First-line medications for alcohol use disorders among public drug plan beneficiaries in Ontario

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Abstract

Objective To examine use of first-line alcohol use disorder (AUD) medications (naltrexone and acamprosate) among public drug plan beneficiaries in the year following an AUD diagnosis.

Design Retrospective population-based cohort study.

Setting Ontario.

Participants Individuals eligible for public drug plan benefits who had an AUD diagnosis at a hospital visit between April 1, 2011, and March 31, 2012.

Main outcome measures Number of AUD medications dispensed to public drug plan beneficiaries who had a recent hospital visit with an AUD diagnosis, and number of prescriptions dispensed per person.

Results A total of 10394 Ontarians between 18 and 65 years of age were identified who had a hospital visit with an AUD diagnosis and were eligible for public drug plan benefits. The rate of AUD medications dispensed in the subsequent year was 3.56 per 1000 population (95% CI 2.51 to 4.91; n=37). This rate did not differ significantly by sex (P=.83).

Conclusion Very few public drug plan beneficiaries are dispensed first-line AUD medications in the year following an AUD diagnosis.

EDITOR'S KEY POINTS

- Naltrexone and acamprosate are effective in helping patients with alcohol use disorders (AUDs) achieve abstinence and, in the case of naltrexone, reducing heavy drinking. In Ontario, these medications are available to public drug plan beneficiaries through a formal request to the Ministry of Health and Long-Term Care.
- This study found that less than 1% of public drug plan beneficiaries with an AUD diagnosis were dispensed naltrexone or acamprosate in the year after diagnosis. Those with an AUD diagnostic code indicating a more severe AUD had a higher rate of AUD medications dispensed and refilled compared with those with any AUD diagnostic code.
- Improved addictions training, resources, and clinical support, as well as streamlining the special approval process for naltrexone and acamprosate, might help improve access among individuals who could benefit from these medications.

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La médication de première intention pour les problèmes de consommation d'alcool chez les patients couverts par programme de médicaments de l'Ontario

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Résumé

Objectif Examiner l'utilisation de la naltrexone et de l'acamprosate chez des patients présentant des problèmes de consommation d'alcool (PCA) qui sont couverts par le programme provincial de médicaments, et ce, durant l'année suivant le diagnostic de la dépendance.

Type d'étude Étude de cohorte rétrospective à partir d'une population.

Contexte L'Ontario.

Participants Les personnes couvertes par le programme provincial de médicaments qui avaient eu un diagnostic de PCA lors d'une visite à l'hôpital entre le 1er avril 2011 et le 31 mars 2012.

Principaux paramètres à l'étude Le nombre de médicaments utilisés pour un PCA distribués à des patients qui, lors d'une visite récente à l'hôpital, avaient reçu un diagnostic d'alcoolo-dépendance et qui étaient couverts par le programme provincial de médicaments, ainsi que le nombre d'ordonnances données par personne.

Résultats On a identifié 10 394 Ontariens âgés de 18 à 65 ans qui avaient reçu un diagnostic de PCA lors d'une visite à l'hôpital et qui étaient couverts par le programme provincial de médicaments. Le taux des médicaments pour PCA distribués au cours de l'année suivante était de 3,56 pour 1000 personnes (IC à 95% 2,51 à 4,91; n=37). Ce taux ne différait pas de façon significative entre les sexes (P=.83).

Conclusion Très peu de bénéficiaires du programme provincial de médicaments qui présentent un PCA reçoivent des médicaments pour cette condition au cours de l'année qui suit le diagnostic.

POINTS DE REPÈRE DU RÉDACTEUR

- La naltrexone et l'acamprosate sont efficaces pour aider les personnes qui ont des problèmes de consommation d'alcool (PCA) à cesser de boire et, dans le cas de la naltrexone, pour réduire une consommation excessive. En Ontario, ces médicaments peuvent être obtenus par les bénéficiaires du programme provincial de médicaments sur simple demande auprès du ministère de la Santé et des Soins de longue durée.
- Cette étude a observé que moins de 1% des patients alcoolo-dépendants couverts par le programme provincial de médicaments ont reçu de la naltrexone ou de l'acamprosate durant l'année suivant le diagnostic.
- Avec une meilleure formation sur l'alcoolo-dépendance ainsi que davantage de ressources et de soutien clinique, et en simplifiant le processus spécial d'approbation donnant accès à la naltrexone et à l'acamprosate, on pourrait améliorer l'accès à cette médication pour les patients susceptibles d'en bénéficier.

