

Medication Use among Canadian Seniors

Mark McPherson, Hong Ji, Jordan Hunt, Rob Ranger and Cheryl Gula

Abstract

As they age, many seniors develop a progressively more complex mix of health conditions. Multiple prescription medications are often required to help manage these conditions and control symptoms, with the goal of maintaining seniors' health for as long as possible. This article explores trends in the number and types of medications used by seniors on public drug programs in Canada. Our findings suggest that a high proportion of Canadian seniors are taking several medications, highlighting the need for medication management systems focusing on this population.

Over three quarters of Canadian seniors (65 years and older) report having at least one chronic condition, while one quarter report being diagnosed with three or more (Canadian Institute for Health Information [CIHI] 2011a). A study by Statistics Canada in 2009 showed that nearly all seniors (97%) in healthcare institutions were taking some form of medication, and over three quarters of those living in a private household were taking at least one type of medication (Ramage-Morin 2009). Within the senior population, the percentage of long-term drug users is rising with the increasing prevalence of chronic conditions (CIHI 2011c). Often, these long-term users are taking multiple medications at one time.

Seniors are particularly vulnerable to adverse drug reactions and drug interactions because of co-morbidities and age-related physiological changes (Ramage-Morin 2009). Approximately half of seniors taking multiple medications report not receiving information from their physician on proper medication use and potential side effects (CIHI 2011c). These side effects have been shown to be a common cause of avoidable hospital admissions (Howard et al. 2006).

The study presented here, using data from CIHI, examined the number and types of drugs used by seniors on public drug programs in Canada. It looked at the prevalence of chronic drug use and polypharmacy among seniors and considered trends by age category.

Data Sources and Methods

The report *Health Care in Canada: A Focus on Seniors and Aging* includes a section on drug use by seniors (CIHI 2011a). Analyses presented here update and expand on the data presented in the report using drug claims from the National Prescription Drug Utilization Information System (NPDUIS) Database at CIHI. The findings are consistent with those presented in *Health Care in Canada*. This study also explored the number of drug classes claimed by seniors and the most claimed drug classes.

The NPDUIS Database includes seniors on public drug programs in seven provinces – Alberta, Saskatchewan, Manitoba, Ontario, New Brunswick, Nova Scotia and Prince Edward Island – in 2010–2011 (fiscal year defined as April 2010 to March 2011). The results are restricted to seniors, as public drug programs in each of the jurisdictions consistently cover this population.

The NPDUIS Database includes claims accepted by public drug programs, either for reimbursement or toward a deductible. Claims are included regardless of whether or not the patient actually used the drugs. The NPDUIS Database does not include information regarding (1) prescriptions that were written but never dispensed; (2) prescriptions that were dispensed but for which the associated drug costs were not submitted to, or not accepted by, the public drug programs; or (3) diagnoses or conditions for which prescriptions were written.

Drug class is defined as a subgroup of chemicals classified by the World Health Organization at the fourth level of the Anatomical Therapeutic Chemical classification system. At this level, subgroups are, in theory, regarded as groups of different chemicals that work in the same way to treat similar medical conditions. The number of drug classes a senior is taking in one year does not necessarily reflect the number of drugs he or she is taking at one time. Chronic users were defined as those with claims for at least a 180-day supply of a drug in a given year.

Findings Drug Costs

As Canadians age, the number of drugs prescribed, and consequently the total cost per patient, increases. In this study, on

average, seniors on public drug programs claimed \$1,790 of prescription drugs per year. Costs rise with increasing age. In the 65- to 74-year age group, the cost per patient was \$1,526. This rose to \$2,005 for seniors aged 75–84 years and to \$2,249 for those 85 years or older. The increase in cost is likely associated with the increasing number of drugs prescribed in older age groups.

Most Commonly Prescribed Medications

The most commonly prescribed medications in 2010–2011 were statins (to lower cholesterol levels) and angiotensin-converting enzyme (ACE) inhibitors (to treat hypertension and heart failure), used by 47.2% and 29.6% of seniors, respectively (Table 1). Half of the top 10 most prescribed drugs were used to treat cardiovascular symptoms and diseases. Seven of the top 10 drug classes were also among the 10 most commonly prescribed medications in 2002.

