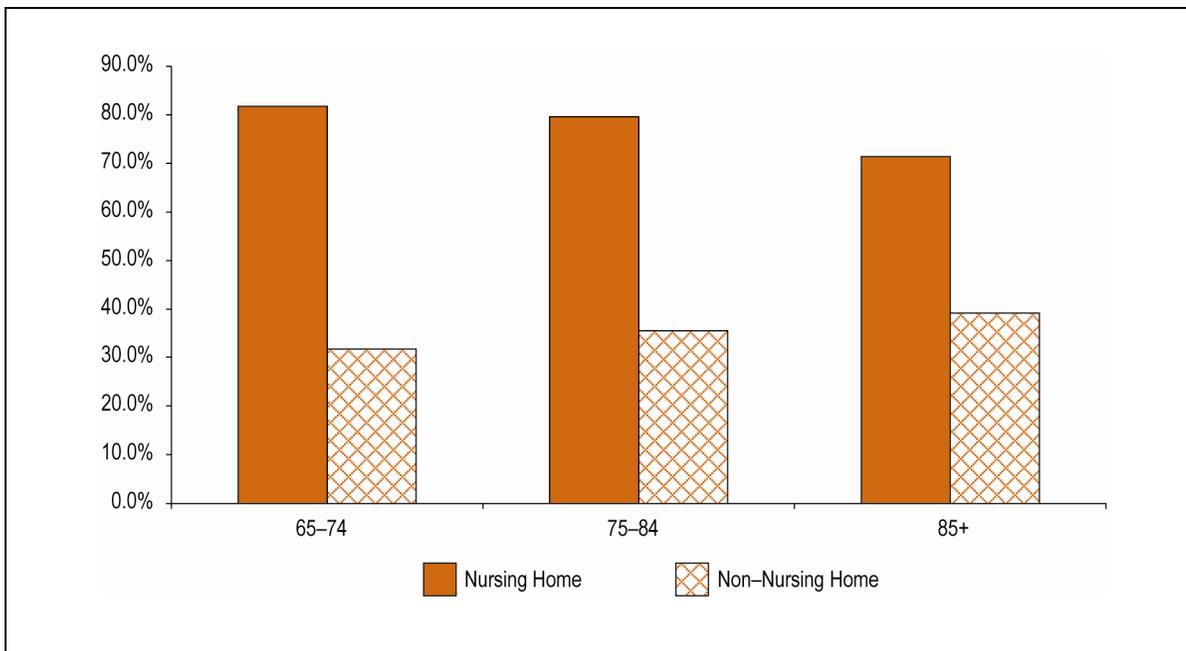
National Prescription Drug Utilization Information System Database, Canadian Institute for Health Information.

Psychotropic Use Among Nursing Home Residents

Using data from Manitoba, New Brunswick and P.E.I., it was possible to compare the use of psychotropic drugs among nursing home residents with use among seniors 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 2009–2010, the rate of psychotropic drug use among seniors in Manitoba, New Brunswick and P.E.I. was significantly higher among seniors residing in nursing homes: 74.9% among nursing home residents, compared with 34.0% among non-nursing home residents (Figure 8). The rate of psychotropic drug use decreased with age among seniors in nursing homes (from 81.7% among seniors age 65 to 74 to 71.4% among those age 85 and older) but increased with age among those not in nursing homes (from 31.6% to 39.2%).

Figure 8: Percentage Rate of Psychotropic Drug Use Among Seniors on Public Drug Programs in Selected Provinces,* by Nursing Home Status and Age Group, 2009–2010



Note

* Three provinces submitting claims that can be identified as nursing home data to the NPDUIS Database as of December 2010: Manitoba, New Brunswick and Prince Edward Island.

