



Comparing opioid harms in Australia and Canada: challenges and findings

Introduction

Representatives from the Canadian Institute for Health Information (CIHI) and the Australian Institute for Health and Welfare (AIHW) have worked together to produce comparable estimates of opioid use and harms in each country.

This topic was selected for this project as opioids are a class of drugs causing concern in both Canada and Australia and impacting most of the developed world. The goal of the collaboration was to explore the value of international comparison for opioids, to understand the comparability of different data holdings and to learn the differences and similarities between the 2 countries.

The full findings and details of the collaboration will be published on 9 November 2018 and can be found at:

Australian report: <https://www.aihw.gov.au/reports/illegal-use-of-drugs/opioid-harm-in-australia>

Canadian report: <https://www.cihi.ca/sites/default/files/document/types-opioids-harm-report-en-web.pdf>

Table 1: Canadian and Australian demographic measures

	Canada	Australia
Sex (% female)	50%	50%
Life expectancy at birth	81.9	82.3
Median age	42.2	38.7
Population aged 25–54 (workforce)	40%	41%
Population living in urban areas	82%	90%
Health expenditure (% gross domestic product)	10%	10%
Privately funded health-care	33%	30%

Source: AIHW forthcoming; CIHI forthcoming.

Method/Approach

Members of the project team from Canada and Australia identified data sources relating to opioid use and harms for each country that were available for detailed analysis, nationally representative, and had comparable data items. A literature review was conducted to understand any differences in the use and availability of opioids; treatment of opioid harms and government strategies aimed at reducing opioid harms.

Prescription opioids dispensed

- Data for Australia is for 2016–17 and is sourced from the Pharmaceutical Benefits Scheme (PBS) data collection.
- Data for Canada is for 2017, and is sourced from the QuintilesIMS CompuScript database.
- Data are presented as Defined Daily Dosage (DDD) per 1,000 population per day. The DDD is the dose of a particular drug that is assumed to be the average per day when used for its main indication in adults. DDDs were based on the WHO method.

Emergency department and hospital presentations relating to opioids

- Data for Australia is for 2016–17 and is from the AIHW National Hospital Morbidity Database and the AIHW National Non-admitted Patient Emergency Department Care.
- Data Canada is for 2016–17 and is from the National Ambulatory Care Reporting System and National Non-admitted Patient Emergency Department Care Database.
- Data are presented as rate per 100,000 population and are age-standardised to the OECD 2010 population.

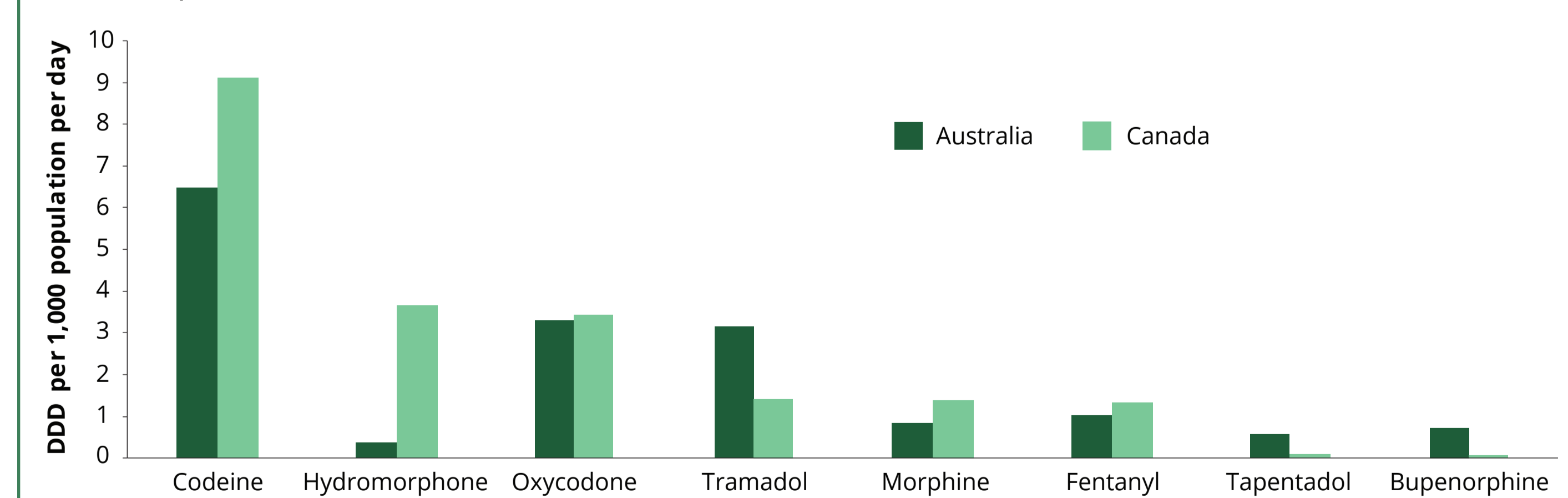
How comparable is the use of opioids in Australia and Canada?

Although both Australia and Canada have opioid-use problems stemming from both licit (prescribed medications) and illicit use, the specific types of opioids involved are not always the same.

Prescription opioids

- Prescribed opioid use declined in both Canada and Australia (per defined daily doses) in the 5 years prior to 2016–17.
- Both Australia and Canada have initiated campaigns targeting medical doctors, to encourage responsible opioid prescribing.
- There are differences in the types of opioids prescribed, with hydromorphone playing a larger role in Canadian prescribing, while tramadol and buprenorphine are more common in Australia (Figure 1).

