

OPIOID-RELATED MORBIDITY & MORTALITY

Opioid-related emergency department visit:

An unscheduled visit made to the emergency department with a main or other problem of opioid poisoning, including poisoning by opium (ICD-CA 10 code: T40.0), heroin (T40.1), other opioids (T40.2), methadone (T40.3), other synthetic narcotics (T40.4), other and unspecified narcotics (T40.6) made by a resident of the NBPSDHU region. Excludes visits with a query/suspected diagnosis.

Opioid-related deaths:

Deaths where opioid poisoning was considered as contributing to the cause of death

Data sources:

ED visits: Ambulatory Emergency External Cause [2006-2017], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: [2018/06/08].

Deaths: Ontario Agency for Health Protection and Promotion (Public Health Ontario).

Interactive Opioid Tool Toronto, ON: Queen's Printer for Ontario; 2017. Downloaded [2018/07/19] with site last updated [2018/05/23]. Available from: <http://www.publichealthontario.ca/en/DataAnalytics/Opioids/Opioids.aspx>

Population estimates: Population Estimates [2005-2016], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, Date Extracted: [2017/11/03]

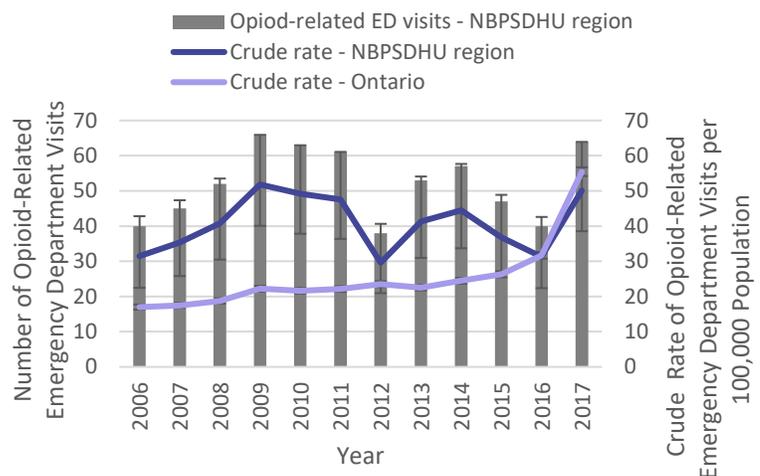
Rate calculations:

Crude rates were calculated by dividing the outcome of interest (e.g., emergency department visits; deaths) by the regional population estimate. Confidence intervals (95%) were calculated using poisson distribution.

Overall Trends

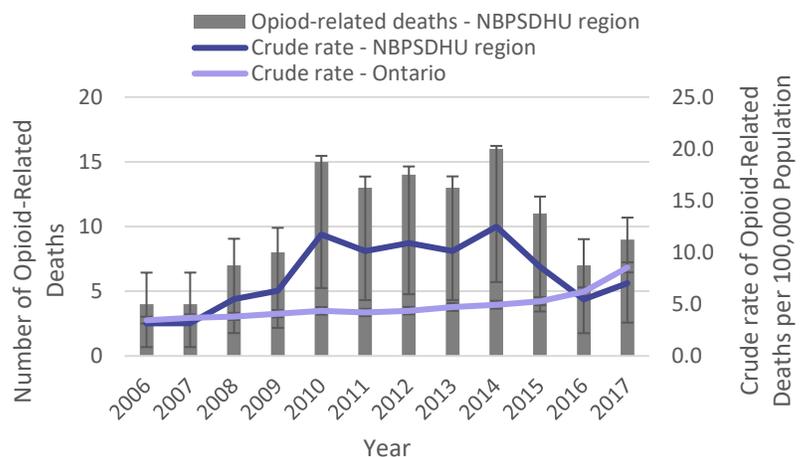
In 2017, the crude rate for opioid-related emergency departments in the North Bay Parry Sound District Health Unit (NBPSDHU) region was among the highest rates in the past 12 years, and similar to the Ontario rate in 2017 (Figure 1 & Table 1). The crude death rate in the NBPSDHU region was similar to the death rate in Ontario during 2017 (Figure 2 & Table 2). Crude death rates were significantly higher in the Health region between 2010 and 2014, compared to Ontario.

