Types of Opioid Harms in Canadian Hospitals: Comparing Canada and Australia

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Abstract

Harms related to opioid use (whether prescribed or obtained illicitly) represent a growing cause of concern in developed countries, including Australia and Canada. This report examines the characteristics of opioid-related care visits to emergency departments (EDs) or hospital admissions and groups them into five distinct harm profiles. These profiles and their respective distributions illustrate how opioid-related harms differ across care settings in Canada. Opioid dependence and accidental poisoning were the more prominent types of harm seen in EDs, with a rate of 39.2 and 38.0 visits per 100,000 population, respectively. Within the in-patient population, rates of hospital stays were comparatively higher (26.8 per 100,000) for adverse drug reactions compared to other opioid-related harms. In addition to differing patterns in care settings, these harm groups differed on length of hospital stay, types of care received, other drugs involved and demographic variables such as age, gender and income.

Introduction

Canada is in the midst of an opioid crisis, with the death rate from January to September 2018 estimated at 11.8 deaths for every 100,000 Canadians (Public Health Agency of Canada 2019). Representatives from the Canadian Institute for Health Information (CIHI) and the Australian Institute of Health and Welfare (AIHW) partnered to produce estimates of opioid use and harms in each country (CIHI 2018). Hospital stays and emergency department (ED) visits for those suffering from five distinct types of opioid harm are profiled, including accidental poisoning (including poisoning of unknown intent), intentional poisoning, opioid dependence, adverse drug reaction and other opioid harms.

Availability and Use of Opioids in Canada and Australia

Although Canada and Australia have opioid use problems stemming from both licit (prescribed medications) and illicit use, the specific types of opioids involved are not always the same. Understanding these differences is an important step in understanding differences in opioid harms and where care is sought. Canada and Australia are similar in their approach to reducing opioid prescribing and the resulting downward trend in prescribed opioid use. In fact, harm from taking prescribed drugs (adverse drug reaction) is the only type of harm that is showing signs of decline (CIHI 2018).

A more revealing comparison is the role of illicit drugs; heroin plays a larger role in Australia, whereas fentanyl is more impactful in Canada (CIHI 2018). The impact of this difference in opioid patterns is that users have different trajectories and contact with the healthcare system, and their care requires different strategies. In Australia, heroin deaths have declined, but there is an aging population of entrenched heroin users (Degenhardt et al. 2004), whereas in Canada, three of five overdose deaths were due to drugs containing fentanyl (BC Centre for Disease Control 2017).

Data Sources and Methods

Hospitalization data were obtained from CIHI's Hospital Morbidity Database. This database captures record-level information that is combined to create an episode for all public hospitals in Canada. Comprehensive ED visit data available for Ontario, Alberta and Yukon were drawn from the National Ambulatory Care Reporting System.

Opioid-related harms refer to morbidity that presents to or occurs in an in-hospital or ED setting (Table 1). People who are harmed by opioids but do not seek acute care will not be captured. Episodes with poisoning harm were included only if coding standards were followed (i.e., they had a T-code and a matching external cause code identifying the intent of the poisoning). As a result, this report may underestimate the magnitude of opioid poisoning by an estimated 2%.

For the purposes of this investigation, poisonings of accidental and undetermined intent were combined as these patients would be treated similarly in a hospital. They are reported separately elsewhere at CIHI. Adverse reactions due to the therapeutic use

of opioids (i.e., correct dosage taken as prescribed) are coded as such and not as opioid poisonings. All episodes with indication of therapeutic use as adverse reactions, regardless of poisoning indication, were included. This miscoding is estimated to occur in less than 1% of episodes.

Emergency Visits and Hospital Stay

The magnitude of rates for hospitalizations and ED visits differed in Canada and Australia, but the patterns remained the same. Reported here is the pattern in Canada; see the full report (CIHI 2018) for a detailed comparison of the countries.

In 2016–2017, the highest rates of ED visits and the highest number of ED visits per day were for those with opioid dependence, accidental poisoning and other harm, whereas intentional poisoning and adverse drug reactions were more infrequent by comparison (Table 2). Overall, ED patients seen for opioid-related harm were mostly men, were younger and had multiple opioid visits.