Cet article a fait l'objet d'une révision par des pairs.
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Alcohol misuse is common in Canadian society; approximately 10.1% of the population exceeds the guidelines for acute risk and 14.4% exceeds the guidelines for chronic risk.[1] Additionally, 2.6% of the population meets the criteria for alcohol dependence,[2] a more severe alcohol use disorder (AUD). *Alcohol use disorder* is a psychiatric illness defined in the *Diagnostic and Statistical Manual of Mental Disorders,* 5th edition, as alcohol use causing clinically important impairment or distress.

Overall, alcohol is responsible for a considerable burden of disease (third after hypertension and smoking) and cost to Canadian society.[3]

Health Canada has approved 3 medications for the treatment of AUD: disulfiram, naltrexone, and acamprosate. Physicians are most familiar with disulfiram. It interferes with the alcohol metabolism pathway and causes an unpleasant, and sometimes severe, reaction when a patient drinks alcohol. Disulfiram is only effective at prolonging abstinence when taken under daily supervision.[4] It is no longer manufactured in Canada and is only accessible through compounding pharmacies at a cost of approximately $150 annually plus compounding costs.

Naltrexone was approved in 1997 by Health Canada. It is a μ-receptor antagonist that blocks some of the euphoric effects of alcohol. Naltrexone not only helps patients achieve abstinence (number needed to treat [NNT] = 20), it also helps patients who do not want to target abstinence to reduce heavy drinking to lower-risk levels (NNT = 12).[5] Acamprosate, approved in 2007, affects the glutamate and γ-aminobutyric acid pathways (pathways important in the reinforcing nature of AUD). For acamprosate, the NNT to achieve abstinence is 12.[5] Systematic reviews and meta-analyses have determined that both naltrexone and acamprosate are safe and effective treatments for those with severe AUD.[6-9] These medications also reduce health care use and overall costs.[10,11] However, access can be challenging for patients without a drug plan, as treatment with naltrexone or acamprosate costs approximately $1800 annually.[12]

Despite evidence of their effectiveness, American studies show that AUD medications are underused.[13,14] Researchers from Veterans Affairs in the United States found that only 2.75% of the 224 000 patients with an AUD diagnosis received a prescription for naltrexone.[15]

In Ontario, physicians must send a formal request to the Ontario Ministry of Health and Long-Term Care (MOHLTC) on behalf of their patients to gain access to these medications through the public drug plan. To be eligible for naltrexone, the patient must have alcohol dependence (a severe AUD) and be in counseling. Counseling by a primary care provider fulfils this requirement. However, if the primary care provider does not feel confident providing addiction counseling, there are multiple barriers to other sources of counseling in Ontario. Individual addictions counseling is not currently publicly funded except as physician-led counseling or as part of specially funded relapse prevention programs. To be eligible for acamprosate, a patient must meet these 2 criteria: treatment failure with or a contraindication to naltrexone, and abstinence for at least 4 days. The 4 days of abstinence is important; evidence shows that acamprosate is more effective when started after detoxification.[7] Additionally, it is only effective for those who are targeting abstinence[9,16] and does not help reduce heavy drinking.

We investigated the use of AUD medications by estimating the prevalence of AUD medications dispensed to public drug plan beneficiaries who had a recent hospital visit with an AUD diagnosis. If the rate of AUD medication dispensing is low, it might encourage policy makers, educators, and health care providers to make changes to increase access to these medications.