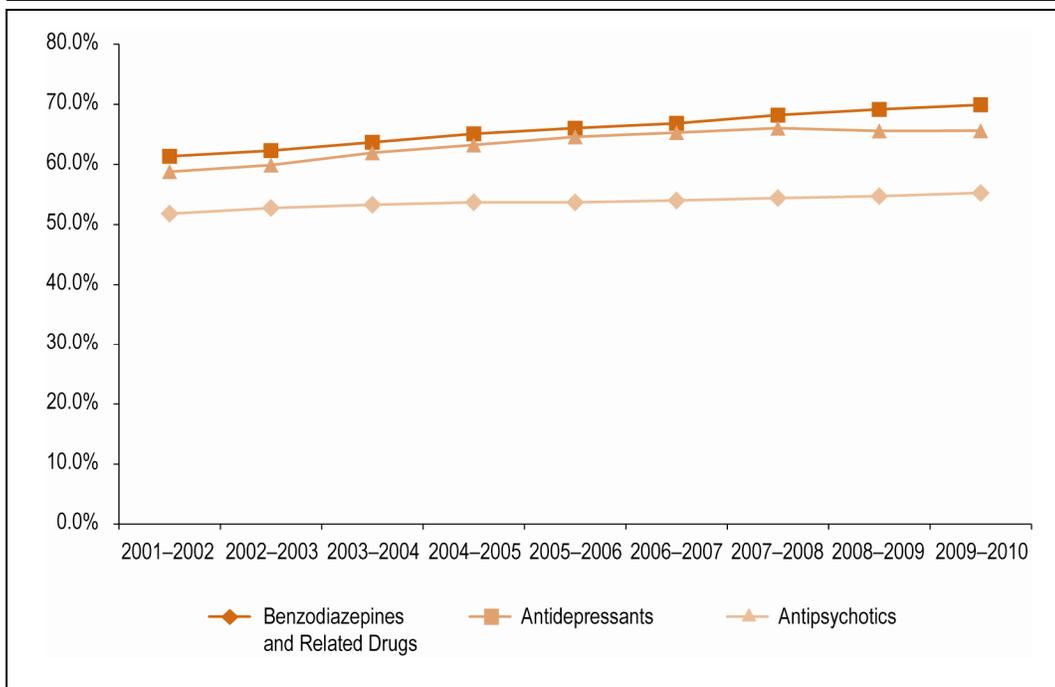
Source

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

Chronic Psychotropic Drug Use

The chronic use of these three psychotropic drug classes also plays an important role in determining the risk of falls. Studies have shown that prescribing psychotropic drugs for longer durations increases the incidence of falls in seniors.^{2, 19, 26} Here, we define chronic use as three or more claims per year with an accepted quantity of at least 180 tablets or capsules for a given drug class. This analysis was based on claims for tablets and capsules only, due to known inconsistencies in reporting quantity units for products like liquids (0.4% of claims were excluded).²⁷ The proportion of users defined as chronic users has been increasing slightly over time for all classes of psychotropic drugs (Figure 9).

Figure 9: Percentage Rate of Chronic Use Among Senior Psychotropic Drug Users on Public Drug Programs in Selected Provinces,* by Drug Classes, 2001–2002 to 2009–2010



Note

* Five provinces submitting claims data to the NPDUIS Database as of December 2010: Alberta, Saskatchewan, Manitoba, New Brunswick and Nova Scotia.

Source

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

Conclusion

This analysis of NPDUIS Database data from Alberta, Saskatchewan, Manitoba, New Brunswick, Nova Scotia and P.E.I. between 2001–2002 and 2009–2010 examined trends in the use of three psychotropic drug classes associated with a heightened risk of falls in seniors. This analysis did not assess the relationship between the use of these drugs and unintentional falls.

One in three seniors on public drug programs in these six provinces was taking at least one psychotropic drug from these classes. Overall, the age–sex-standardized rate of psychotropic drug use increased slightly during the study period, from 32.1% in 2001–2002 to 33.5% in 2009–2010. The rate of psychotropic drug use was significantly higher among seniors residing in nursing homes.

Antidepressant use among seniors on public drug programs increased from 15.2% to 18.9% during this period. The use of TCAs declined, while there was increased use of SSRIs, SNRIs and other antidepressants, including trazodone, mirtazapine and bupropion. TCAs are associated with a greater risk of certain side effects; however, studies comparing the risk of falls between groups of antidepressants have found differing results.^{17–19}

While both short- and long-acting benzodiazepine use decreased, the use of zopiclone, a short-acting benzodiazepine-related drug, increased. Short-acting agents are often preferred over long-acting ones, as their sedative effects are less likely to persist during the day. Studies have not found significant differences in adverse events between benzodiazepines and benzodiazepine-related drugs, including zopiclone.¹⁵

There was an increase in the use of atypical antipsychotics and a decrease in the use of typical antipsychotics, resulting in a slight increase in antipsychotic use, from 4.5% in 2001–2002 to 5.1% in 2009–2010. Atypical agents have been shown to be at least as effective as typical agents, with a lower risk of some adverse effects.^{21, 22}

Further analysis is required to examine the use of these drugs, particularly among older seniors and seniors living in nursing homes, where rates of use are particularly high. The inclusion of diagnostic information in future analyses would provide valuable context for interpreting the results. The risks associated with these selected psychotropic drugs are of particular concern in seniors, who are already at heightened risk of falls due to age-related changes in how drugs are processed by the body. In addition, the prevalence of other risk factors is also known to increase with age. For example, the prevalence of dementia in Canada has been estimated at 2.5% among seniors age 65 to 74, compared with 34.5% among those 85 and older.²⁸ A previous study also found that 16.8% of seniors age 65 to 74 had claims for 10 or more drugs, compared with 28.6% of seniors 85 and older.²⁹

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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.

