

ACCESS AND INTENSITY OF USE OF PRESCRIPTION ANALGESICS AMONG OLDER MANITOBANS

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ABSTRACT

Background

Under-treatment of pain is frequently reported, especially among seniors, with chronic non-cancer pain most likely to be under-treated. Legislation regarding the prescribing/dispensing of opioid analgesics (including multiple prescription programs [MPP]) may impede access to needed analgesics.

Objective

To describe access and intensity of use of analgesics among older Manitobans by health region.

Methods

A cross-sectional study of non-Aboriginal non-institutionalized Manitoba residents over 65 years of age during April 1, 2002 to March 31, 2003 was conducted using the Pharmaceutical Claims data and the Cancer Registry from the province of Manitoba. Access to analgesics (users/1000/Yr) and intensity of use (using defined daily dose [DDD] methodology) were calculated for non-opioid analgesics, opioids, and multiple-prescription-program opioids [MPP-opioids]. Usage was categorized by age, gender, and stratified by cancer diagnosis. Age-sex standardized rates of prevalence and intensity are reported for the eleven health regions of Manitoba.

Results

Thirty-four percent of older Manitobans accessed analgesics during the study period. Female gender, increasing age, and a cancer diagnosis were associated with greater access and intensity of use of all classes of analgesics. Age-sex standardized access and intensity measures revealed the highest overall analgesic use in the most rural / remote regions of the province. However, these same regions had the lowest use of opioids, and MPP-opioids among residents lacking a cancer diagnosis.

Conclusion

This population-based study of analgesic use suggests that there may be variations in use of opioids and other analgesics depending on an urban or rural residence. The impact of programs such as the MPP program requires further study to describe its impact on analgesic use.

Key Words: *Rural, aged, pain, analgesia, opioid, drug and narcotic control*

Under-treatment of pain is a frequently reported problem.¹⁻³ Further, there is evidence to suggest that older adults are less likely to receive adequate analgesia, and in particular, are less likely to receive opioid analgesics.^{2,4} In

Canada, the federal Controlled Drugs and Substances Act stipulates all but lower potency opioids, in combination with other non-opioid ingredients, must be dispensed by a pharmacist pursuant to a written physician's order (i.e. no

verbal/telephone orders are acceptable). Additional requirements, like multiple-copy prescriptions, are commonly imposed by professional bodies in many provinces in Canada. In Manitoba, the Multiple Prescription Program requires that physicians prescribe all but the lower potency combination opioids (e.g., acetaminophen /caffeine /codeine combinations) using personalized multiple copy prescriptions, which are valid for only three days from the date of issue.⁵ Multiple copy prescriptions are required for single-entity and/or parenteral opioids, in addition to controlled drugs (e.g. methylphenidate).

Evidence suggests that the increased administrative burden and fear of professional sanction related to multiple-copy prescription programs results in reductions of both inappropriate and appropriate prescribing of controlled substances.⁶ Further, there is speculation that such programs merely result in a shift to the prescribing of less efficacious agents.^{7,8} In the context of opioid prescribing, the effect of such programs may differ, dependent upon the type of pain. For example, Canadian physicians reported a high incidence of opioid prescribing for cancer pain, while indicating a reluctance to prescribe opioids for chronic non-cancer pain, even when severe.⁹ However, such attitudes are in contrast to recent guidelines which support the use of opioids in the treatment of chronic non-cancer pain.^{10,11}

In non-cancer pain, negative attitudes toward the use of opioids are likely to compound the difficulties of healthcare-system barriers to receive adequate treatment. Specifically, patients living in rural areas may have greater difficulties in accessing analgesics, especially opioids, due to geographic and practical constraints (e.g., remoteness, reduced access to specialists, a shortage of healthcare providers, and federal/local regulations governing the dispensing of opioids). Thus, rural seniors with non-cancer pain may be at the greatest risk for inappropriate under-use of analgesics, in general, and opioid analgesics, specifically. We examined access and intensity of use of analgesics among older Manitobans by area of residence, to identify differences that may signal the existence of barriers to care.

