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Antipsychotic Drug Dispensations in Older Adults, Including Continuation After a Fall-Related Hospitalization: Identifying Adherence to Screening Tool of Older Persons' Potentially Inappropriate Prescriptions Criteria Using the Nova Scotia Seniors' Pharmacare Program and Canadian Institute for Health's Discharge Databases

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ABSTRACT

Purpose: Despite well-established concerns regarding adverse drug effects, antipsychotics are frequently prescribed for older adults. Our first objective was to identify trends in antipsychotic dispensations to older Nova Scotians. STOPP (Screening Tool of Older Persons' Potentially Inappropriate Prescriptions) criteria identify antipsychotic use in those with a history of falls as potentially inappropriate. Our second objective was to identify trends, predictors, and adherence with this STOPP criteria by identifying continued antipsychotic dispensations following a fall-related hospitalization.

Methods: A descriptive cross-sectional cohort study of Nova Scotia Seniors' Pharmacare Program (NSSPP) beneficiaries ≥ 66 years with at least one antipsychotic dispensation annually from April 1, 2009 to March 31, 2014 was completed. As well, unique beneficiaries with at least one antipsychotic dispensation in the four-year period between April 1, 2009 and March 31, 2013 were linked to fall-related hospitalizations recorded in the Canadian Institute for Health Information Discharge Abstract Database. The relationship of age, sex, fiscal year, days supply and length-of-stay were studied to identify predictors of continued antipsychotic dispensation post-discharge. Descriptive statistics and multivariate logistic analysis were performed. Odds ratios for the association of risk factors and adherence to STOPP criteria were calculated.

Findings: We identified that in each year observed, there were 6% of eligible NSSPP beneficiaries that received at least one antipsychotic dispensation. Approximately 70% of antipsychotic dispensations were for second generation agents, primarily quetiapine and risperidone. Of the unique beneficiaries with at least one antipsychotic dispensation in the four-year period between April 1, 2009 and March 31, 2013 who survived a fall-related hospitalization over 75% were dispensed an antipsychotic in the 100 days following hospital discharge. Logistic regression showed no statistically significant association between potentially inappropriate therapy and potential predictors in multivariate analysis.

Implications: In each year from 2009 to 2014, 6% of Nova Scotia Seniors' Pharmacare beneficiaries were dispensed at least one antipsychotic prescription. Over 75% of the older adults who received an antipsy-

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chotic dispensation in the 100 days prior to a fall-related hospitalization, continued the drug class after discharge. This demonstrates that despite the recommendations of quality indicators such as the STOPP criteria, antipsychotics are continued in individuals at a high risk of falling. Future investigations are needed to inform health team, system, and policy interventions to improve concordance with this antipsychotic specific STOPP criterion when appropriate.

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Introduction

Optimization of drug use by older adults remains a priority. Recognition of this need has led to creation of explicit measures that suggest optimal medication practices for older adults, including the Beers Criteria list¹ and Screening Tool of Older Persons' Potentially Inappropriate Prescriptions (STOPP) criteria.² Similarly, the Choosing Wisely initiative³ works to promote changes in health care to avoid unnecessary tests, treatments, and procedures for patients. These quality indicators help clinicians and health system managers identify situations where risks from specific medications and procedures may outweigh benefits. Antipsychotic drugs are included among these explicit measures^{1–3} as potentially inappropriate medications.