Appendix A

Distribution of Total Senior Population^{ix} and Senior Claimants on Public Drug Programs in Selected Provinces,^x by Age and Sex, 2009–2010

Alberta

Group	Senior Population (n = 388,239)	Senior Claimants (n = 347,752)
Male	45.1%	44.8%
Female	54.9%	55.2%
65–74	53.7%	52.8%
75–84	33.3%	34.8%
85+	13.0%	12.3%

Saskatchewan

Group	Senior Population (n = 152,356)	Senior Claimants (n = 137,943)
Male	44.1%	42.8%
Female	55.9%	57.2%
65–74	48.1%	46.0%
75–84	35.3%	36.2%
85+	16.6%	17.9%

Manitoba

Group	Senior Population (n = 169,356)	Senior Claimants (n = 153,619)
Male	43.4%	42.5%
Female	56.6%	57.5%
65–74	49.9%	48.1%
75–84	34.1%	35.0%
85+	16.0%	16.9%

New Brunswick

Group	Senior Population (n = 117,285)	Senior Claimants (n = 66,069)
Male	44.2%	39.1%
Female	55.8%	60.9%
65–74	53.9%	47.0%
75–84	32.1%	35.9%
85+	13.9%	17.1%

ix. Population data comes from Statistics Canada, Demography Division, Special Tabulation, June 2010.

x. The six provinces submitting claims data to the NPDUIS Database as of December 2010.

Nova Scotia

Group	Senior Population (n = 148,970)	Senior Claimants (n = 100,466)
Male	43.8%	39.5%
Female	56.2%	60.5%
65–74	54.3%	50.0%
75–84	31.9%	34.4%
85+	13.8%	15.6%

Prince Edward Island

Group	Senior Population (n = 21,822)	Senior Claimants (n = 18,937)
Male	44.0%	42.9%
Female	56.0%	57.1%
65–74	54.3%	52.8%
75–84	32.3%	34.0%
85+	13.5%	13.2%

Canada (Standard Population)

Group	Senior Population (n = 4,725,141)	Senior Claimants (N/A)
Male	44.2%	N/A
Female	55.8%	N/A
65–74	53.1%	N/A
75–84	33.6%	N/A
85+	13.3%	N/A

Note
N/A: non-applicable.

Appendix B

Age–Sex-Standardized Percentage Rate of Psychotropic Use Among Seniors on Public Drug Programs in Selected Provinces (Both Including and Excluding Nursing Home Residents),^{xi} by Province, 2009–2010^{xii}

Benzodiazepines and Related Drugs

Province	All Claimants (Including Nursing Home Residents)	All Claimants (Excluding Nursing Home Residents)
Alberta	N/A	22.4%
Saskatchewan	10.5%	N/A
Manitoba	21.7%	21.2%
New Brunswick	31.0%	29.9%
Nova Scotia	21.6%	N/A
Prince Edward Island	9.6%	N/A

Antidepressants

Province	All Claimants (Including Nursing Home Residents)	All Claimants (Excluding Nursing Home Residents)
Alberta	N/A	17.3%
Saskatchewan	18.2%	N/A
Manitoba	17.4%	15.8%
New Brunswick	23.0%	21.3%
Nova Scotia	23.0%	N/A
Prince Edward Island	19.1%	N/A

Antipsychotics

Province	All Claimants (Including Nursing Home Residents)	All Claimants (Excluding Nursing Home Residents)
Alberta	N/A	3.6%
Saskatchewan	5.8%	N/A
Manitoba	4.8%	3.0%
New Brunswick	8.2%	5.7%
Nova Scotia	5.9%	N/A
Prince Edward Island	2.4%	N/A

Note

N/A: non-applicable.

xi. The six provinces submitting claims data to the NPDUI Database as of December 2010: Alberta, Saskatchewan, Manitoba, New Brunswick, Nova Scotia and Prince Edward Island.

xii. Data comes from the National Prescription Drug Utilization Information System Database, Canadian Institute for Health Information.

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