Figure 1: Number of defined daily doses dispensed (DDD) per 1,000 people, per day, Canada and Australia, 2017



Source: AIHW forthcoming; CIHI forthcoming.

Illicit opioids

Illicit use of fentanyl is more common in Canada than Australia. In Canada, 55% of accidental apparent opioid-related deaths in 2016 involved fentanyl or fentanyl analogues.

Based on the most recent estimates of seized controlled substances:

- In Canada, fentanyl is the most commonly detected opioid seized.
- In Australia, fentanyl does not even rank as a separate category.

Heroin has a more prominent history in Australia than in Canada. While heroin use in Australia is low (compared with other opioids), it is still higher than in Canada and remains a of concern as a source of opioid harm.

How comparable are ED and hospital admitted patient care data for Australia and Canada?

Despite age-standardization to the OECD 2010 population, there remained large differences between Australia and Canada (Table 2). Some key differences surfaced through this collaboration were:

- Collection of diagnosis information in ED data in Australia is relatively new; the quality of the principal diagnosis variable has not been fully assessed. No additional diagnosis fields are available.
- Admission rates from ED to hospital for opioid harms differ—20% of patients in Canada compared with 53% in Australia. While this could reflect differing needs for care, it could also be influenced by differences in admission practices between countries.
- Opioid dependence treatment occurs predominantly in the community in Canada, whereas in Australia it is possible for certain dependence treatments, such as supervised withdrawal, to take place in hospitals.
- In the Australian data, the *principal diagnosis* is based on the reason for admission. In the Canadian data, the *most responsible diagnosis* is based on resource use. Therefore, if the same episode of hospital care were to occur in Australia and Canada, it may be represented differently in the administrative hospital datasets and impacts data comparability between the countries.

In order to compare estimates, a number of diagnosis fields were included in the analysis:

- For Australian data: *principal diagnosis* for ED; a range from *principal* to *any diagnosis* for hospitals.
- For the Canadian data: *most responsible diagnosis*; *pre-admit comorbidity* and *post-admit comorbidity*.

Table 2: Comparison of age-standardised rates of Australian and Canadian emergency department and hospital presentations, 2016–17

Type of harm (diagnosis)	Age-standardised rate (per 100,000 population)			
	Canadian ED presentations	Australian ED presentations	Canadian hospitalisations	Australian hospitalisations
Accidental poisoning	38.0		9.8	6.6–12.2
Undetermined intent		17.7		2.5–4.2
Intentional poisoning	10.5		4.7	8.1–23.4
Opioid use disorder	39.3	2.4	17.4	15.5–70.7
Side effects from opioid use	17.8	-	26.8	112.9
Other harm	30.9	1.3	8.6	2.5–18.7

Source: AIHW forthcoming; CIHI forthcoming.

Side effects of pharmaceutical opioid use

These hospitalisations refer to medically prescribed opioids which have been used as directed. In Australia and Canada these hospitalisations have:

- The highest rate of hospital stays and therefore a large impact on the health-care system.
- Similar age and sex: more common in females; increasing rates of hospitalisation with increasing age; and reflecting the demographic profile of people receiving prescription opioids in both countries.

Poisoning

In both Australia and Canada, the most common opioid type responsible for poisoning hospitalisations was *Naturally derived opioids* (for example, codeine, oxycodone and morphine; ICD-10 code T40.2). But the types of opioid varied thereafter, mainly reflecting the differences in illicit use.

The most common opioid types responsible for poisoning hospitalisations in Australia and Canada



1. Natural opioids
2. Synthetic opioids
3. Heroin



1. Natural opioids
2. Other and unspecified opioids
3. Synthetic opioids

There were also similarities in the profiles of people hospitalised for opioid poisoning



Males in both countries are more likely to be hospitalised for accidental opioid poisoning than females.



Females in both countries were more likely to be hospitalised for intentional poisoning than males.



The average age of accidental poisonings was similar between Australia and Canada (48–49 years old), while for intentional poisonings the average age was slightly younger in Australia than in Canada, 38 and 44 years respectively.

Note that poisoning of unknown intent is included with accidental poisoning for Canada.

Dependence

- 55% of *Opioid dependence* hospital stays were among males in both Canada and Australia.
- The average age was similar between countries, 44 and 42 years for Australia and Canada, respectively.
- The rate of *Opioid dependence* hospitalisations was over 4 times as high in Australia (any diagnosis) as in Canada, which is likely to be reflective of the difference in treatment practices.

Conclusions

Opioid use varies between Australia and Canada

In both Australia and Canada there was a downward trend in prescription opioid use in the 5 years to 2016–17. However, there were slight differences in the types of opioids prescribed, with the use of hydromorphone substantially higher in Canada, and use of tramadol and buprenorphine higher in Australia. Both countries had a similar level of fentanyl use.

Illicit use of fentanyl is more common in Canada, while heroin use is comparatively higher in Australia. The impact of this difference is that people using these different drugs—while they are all opioids—have different trajectories and contact with the acute care system. Fentanyl is more potent than heroin and has a greater potential to be lethal, meaning many users die before they can receive acute care.

Side effects from opioid use are responsible for the greatest number of hospitalisations in both Canada and Australia

In both Australia and Canada, the greatest volume of harm treated in hospitals came from side effects from opioid use. The age profile for these hospitalisations was similar, with rates of hospitalisation increasing with increasing age, reflecting the rates of prescription opioids in both countries.

Rates of hospitalisations vary but demographic profiles of people receiving care are similar

Despite differences in the rates of hospital care in Australia and Canada for opioid harms—due in part to differences in systems and infrastructure for health services—there are similarities in the profiles of people most likely to receive hospital care for opioid harm.