Figure 1. Number and Crude Rates for Opioid-Related Emergency Department Visits, by Region, 2006-2017



Note: Emergency department visit data for 2017 should be considered as preliminary and is subject to change.

Figure 2. Number and Crude Rates for Opioid-Related Deaths, by Region, 2006 – 2017



Note: Death data for 2017 should be considered as preliminary and is subject to change. Rates for 2017 exclude deaths where the cause of death is ongoing.

Interpretation of a significant difference:

A statistic interpreted as 'statistically significant' from another is an estimate found to be statistically meaningful, i.e., the difference is unlikely due to chance. Error bars noted in figures within this report illustrate the 95% confidence intervals. If there is no overlap in range, the difference can be described as statistically significant.

Table 1. Number and Crude Rates of Opioid-Related Emergency Department (ED) Visits, by Region, 2006-2017

Year	Number of Opioid-Related ED Visits - NBPSDHU Region	NBPSDHU Regional Crude Rate for Opioid-Related ED Visits (95% CI)	Ontario Crude Rate for Opioid-Related ED Visits (95% CI)
2006	40	31.4* (22.5, 42.8)	17.0 (16.3, 17.7)
2007	45	35.4* (25.8, 47.3)	17.5 (16.8, 18.2)
2008	52	40.8* (30.5, 53.5)	18.7 (18.0, 19.5)
2009	66	51.8* (40.1, 65.9)	22.2 (21.4, 23.0)
2010	63	49.2* (37.8, 63.0)	21.6 (20.8, 22.4)
2011	61	47.5* (36.4, 61.1)	22.1 (21.3, 22.9)
2012	38	29.6 (20.9, 40.6)	23.5 (22.7, 24.3)
2013	53	41.3* (31.0, 54.1)	22.5 (21.7, 23.3)
2014	57	44.5* (33.7, 57.6)	24.5 (23.6, 25.3)
2015	47	36.8 (27.0, 48.9)	26.3 (25.4, 27.2)
2016	40	31.3 (22.3, 42.6)	31.7 (30.7, 32.6)
2017	64	50.0 (38.5, 63.9)	55.4 (54.2, 56.7)

*Estimate is significantly higher compared to provincial estimate of the same time period

Note: Emergency department visit data for 2017 should be considered as preliminary and is subject to change.

Table 2. Number and Crude Rates of Opioid-Related Deaths, by Region, 2006-2017

Year	Number of Opioid-Related Deaths - NBPSDHU Region	NBPSDHU Regional Crude Rate for Opioid-Related Deaths (95% CI)	Ontario Crude Rate for Opioid-Related Deaths (95% CI)
2006	4	3.1 (0.9, 8.0)	3.4 (3.1, 3.8)
2007	4	3.1 (0.9, 8.1)	3.7 (3.3, 4.0)
2008	7	5.5 (2.2, 11.3)	3.8 (3.5, 4.2)
2009	8	6.3 (2.7, 12.4)	4.1 (3.7, 4.4)
2010	15	11.7* (6.6, 19.3)	4.3 (4.0, 4.7)
2011	13	10.1* (5.4, 17.3)	4.2 (3.9, 4.6)
2012	14	10.9* (6.0, 18.3)	4.4 (4.0, 4.7)
2013	13	10.1* (5.4, 17.3)	4.7 (4.4, 5.1)
2014	16	12.5* (7.1, 20.3)	4.9 (4.6, 5.3)
2015	11	8.6 (4.3, 15.4)	5.3 (4.9, 5.7)
2016	7	5.5 (2.2, 11.3)	6.2 (5.8, 6.6)
2017	9	7.0 (3.2, 13.4)	8.5 (8.1, 9.0)