METHODS

Setting

We conducted a retrospective, population-based cohort study of Ontario residents aged 18 and older who were eligible for public drug plan coverage and had a hospital AUD diagnosis between April 1, 2011, and March 31, 2012. Ontario is an ethnically diverse province with a population of more than 13 million people, all of whom have universal public coverage for physician and hospital services. Further, Ontario residents are eligible for public drug plan coverage if they are unemployed or disabled, have high prescription medication costs in relation to their net household income, receive home care, reside in a long-term care facility, or are 65 years of age or older. The 2 medications of interest in this study, naltrexone and acamprosate, are not available as a general benefit on the Ontario public drug plan formulary, but are available by formal request to the MOHLTC for those with a diagnosis of alcohol dependence who meet the specific clinical criteria described above.

Data sources

In our analysis, we used several administrative databases that were linked using unique, encoded identifiers and were analyzed at the Institute for Clinical Evaluative Sciences. These databases are used regularly in the study of medication use and safety.[17-20] The Ontario Drug Benefit (ODB) database records all prescription medications dispensed to public drug plan beneficiaries in Ontario and was used to determine the number of individuals eligible for public drug plan coverage and to identify publicly funded prescriptions for AUD medications dispensed during the study period. The Canadian Institute for Health Information Discharge Abstract

Database captures detailed diagnostic and procedural data from all acute hospital admissions in Ontario, and the Canadian Institute for Health Information National Ambulatory Care Reporting System contains similar data from all emergency department visits. These databases were used to identify patients who had a hospital visit with an AUD diagnosis during the study period. Finally, the Registered Persons Database contains demographic and vital statistic information for all residents of Ontario who have ever been issued a health card. We used the Registered Persons Database to determine patient demographic information (age and sex). This study was approved by the research ethics board of Sunnybrook Health Sciences Centre in Toronto, Ont.

Prevalence of AUD medication use among adults with an AUD diagnosis

We identified all public drug plan beneficiaries aged 18 and older who had a hospital visit with an AUD diagnosis between April 1, 2011, and March 31, 2012. We defined eligibility for public drug plan coverage as those individuals who were dispensed a prescription for any drug in the 6 months before their AUD diagnosis.

Alcohol use disorder diagnoses were identified based on an inpatient hospital admission or an emergency department visit that was associated with an AUD diagnosis. We defined AUD using the International Classification of Diseases, 10th revision, diagnostic codes for AUD defined by Beck et al in a Canadian study.[21] Beck et al compiled diagnostic codes that are indicative of an AUD from the literature. The authors had 3 experts independently review the list and select the diagnostic codes for an AUD. Discrepancies were resolved by consensus.

We removed 1 code from those compiled by Beck et al in our analysis, niacin deficiency (E52), because there are cases in which niacin deficiency is not caused by alcohol use. In our analysis, we also selected a subset of these diagnostic codes consistent with more severe AUD and conducted a subgroup analysis.

Patients in this cohort were followed from their AUD diagnosis for 1 year, up to March 31, 2013, at the latest, to determine whether they were dispensed an AUD medication and the number of prescriptions dispensed per person. The prevalence of AUD medications dispensed was expressed as a rate per 1000 eligible population and stratified by age and sex. All analyses were performed using SAS software, version 9.3.

RESULTS

We identified 41 172 Ontarians aged 18 and older who had a hospital visit with an AUD diagnosis. Of these patients, 15 683 (38.1%) were public drug plan beneficiaries.

As the number of individuals aged 65 or older who were dispensed an AUD medication was very small (≤5), we were not able to report on that age group. Our analysis is limited to those younger than 65 years of age. In this population, there were 10 394 public drug plan beneficiaries with an AUD diagnosis and 6920 (66.6%) were men.

Of the 10 394 public drug plan beneficiaries younger than 65 with an AUD diagnosis, only 37 (0.4%) were dispensed an AUD medication in the year following their AUD-related hospital visit (**Table 1**). Of these, 24 (64.9%) were men. The overall rate of AUD medications dispensed was 3.56 per 1000 public drug plan beneficiaries with an AUD diagnosis (95% CI 2.51 to 4.91). The difference in this rate between men (3.47 per 1000 population, 95% CI 2.22 to 5.16) and women (3.74 per 1000 population, 95% CI 1.99 to 6.40) was not statistically significant (P=.83).