The prevalent use of antipsychotic drugs by older adults is a concern due to their known increased risk of adverse drug events,^{4–8} which include akathisia,⁹ movement disorders,¹⁰ confusion,^{11,12} pneumonia,¹³ falls,¹⁴ cardiovascular effects (eg, hypertension, dyslipidemia, and obesity),¹⁵ hypothyroidism,^{16–18} neuroleptic malignant syndrome,¹⁹ and death.^{19,20} In 2005, the US Food and Drug Administration (FDA) and Health Canada issued black box warnings regarding the increased risk of mortality in older adults with dementia treated with second-generation antipsychotic drugs.^{4,21–23} In response to observational studies that identified this risk, with the use of both typical and atypical antipsychotic drugs,^{19,20,23} the FDA extended this black box warning to include all antipsychotic drugs in 2008.^{22,24} As a result, antipsychotic agents are only recommended for use in those with a psychotic disorder or symptoms of dementia that have not responded to nonpharmacologic treatment.^{25–30} Despite existing quality indicators and limited indications approved by drug regulatory bodies, antipsychotic agents continue to be used off-label.^{4,8,31–33} Many times, off-label antipsychotic drug use occurs where precautions exist due to concomitant health issues (eg, Parkinsonism or history of falls), or where drug interactions exist (eg, augmented anticholinergic burden resulting in dry mouth or blurred vision.⁴ Sensitivity to antipsychotic agent adverse effects in older adults is potentially related to age-related changes in the brain's response to these agents,³⁴ changes in the blood-brain barrier,^{35,36} and/or changes in drug metabolism and elimination.^{37,38}

We were interested in antipsychotic agent prescribing to older adults in Nova Scotia, Canada. We also wanted to explore concordance with the STOPP criteria that recommends antipsychotic drugs be avoided in those at risk of falls. We conducted a retrospective observational study using Nova Scotia administrative health data to identify annual trends in the dispensation of antipsychotic drugs to older persons (Objective 1). Additionally, with a continuous 4-year cohort, we identified the postdischarge continued dispensation of antipsychotic drugs in older persons who had experienced a fall-related hospitalization (Objective 2).

Methods

Sources of data

Nova Scotia Seniors' Pharmacare Program Database

The Nova Scotia Seniors' Pharmacare Program Database (NSSPP) is a provincial drug insurance plan for eligible residents of Nova Scotia, aged 65 years and older qualifying for provincial health coverage (<https://novascotia.ca/dhw/pharmacare/seniors-pharmacare.asp>). This database was used to identify older adults aged 66 and older for Objectives 1 and 2 in separate data extractions: Objective 1 is based on annual cohorts, whereas Objective 2 has a 4-year single cohort.

Nova Scotians may choose to enroll in this provincially funded drug plan at age 65 years. Opting in requires registration and payment of an annual premium and a copayment, both with an annual maximum (exceptions exist for low-income seniors).³⁹ The NSSPP provides benefits for approximately 66% of this older population.⁴⁰ Approximately 92% of NSSPP beneficiaries live in the community; 8% live in a variety of care-based settings (community-based options for continuing care, or long-term care facilities). Nova Scotians are excluded from the NSSPP if they receive benefits from a federal government drug insurance program (eg, Veterans Affairs Canada or Non-Insured Health Benefits for First Nations People and Inuit), Nova Scotia Family Pharmacare, or any private plan that covers most medications and supplies. Nova Scotians who qualify for NSSPP but choose to pay for prescriptions themselves are not included in the NSSPP database.

The NSSPP database records prescriptions dispensed in community pharmacies to program beneficiaries who are living in the community or long-term care facilities. Prescription claims data from the NSSPP include demographic details (eg, age and sex) and information on prescriptions dispensed, including the generic and brand name of the medication, strength, quantity, days supplied, and cost. NSSPP data do not contain medications administered in hospitals, on discharge, or in emergency departments.

World Health Organization Anatomical Therapeutic Chemical Classification System codes

Antipsychotic drugs were identified by 2015 World Health Organization Anatomical Therapeutic Chemical Classification System (codes for data extraction for both Objectives 1 and 2 (https://www.whocc.no/atc_ddd_index/)) (Appendix 1).

Canadian Institute of Health Information Discharge Abstract Database

The Canadian Institute of Health Information Discharge Abstract Database (DAD) records acute patient discharge information from 33 acute care facilities in Nova Scotia (<https://www.cihi.ca/en/discharge-abstract-database-metadata>). The DAD was used for Objective 2.

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