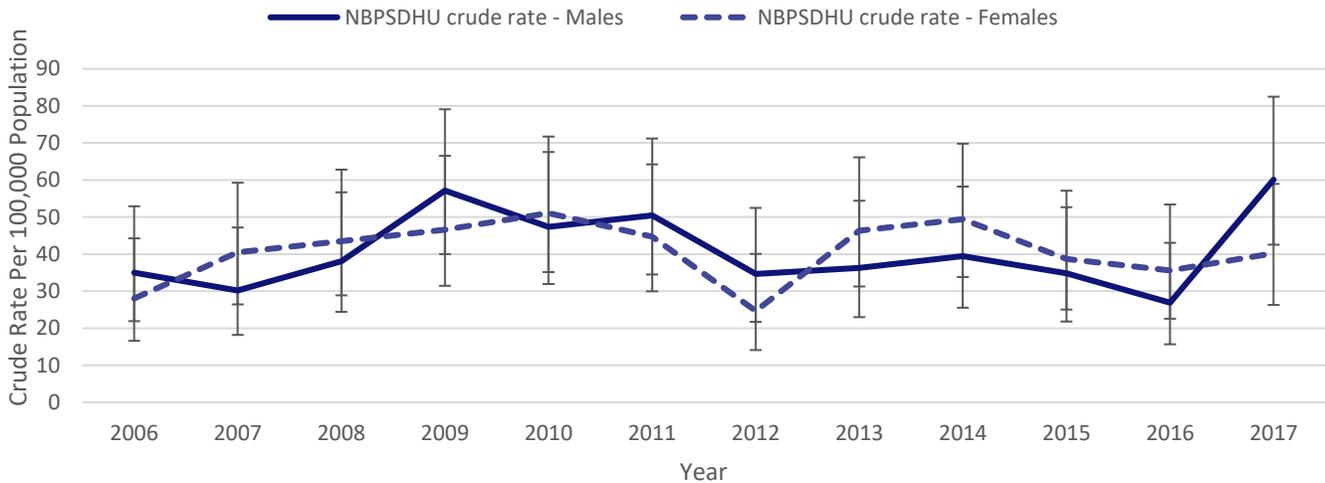
*Estimate is significantly higher compared to provincial estimate of the same time period

Note: Death data for 2017 should be considered as preliminary and is subject to change. Rates for 2017 exclude deaths where the cause of death is ongoing.

Sex-Specific Rates

The crude rates for opioid-related emergency department visits and deaths are statistically similar between males and females for all years between 2006 and 2017 (Figure 3 & Table 3; Figure 4 & Table 4). The crude rate of opioid-related emergency department visits among females in the NBPSDHU region was approximately double the Ontario rate in 2013 and 2014, but statistically similar to the Ontario rate in 2015, 2016, and 2017.

Figure 3. Crude Rates for Opioid-Related Emergency Department Visits, by Sex, NBPSDHU Region, 2006 - 2017



Note: Emergency department visit data for 2017 should be considered as preliminary and is subject to change.

Figure 4. Crude Rates for Opioid-Related Deaths, by Sex, NBPSDHU Region, 2005 - 2016