Individuals who were dispensed an AUD medication were dispensed a mean (SD) of 5.12 (8.45) prescriptions in the year after their AUD diagnosis. On average, men were dispensed more AUD medication prescriptions compared with women (mean [SD] of 5.58 [9.52] vs 4.23 [6.35]). However, this difference was not statistically significant (P=.65).

Among the public drug plan beneficiaries with an AUD diagnostic code that indicated a more severe AUD (n=4853), the rate of AUD medications dispensed in the following year was higher (5.77 per 1000 population) compared with the overall population (3.56 per 1000 population). On average, the individuals dispensed an AUD medication in this subgroup were dispensed more prescriptions in the year following the AUD diagnosis than those in the overall population (mean [SD] of 6.57 [9.32] vs 5.12 [8.45]). The rate of AUD medications dispensed did not differ by sex for those with severe AUD (P=.66).

DISCUSSION

Our study found that less than 1% of public drug plan beneficiaries with an AUD diagnosis were dispensed naltrexone or acamprosate in the subsequent year. Those with an AUD diagnostic code indicating a more severe AUD had a higher rate of AUD medications dispensed and refilled compared with those with any AUD diagnostic code.

For men and women who were dispensed at least 1 prescription for an AUD medication, our study found that overall they filled a similar number of prescriptions, indicating that adherence to medications was similar. This is consistent with the literature on acamprosate and naltrexone showing no sex-related differences in response.[22-24]

Very few of the public drug plan beneficiaries aged 65 and older with an AUD diagnosis were dispensed an AUD medication. Literature reveals several possible explanations for this finding. The elderly are often

Table 1. Prevalence of prescriptions for AUD medications following an AUD hospital visit among ODB-eligible adult patients, overall and by sex: *This output was limited to those aged < 65 y, as there were very few patients aged ≥ 65 y.*

MEASURE	OVERALL	MEN	WOMEN	*P* VALUE
Among patients with any AUD diagnostic code				
• No. of individuals with AUD	10 394	6920	3474	
• No. of AUD medication users	37	24	13	.83*
• Rate of AUD medication use per 1000 (95% CI†)	3.56 (2.51-4.91)	3.47 (2.22-5.16)	3.74 (1.99-6.40)	
• Mean (SD) no. of prescriptions for AUD medication per user	5.12 (8.45)	5.58 (9.52)	4.23 (6.25)	.65‡
Among patients with subset§ of AUD diagnostic codes				
• No. of individuals with AUD	4853	3457	1396	
• No. of AUD medication users	28	21	7	.66*
• Rate of AUD medication use per 1000 (95% CI†)	5.77 (3.83-8.34)	6.07 (3.76-9.29)	5.01 (2.02-10.33)	
• Mean (SD) no. of prescriptions for AUD medication per user	6.57 (9.32)	6.62 (9.87)	6.43 (8.16)	.96‡

AUD—alcohol use disorder, ODB—Ontario Drug Benefit.
*Calculated using a χ^2 test for AUD medication use by sex.
†The 95% CIs were calculated using γ distribution with an α level of .05.
‡Pooled *t* test for mean no. of prescriptions by sex.
§The subset included diagnostic codes consistent with more severe AUD.

underdiagnosed and undertreated.[25,26] As well, they appear to have milder disease compared with the younger population,[27,28] possibly making providers less inclined to prescribe to this population. However, the elderly do experience substantial harms from their alcohol use[29] and would likely benefit from treatment with AUD medications.[30]

The low rates of AUD medication use might reflect the lingering cultural view of substance problems as a psychosocial issue, not a medical condition.[31,32] Although opinions in the medical profession are changing, and many health care providers now view AUD as a chronic medical disorder or disease, medical schools and residency training programs have been slow to respond.[31,33,34] This gap in the education system leaves practising physicians unprepared to screen, diagnose, manage, and prescribe for those with an AUD.[35,36]