TABLE 1.
Top 10 most claimed drug classes among seniors on public drug programs, 2010–2011*

| Drug Class | Common Use | Rate of Use (%) |
|--|---|-----------------|
| HMG-CoA reductase inhibitors (statins) | High cholesterol | 47.2 |
| ACE inhibitors, plain | Heart failure, high blood pressure | 29.6 |
| Proton pump inhibitors | Gastroesophageal reflux disease, peptic ulcer diseases | 29.0 |
| Beta-blocking agents, selective | High blood pressure, heart failure, angina (chest pain) | 24.8 |
| Dihydropyridine calcium channel blockers | High blood pressure | 21.9 |
| Angiotensin II receptor antagonists, plain | High blood pressure, heart failure | 17.5 |
| Thyroid hormones | Hyperthyroidism | 17.3 |
| Thiazide diuretics, plain | High blood pressure | 16.6 |
| Natural opium alkaloids | Pain management | 15.8 |
| Biguanides | Diabetes | 15.0 |

ACE = angiotensin-converting enzyme; HMG-CoA = 3-hydroxy-3-methylglutaryl coenzyme A.

* The seven provinces submitting data to the National Prescription Drug Utilization Information System Database as of March 2011: Alberta, Saskatchewan, Manitoba, Ontario, New Brunswick, Nova Scotia and Prince Edward Island.

Source: National Prescription Drug Utilization Information System Database, Canadian Institute for Health Information, 2010–2011.

There was little difference in most prescribed medications between the 65–74 and 75–84 age categories. In the 85+ age category, a drop in statin use and an increase in sulphonamide diuretics (to treat hypertension) was observed. Also, fluoroqui-

nolones (antibiotics), anilides (pain relievers) and benzodiazepine derivatives (to alleviate anxiety or to treat insomnia) were claimed by roughly 20% of seniors in this age group. While among the most often-claimed drugs in the 85+ age group, these drugs were not among the top 10 in the other senior age groups.

Drug Use for Select Chronic Conditions

With the increasing prevalence of multiple chronic conditions among seniors, medications are often taken for extended periods of time. Chronic drug use, defined here as having at least a 180-day supply of a drug, is a growing concern in the senior population. In 2010–2011, slightly more than half (57.6%) of seniors on public drug programs had claims for chronic use to treat two or more select conditions. Nearly one in three (31.0%) seniors in 2010–2011 had long-term claims for drugs to treat three or more conditions, representing over 800,000 seniors. The prevalence of chronic drug list to treat three or more chronic conditions was highest (35.9%) in the 75–84 age group.

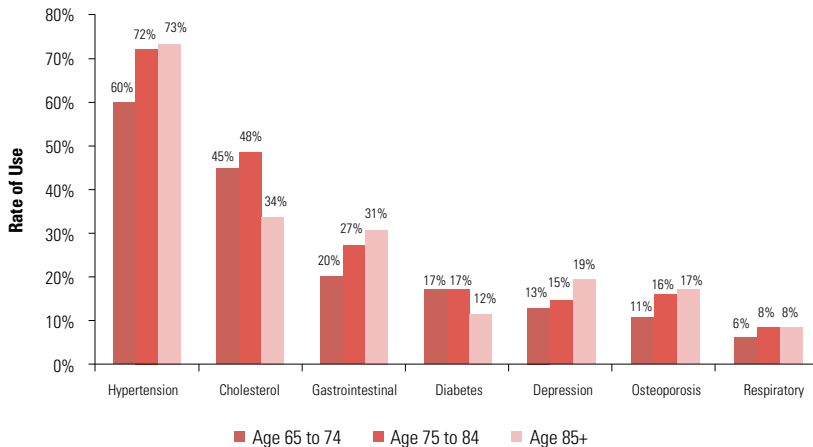
Chronic drug use was most common for the treatment of hypertension and cholesterol (Figure 1). The number of drug classes a senior is taking in one year does not necessarily reflect the number of drugs he or she is taking at one time. Some drugs are taken for the long term, while others, such as anti-infectives, are typically taken for a defined short course of treatment.