METHODS

A cross-sectional study of prescription analgesic use among non-Aboriginal, non-institutionalized Manitoba residents over 65 years of age during April 1, 2002 to March 31, 2003 was conducted.

Data Source

Anonymized claims from the administrative healthcare databases of Manitoba Health and Healthy Living, accessed through the Manitoba Centre for Health Policy, were used as the data source. Accessed components of the database included: pharmaceutical claims from the Drug Programs Information Network (DPIN), the Registry File (a list of everyone eligible for health care coverage in the province, including demographic information), and the Personal Care Home Data (a database of healthcare services provided to residents of personal care homes in the province). The reliability and validity of the Manitoba Health databases have previously been reported.¹²⁻¹⁴ Specifically, the DPIN is reported to have a high degree of accuracy and completeness, although it does not capture the use of medications in hospital or the majority of non-prescription drugs. It may underestimate use by the Aboriginal population, who receive federal coverage for medications.¹²

To identify subjects with a previous cancer diagnosis, data from Manitoba Health was linked to the Manitoba Cancer Registry. CancerCare Manitoba is legally mandated to maintain accurate, comprehensive information on all cancer cases for the province of Manitoba, and uses multiple sources of information to ensure complete capture of all cancer cases in the province. The study was approved by the Health Research Ethics Boards of the Universities of Alberta and Manitoba, the Health Information Privacy Committee of Manitoba Health, and the Research Resource Impact Committee of CancerCare Manitoba.

Identification of the Cohort/Claims

Manitoba residents, 65 years of age or older during the study period April 1, 2002 to March 31, 2003, and who did not reside in a personal care home or a Aboriginal community, were identified using the Registry and Personal Care Home data and constitute our cohort of interest.

Subjects with long hospital stays, defined as greater than 60 days within any 121-day period during the study year, were excluded. Age, gender and region of residence were assigned as of March 2003 based on the Registry File. Subjects entered into the Manitoba Cancer Registry prior to March 31, 2003, as having a diagnosis of any invasive non-dermatological cancer in the previous five years were identified. Residents who died or left the province during the year were maintained in the cohort, but were censored, and the number of person-days each resident contributed during the study period was calculated.

Prescription claims by the study cohort for analgesic medications were abstracted from the DPIN for the study period stated above. Analgesic prescriptions were identified using the Anatomic Therapeutic Chemical (ATC) classification system. Prescriptions containing the ATC codes M01A (anti-inflammatory and anti-rheumatic products, non steroids), N02A (opioids), and N02B (other analgesics and antipyretics) were abstracted. Claims for non-prescription products contained within these classifications were excluded.

For the description of analgesic use five categories of analgesics were defined. These included all analgesics, which were further categorized as non-opioids or opioids. Non-opioids are for the most part older non-steroidal anti-inflammatory agents (NSAIDs) and newer cox-2 selective inhibitors. Opioids were further categorized based on whether they are subject to the restrictions of the Multiple Prescription Program in Manitoba (MPP-opioids and non-MPP opioids).

Access to analgesics is described based on the proportion of the cohort who filled at least one prescription for an analgesic of interest during the study period reported as users/1000/year. Two intensity of analgesic use measures were calculated utilizing the number of defined daily doses [DDD] per resident and per user.¹⁵ Only oral solid dosage forms were used to calculate intensity-of-use, as liquid and topical analgesic formulations (e.g., fentanyl patches) are complicated due to inconsistencies in the way in which quantity dispensed is recorded in the DPIN. The DDD is defined as the average maintenance dose per day for a drug used for its main indication in adults. The first measure of intensity reported (DDD per

1000 resident-days) provides an estimate of the proportion of older Manitobans who would be a "user" on any given day. The second measure of intensity reported (DDD per user-year) provides an estimate of the number of days per year that a user would consume the analgesic of interest.¹⁵ Within each of the five categories of analgesics described above, a "user" refers to a resident who filled at least one prescription for that specific category of analgesic. Thus the number of users differs based on the category of analgesic being described.