System barriers also affect use of AUD medications.[37,38] Few clinics or hospitals in Canada (including those in Ontario) have implemented routine screening, brief intervention, and referral to treatment programs or comprehensive treatment programs that incorporate medical management techniques (medications along with counseling and comprehensive psychosocial support programs).[39] Programs in Ontario are also affected by financial constraints, impeding access to care[40] and likely to medications.[41]

Another system barrier is the preauthorization requirement for naltrexone and acamprosate.[35,42,43] Physicians must send a formal request to the MOHLTC and wait for approval. Ontario uses this process to restrict access to medications when they determine that "strong clinical evidence is not available to support efficacy and/or cost-effectiveness, when compared to other drugs already funded through the ODB program."[44] Although the process is useful and warranted to ensure appropriate prescribing, physicians do report that this process is often complex and time consuming, and might delay access to medications.[45] In addiction medicine, studies show that a time lag in addiction treatment initiation leads to a sharp increase in dropout rates from treatment.[46,47] Therefore, the preauthorization process might be partially responsible for the low rate of AUD medications dispensed in Ontario.

Patient factors might also account for low rates of medication use. Many patients view AUD as a psychosocial issue, not a medical condition, and therefore they might request a nonpharmacologic approach.[35,36] Some patients might not be ready to make a change and might decline a prescription or fail to fill it. One study found that almost 10% of those with an AUD were not ready to make, nor were they contemplating, a change.[48] As well, patients with addictions have lower rates of engagement with treatment, including medications, compared with other health conditions.[47,49]

Limitations

Several limitations in our study merit emphasis. As we used diagnostic codes (used for billing purposes) to define an AUD diagnosis, we were unable to determine if all those with an AUD diagnosis met the *Diagnostic and Statistical Manual of Mental Disorders,* 5th edition, criteria for an AUD or the ODB criteria for use of an AUD medication. In particular, some patients might have had disease that most clinicians would consider too mild for use of AUD medications.

We were unable to track dispensing of disulfiram, the other first-line AUD medication, because it is not

on the formulary and is not available by request to the MOHLTC. Therefore, we might have underestimated the prevalence of AUD medication use among patients with an AUD diagnosis. However, dispensing of disulfiram is likely to be very low because disulfiram is no longer manufactured in Canada and must be made by a compounding pharmacy. Additionally, patients must pay out of pocket for it. If patients are eligible for public drug plan coverage, they will likely be prescribed a medication that can be accessed on the formulary or by special request. As well, we did not track dispensing of off-label AUD medications (eg, topiramate and baclofen) because it was too difficult to determine the reason for use. As these medications have less evidence for treatment of AUD and are being used off label, dispensing rates were likely very low.

Our definition of an AUD diagnosis relied on data from hospital visits and therefore will not capture patients diagnosed through interactions with the primary care system. Furthermore, hospitals in Ontario do not have a standardized process of screening for alcohol problems, and studies show that, in this situation, clinicians fail to diagnose many with AUDs.[50,51] Therefore, we have likely underestimated the true population with an AUD diagnosis in Ontario.

As we do not have access to primary care or hospital prescribing data, we are only able to determine if a patient was dispensed a medication at a pharmacy. The prescribing rates might have been higher than the dispensing rates. As well, we are not able to determine if patients took the AUD medication, just that they were dispensed a medication.

Finally, we do not have access to prescription records for medications paid for out of pocket or through private insurers. Therefore, we were unable to determine whether patients eligible for public drug plan coverage paid for their AUD medications using other means than the MOHLTC request process. However, we expect this is unlikely.

Conclusion

Few public drug plan beneficiaries are dispensed a first-line AUD medication in the year following a diagnosis of an AUD at a hospital visit. Improved addictions training, resources, and clinical support, as well as streamlining the special approval process for naltrexone and acamprosate, might help improve access among individuals who could benefit from these medications.

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Contributors

All authors contributed to the concept and design of the study; data gathering, analysis, and interpretation; and preparing the manuscript for submission.

Competing interests

None declared

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