Patients admitted to a hospital showed a different pattern. The highest rates of hospital stays and the highest number of hospital stays per day were for those with adverse drug reactions (Table 3). Accidental poisoning and other harm, which showed high

TABLE 1.
Definition table

Type of opioid harm	Definition
Accidental poisoning	Unintended poisoning by and exposure to opioids (includes poisoning of undetermined intent)
Intentional poisoning	Intended self-poisoning by and exposure to opioids
Opioid dependence	Behavioural, cognitive and physiological phenomena that develop after repeated opioid use, including difficulties controlling opioid use, persistent use despite harmful consequences and withdrawal symptoms with cessation or reduction in use
Adverse drug reaction	An adverse reaction to opioids used as prescribed. Note: Harm from drugs not used as prescribed will fall into one of the other types of harm.
Other harm	Other mental health and behavioural disorders or intoxication from opioids (includes acute intoxication or other harmful use, such as using drugs not prescribed or not using as prescribed, and other mental disorders related to opioid use). These individuals as seen in the ED or hospital may not meet the coding threshold in that episode to be classified as poisoning or opioid dependence even though their profile is similar to either of these harms.

TABLE 2.
Profiles of ED visits with opioid harm

Metric	Accidental poisoning	Intentional poisoning	Opioid dependence	Adverse drug reaction	Other harm
Rate of emergency visits (per 100,000)	38.0	10.5	39.3	17.8	30.9
Percentage of men	63	46	56	38	62
Average age	39.0	37.8	38.5	57.1	35.0
Percentage of men 50 and older	13	13	13	25	5
Percentage of women 50 and older	12	14	10	39	3
Arrived at the ED via ambulance	80	75	28	37	42
Median length of stay (hours)	5.2	7.9	3.5	3.9	3.8
Percentage who died in ED	0.5	0.3	0.0	0.0	0.1
Percentage admitted to hospital	24	53	13	17	16
Percentage who left against medical advice	8	3	6	1	8
Percentage with more than two visits in previous six months	37	42	45	40	49

ED = emergency department.

Notes: Accidental poisoning includes poisoning of unknown intent. Canadian rates were standardized using the 2010 Organisation for Economic Co-operation and Development standard population to enable international comparison. The fiscal year in Canada starts on April 1 and ends on March 31. ED data represent Alberta, Ontario and Yukon only.

Source: National Ambulatory Care Reporting System, 2016–2017, Canadian Institute for Health Information.

rates of ED visits, had comparably lower rates of hospital stays. One driver of this difference in ranking is that the likelihood of admission to hospital from an ED increased for those aged 50 and older for all types of opioid harm but particularly in adverse drug reactions. This drives the rate of adverse drug reactions higher in the in-patient population. Hospitalized patients with opioid harm were generally female and older than the ED opioid harm population. Of particular note, larger proportions of people with opioid harm leave the hospital against medical advice relative to the general in-patient population (2%).

Summary

Opioid use can have far-reaching impacts on hospital care. Understanding the needs of these care visits and the characteristics of patients suffering from opioid harm can help support better decisions for both clinicians and patients across healthcare settings.

Opioid dependence and accidental poisoning were the most common types of harm observed in EDs, whereas adverse drug reactions had the highest rates of hospital admissions. Variations by age and gender are also evident in the types of opioid harm when comparing hospitalizations and ED visits. Patients admitted to a hospital were, on average, more likely to be older than those who visited the ED, regardless of the type of opioid harm. Overall, hospitalized patients are female compared to the higher proportion of male patients visiting EDs for opioid harm.

The impact of this difference in opioid patterns is that patients experience different trajectories and contacts with the hospital system. These profiles emphasize the need for tailored public health interventions for opioid harms to address the unique needs of those suffering from opioid-related harm. HQ

References

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TABLE 3.
Profiles of hospital stays with opioid harm

Metric	Accidental poisoning	Intentional poisoning	Opioid dependence	Adverse drug reaction	Other harm
Rate of admissions (per 100,000)	9.8	4.7	17.4	26.8	8.6
Percentage men	54	42	55	39	58
Average age	49.2	43.7	42.4	67.4	41.2
Percentage of men 50 and older	23	16	19	34	17
Percentage of women 50 and older	28	24	14	51	12
Median length of stay (days)	3.0	3.0	6.0	9.0	5.0
Intensive care unit stay	40	43	13	16	14
Percentage who died in hospital	7	3	2	7	2
Percentage who left against medical advice	12	6	18	1	14
Percentage with more than two admissions in previous six months	14	9	14	15	16
Percentage with another substance recorded	39	70	35	4	57
Rate of hospital stays in rural areas	11.1	6.2	18.6	38.9	9.3

Notes: Accidental poisoning includes poisoning of unknown intent. Canadian rates were standardized using the 2010 Organisation for Economic Co-operation and Development standard population to enable international comparison. The fiscal year in Canada starts on April 1 and ends on March 31.

Source: Hospital Morbidity Database, 2016–2017, Canadian Institute for Health Information.