Analysis

Measures of access and intensity of use were stratified by age, gender and cancer diagnosis. To compare access and intensity of use by region of residence, age-sex standardized measures were calculated for Manitoba's eleven health regions. The three northern regions (Burntwood, Norman, and Churchill [BNC]) were combined, due to their sparse population. Winnipeg and Brandon regions are considered high-density major urban centres and are located in the southern part of the province. Residents of the combined BNC region are the furthest removed from these urban centres. (See Figure 1)

RESULTS

Of the 145,969 Manitoba residents meeting inclusion criteria for study, 63,641 (43.6%) were male and 82,508 (56.5%) were female. The majority of subjects resided in the Winnipeg Regional Health Authority (58.6%), followed by Central (8.4%), Assiniboine (8.3%), Interlake (6.8%), Parkland (5.2%), Brandon (4.4%), South Eastman (4.0%), North Eastman (3.0%), and Burntwood /Norman /Churchill (BNC) (1.5%).

Access to Analgesics

Approximately a third of older Manitobans filled at least one prescription for an analgesic during the study year. Non-opioid analgesics were the most frequently accessed class of analgesics, with 24.4% of the cohort filling at least one prescription for such agents, compared to 17.1% for opioid analgesics. Non-MPP opioids were more frequently accessed by the cohort than MPP-opioids; 15.4% of the cohort filled a prescription for a non-MPP opioid, and 3.2% filled a

prescription for a MPP-opioid. Females accessed all classes of analgesics more frequently than males, and those with a cancer diagnosis in the last 5 years were more likely to access all classes of analgesics than those lacking such a diagnosis. Cancer patients were only slightly more likely to access non-opioid analgesics (25.3% of cancer patients vs. 24.3% for non-cancer patients), but were approximately twice as likely to access opioids in general (31.7% vs. 16.1%), and three times as likely to access MPP-opioids (9.7% vs. 2.8%).

The proportion of older adults accessing analgesics differed between health regions (Table 1). Rates of access (age-sex standardized) for all

analgesics was highest in the South Eastman, Parkland, and Burntwood /Norman /Churchill regions, with correspondingly high rates of access of non-opioid analgesics in all regions.

However, while South Eastman residents also evidenced one of the highest rates of access of opioids (both total and MPP-opioids specifically), Burntwood /Norman /Churchill evidenced the lowest rate of access of opioids, despite having the highest rate of analgesic access overall. In contrast, regions with the lowest rates of access for all analgesics (Brandon and Assiniboine) consistently evidenced relatively low rates for both opioid and non-opioid analgesics.

TABLE 1 Access to Analgesics by Category and Health Region

	All analgesics Users/1000/year (95% CI)	Non-Opioid Users/1000/year (95% CI)	Opioid Users/1000/year (95% CI)	Non-MPP Opioid Users/1000/year (95% CI)	MPP-Opioid Users/1000/year (95% CI)
Central	354 (346-363)	273 (266-281)	160 (154-167)	141 (135-147)	36 (33-39)
North Eastman	369 (354-384)	286 (272-300)	171 (160-182)	150 (139-161)	37 (32-43)
South Eastman	378 (365-390)	294 (283-306)	180 (170-190)	150 (141-159)	49 (44-55)
Interlake	355 (346-365)	254 (245-263)	187 (179-195)	167 (159-174)	38 (34-42)
Parkland	379 (368-390)	317 (306-327)	149 (141-158)	134 (126-142)	31 (27-35)
Burntwood/ Norman/ Churchill	388 (368-410)	329 (309-350)	138 (124-154)	128 (115-144)	22 (16-29)
Brandon	316 (305-328)	231 (221-241)	150 (142-159)	138 (130-147)	24 (21-28)
Assiniboine	333 (325-342)	264 (257-272)	139 (133-146)	124 (118-130)	31 (28-34)
Winnipeg	339 (336-341)	223 (220-226)	179 (177-182)	162 (160-165)	31 (30-33)

Intensity of Analgesic Use

Intensity of use calculations were necessarily restricted to the use of oral solid dosage forms. Oral solid dosage forms accounted for the majority of prescriptions within each class, all analgesics (96.2%), non-opioids (99.5%), and non-MPP opioids (99.9%). In contrast, oral solid dosage forms accounted for only 64.2% of MPP-opioid prescriptions.