Number of Drugs

Although it may be appropriate for some seniors to take several drugs, the use of multiple medications, known as polypharmacy, increases the risks of drug interactions and side effects. The number of seniors taking five or more drugs was more than double those taking less than five drugs. Roughly 69%, or 1.8 million of all seniors, were taking five or more

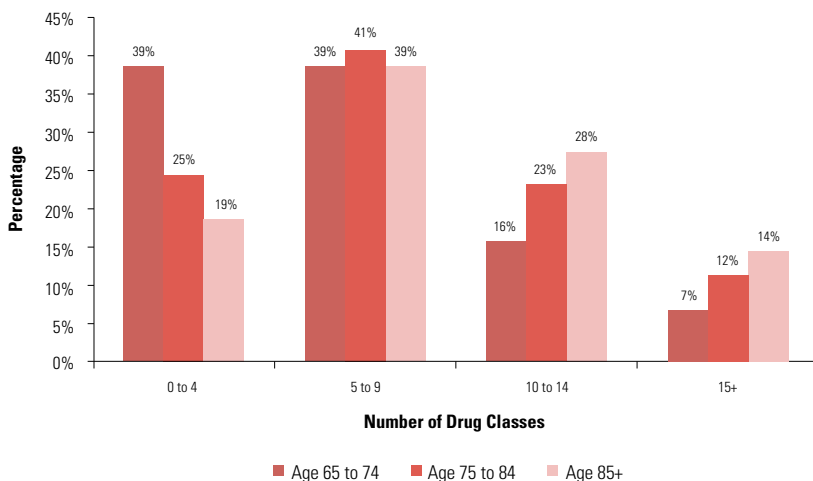
drugs from different drug classes, with nearly 10% (293,441 seniors) taking 15 or more. This increased with age, with those who were 85+ being twice as likely to take at least 15 drug classes compared with those in the 65–74 age group (Figure 2).

FIGURE 1.
Rate of chronic use of at least one drug class in defined diseases among seniors on public drug programs, by disease and age group, 2010–2011*



*The seven provinces submitting data to the National Prescription Drug Utilization Information System Database as of March 2011: Alberta, Saskatchewan, Manitoba, Ontario, New Brunswick, Nova Scotia and Prince Edward Island.
 Source: National Prescription Drug Utilization Information System Database, Canadian Institute for Health Information, 2010–2011.

FIGURE 2.
Percentage of claims for different drug classes among seniors on public drug programs, by age groups, 2010–2011*



*The seven provinces submitting data to the National Prescription Drug Utilization Information System Database as of March 2011: Alberta, Saskatchewan, Manitoba, Ontario, New Brunswick, Nova Scotia and Prince Edward Island.
 Source: National Prescription Drug Utilization Information System Database, Canadian Institute for Health Information, 2010–2011.

Discussion

With advancing age, people often develop an increasingly complex mix of health conditions that require an increasing number of prescription medications to be managed. Many Canadian seniors are chronic users of multiple medications and, consequently, are at a heightened risk of drug side effects and interactions.

Several strategies have been implemented to promote the safe and appropriate use of drugs in seniors, including team-based approaches to care, medication reviews and the implementation of drug information systems and electronic medical records. More widespread adoption of electronic medical record systems may facilitate physician decision-making in the future, by ensuring that they have access to more complete information on patients’ medical conditions and other medications in addition to clinical decision support tools. Given that nearly 13% of seniors with at least one chronic condition who were taking at least five prescription medications reported side effect that required health-care in the previous 12 months (CIHI 2011c), clinical practice guidelines and electronic decision support for physicians may help to ensure that all the medications being taken by seniors are properly managed (Health Council of Canada 2010).

Prescribed medications have become an increasingly significant component of Canada’s healthcare system, accounting for the second-largest share of health spending, after hospitals (CIHI 2011b). As the number and availability of drugs continue to grow, strategies and policies will need to be implemented to ensure that Canadian seniors are receiving the appropriate number, type and dosage of medications to promote and maintain good health for as long as possible. **HQ**

Acknowledgments

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