Intensity of analgesic use by the cohort, reported as DDD/1000 resident-days, provides an estimate of the proportion of older Manitobans who would be a “user” on any given day. Thus, approximately 133 out of 1000 older Manitobans would be using an analgesic on any given day (Table 2). Intensity of use of non-opioids by the cohort was greater than that of opioids, 113.1 versus

19.4/1000 resident-days, respectively. Residents, both with and without a cancer diagnosis, had similar rates of intensity for non-opioids. However, the intensity of use for both non-MPP and MPP opioids was greater among subjects having a cancer diagnosis, compared to those lacking such a diagnosis (Table 2).

An intensity of use for all analgesics of 145.2 DDD/user-year indicates that each user of analgesics received on average 145.2 DDDs of analgesics during the study year (Table 2). Non-opioid users received on average 168.9 DDDs of non-opioid analgesics during the year, while users of opioids received 43.6 DDDs of opioids during the same time period. However, users of MPP-opioids had the highest intensity of use, receiving on average 174.6 DDDs of MPP-opioids. Intensity of use was similar

for both cancer and non-cancer users in all classes, with the exception of a higher intensity of use of MPP-opioids among cancer users compared to non-cancer users, 205.6 versus 167.9 DDD/user-year.

Age-sex standardized intensity of use rates, by region of residence, for the non-cancer cohort is reported in Table 3. Among the cohort lacking a cancer diagnosis, residents/users in South Eastman, Parkland, and Burntwood/Churchill/Norman regions had the highest intensity of overall analgesic use, with correspondingly high rates of non-opioid

analgesic use. South Eastman also evidenced high intensity of opioid analgesic use; however, Parkland and Burntwood/Churchill/Norman regions had low intensity of use of such agents. Low intensity of use in Parkland and Burntwood/Churchill/Norman regions was particularly evident for MPP-opioids. Southeastman, Parkland, and Burntwood/Churchill/Norman continued to be high users of analgesics for the cancer cohort, but the disparity in type of analgesic use was not noted for the cancer cohort (data not presented).

FIG. 1 Manitoba Health Regions

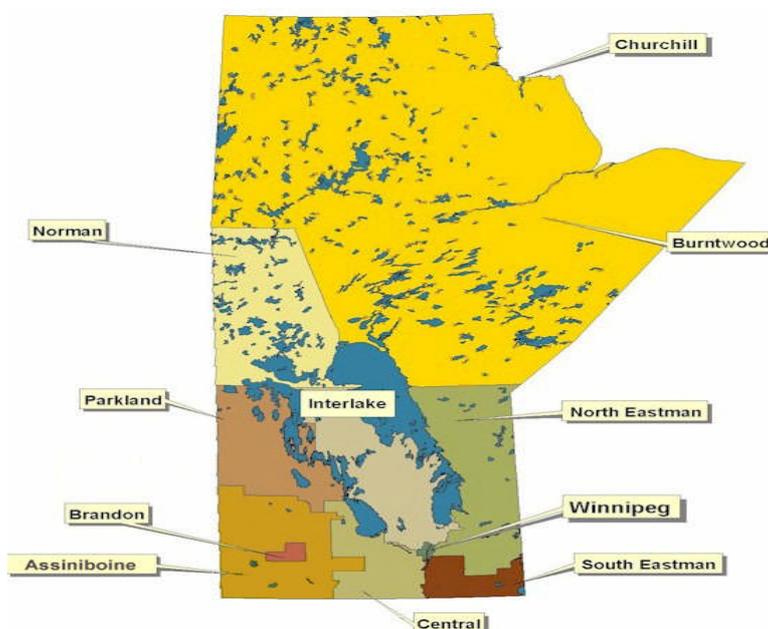


TABLE 2 Measures of Intensity of Analgesic Use by Category and Cancer Diagnosis

	Total Cohort	Cancer	No-Cancer
All Analgesics			
DDD/1000 resident-days	132.6	163.2	130.6
DDD/user-year	145.2	133.8	146.2
Non-Opioids			
DDD/1000 resident-days	113.1	112.6	113.2
DDD/user-year	168.9	160.4	169.5
Opioids			
DDD/1000 resident-days	19.4	50.6	17.4
DDD/user-year	43.6	62.0	41.2
Non-MPP Opioids			
DDD/1000 resident-days	9.5	15.9	9.1
DDD/user-year	22.7	21.5	22.9
MPP Opioids			
DDD/1000 resident-days	9.9	34.6	8.3
DDD/user-year	174.8	205.6	167.9

TABLE 3 Age and Sex-adjusted Intensity of Analgesic Use by Health Region for Non-cancer Cohort

DDD/1000 Resident days	Central	North Eastman	South Eastman	Interlake	Parkland	BNC	Brandon	Assiniboine	Winnipeg
All analgesic	149 (141-157)	149 (135-164)	171 (160-183)	136 (127-146)	165 (156-175)	183 (164-204)	114 (105-123)	143 (130-157)	119 (116-122)
Non-opioid	130 (124-137)	129 (119-141)	151 (141-161)	115 (109-122)	154 (145-163)	175 (156-196)	101 (94-109)	122 (116-129)	102 (100-104)
Opioid	19 (15-23)	19 (13-29)	20 (16-26)	21 (16-27)	12 (10-14)	8 (6-11)	13 (9-17)	20 (11-36)	17 (15-19)
Non-MPP opioid	8 (7-9)	7 (6-9)	9 (8-11)	9 (9-11)	9 (8-10)	6 (5-8)	8 (7-9)	7 (6-8)	10 (9-10)
MPP-opioid	11 (7-15)	12 (6-22)	11 (8-16)	11 (7-18)	3 (2-5)	2 (1-6)	5 (2-10)	13 (6-32)	7 (6-9)
DDD/User-year									
All analgesic	159 (151-168)	152 (138-167)	172 (160-184)	144 (135-154)	163 (154-173)	177 (158-197)	135 (124-146)	161 (147-178)	138 (135-141)
Non-opioid	175 (167-184)	167 (153-182)	186 (174-199)	166 (156-176)	177 (167-188)	193 (173-216)	159 (147-172)	170 (161-179)	167 (163-170)
Opioid	49 (39-60)	49 (32-75)	47 (37-58)	45 (34-58)	32 (27-38)	26 (18-39)	34 (24-47)	60 (34-106)	38 (35-42)
Non-MPP opioid	23 (21-26)	20 (16-24)	24 (21-27)	23 (20-25)	26 (23-29)	22 (15-33)	22 (19-26)	22 (20-25)	23 (22-24)
MPP-opioid	186 (132-262)	180 (101-321)	144 (98-213)	149 (90-248)	63 (38-102)	53 (20-140)	150 (54-406)	281 (118-669)	162 (131-201)

DISCUSSION

Approximately one-third of older adults in Manitoba filled a prescription for an analgesic during the one-year study period. While this is considerably greater than the 9% of adults reporting prescription analgesic use in a national health survey from the US, it should be noted that the US study examined analgesic use over a much shorter period (one month) and included adults of all ages.¹⁶ A high proportion (65%) of elderly nursing home residents have been reported to be users of analgesics.¹⁷ Our results are reflective of analgesic use by older adults living in the community. As a proxy measure for pain prevalence, our findings are consistent with studies reporting pain prevalence among community-dwelling older adults, which found a prevalence of 39-49%.^{3, 18, 19}

In the present study females filled more analgesic prescriptions than males. Earlier studies have similarly reported a higher prevalence of pain and analgesic use among females.^{3, 16} Not surprisingly, patients with cancer are higher users of analgesics overall, particularly opioid analgesics. This may indicate that care by an oncology specialist increases the opportunity that the patient will receive narcotic analgesia. Physicians do not appear hesitant to prescribe opioid analgesics to individuals with a cancer diagnosis, but appear hesitant to use opioids for pain of other causes.⁹

Seniors are generally undertreated for pain.¹⁰ Some of the barriers to effective pain management in seniors include the underreporting of symptoms, the presentation of multiple chronic health conditions, cost of medications (socioeconomic concerns), hesitancy to treat due to adverse effects of medications, drug interactions, fear of addiction/abuse, impaired cognition and inability to self-treat, patient beliefs, health care professional beliefs, cultural factors, system factors (e.g., time for health care appointments), mobility, and transportation.^{10, 20-24}

Our results indicate that individuals living in the most remote region of the province have a different pattern of analgesic use. Rural areas hold different challenges than urban areas for access to healthcare services.²⁵⁻²⁷ Rural older adults identified five major barriers to health care access when asked to provide their perceptions of healthcare access.²⁵ The barriers included

transportation difficulties, limited supply of health care workers and facilities, lack of quality healthcare, social isolation, and financial constraints. The inability to afford prescription medications was one of the most frequently identified problems emerging from the financial constraint barrier.²⁸ The various barriers identified in the literature raise concern that rural older adults might be experiencing lower access to prescribed medications than urban older adults.

Despite the highest overall use of analgesics in the most remote and rural regions of Manitoba, older adults lacking a cancer diagnosis in these regions appear to have limited access to opioid analgesics. Our findings lend support to the view that rural residence presents challenges in accessing healthcare services generally, and receiving adequate analgesia specifically. The reasons for this are expected to be multifactorial, including many of the barriers listed above. However, the lowest use of opioids, especially MPP-opioids, in a region with the highest use of total analgesics suggests that MPP may play a role in decisions related to the treatment of pain. Multiple prescription programs have been shown to reduce appropriate and inappropriate benzodiazepine prescribing.⁶

The primary limitation of this study is that data was extracted from a database. Pharmaceutical usage data is derived from a pharmaceutical claims database, and reflects receipt of medication, which is only a proxy for consumption. We have underestimated the use of analgesics because we could not quantify non-solid dosage forms. This is most problematic in regards to the MPP opioids, where many of the products are non-solid dosage forms (e.g., syrups, drops, injections, patches). This underestimation may be more or less pronounced, dependent upon patient or prescriber preference for particular dosage forms, which may be peculiar to a particular region. Differences in the use of non-solid dosage forms between regions remains a potential explanation for observed differences in our intensity of use measures. However, the access to analgesic measure is not affected by this potential bias, indicating that individuals in the northern communities are receiving less MPP prescription analgesics. An additional limitation of our study is that we did not include non-prescription analgesia, which could be widely used by this population.

The use of non-prescription analgesics, such as acetaminophen, was not recorded in the claims database. This could have significantly underestimated the amount of analgesics individuals were using.

These results are not reflective of the entire Manitoba senior population, due to exclusion of Aboriginal individuals. However, Aboriginals account for less than 2% of the Manitoba population over age 65. Further study is required to determine the use and access to MPP-analgesics in among the Aboriginal community. In addition, we cannot make any definitive statements about whether the intensity of use is appropriate.

Our study provides some support for the hypothesis that rural seniors with non-cancer pain are at risk for inappropriate underuse of opioid analgesics. Further study is required to determine the reasons for the low use of opioid analgesics in remote regions, and to determine the extent to which multiple prescription programs contribute.

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