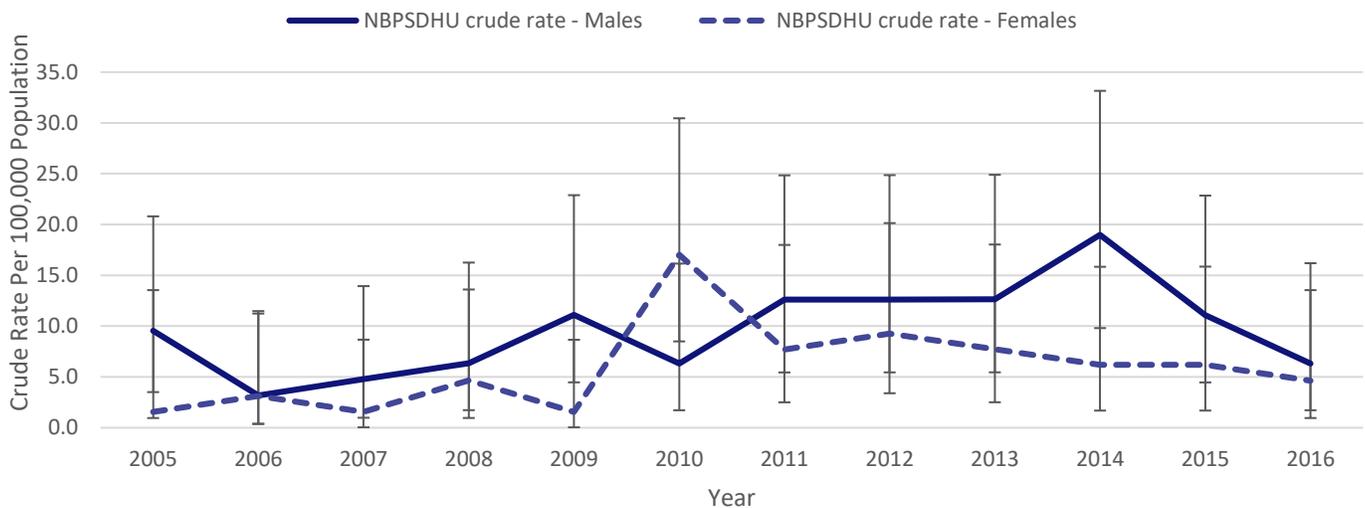


Table 3. Crude Rate of Opioid-Related Emergency Visits, by Sex, NBPSDHU Region, 2006-2017

Year	NBPSDHU Crude Rate among Males (95% CI)	NBPSDHU Crude Rate among Females (95% CI)
2006	34.9 (21.9, 52.9)	28.0 (16.6, 44.2)
2007	30.2 (18.2, 47.2)	40.4 (26.4, 59.3)
2008	38.1 (24.4, 56.7)	43.4 (28.9, 62.8)
2009	57.1 (40.0, 79.1)	46.6 (31.4, 66.5)
2010	47.3 (31.9, 67.6)	51.1 (35.1, 71.7)
2011	50.4 (34.5, 71.2)	44.7 (29.9, 64.2)
2012	34.7 (21.7, 52.5)	24.7 (14.1, 40.0)
2013	36.3 (23.0, 54.4)	46.3 (31.3, 66.1)
2014	39.4 (25.5, 58.2)	49.4 (33.8, 69.8)
2015	34.8 (21.8, 52.7)	38.7 (25.0, 57.1)
2016	26.9 (15.7, 43.0)	35.6 (22.6, 53.4)
2017	60.1 (42.5, 82.5)	40.2 (26.3, 58.9)

Note: Emergency department visit data for 2017 should be considered as preliminary and is subject to change.

Table 4. Crude Rate of Opioid-Related Deaths, by Sex, NBPSDHU Region, 2005-2016

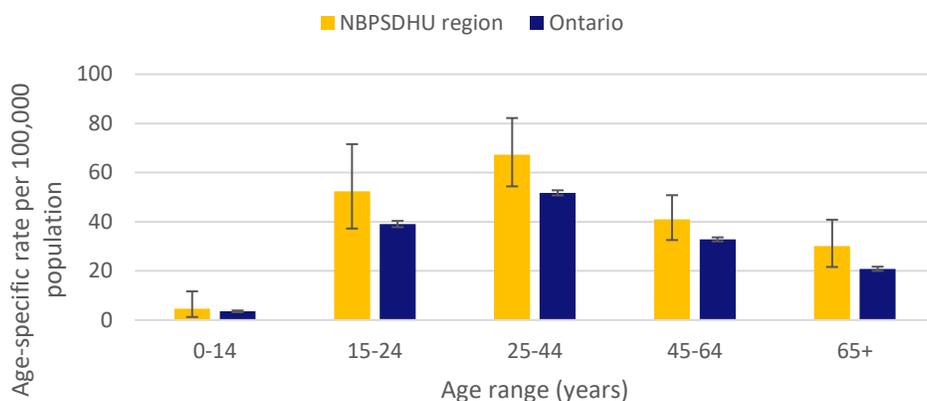
Year	NBPSDHU Crude Rate among Males (95% CI)	NBPSDHU Crude Rate among Females (95% CI)
2005	9.6 (3.5, 20.8)	1.6 (1.0, 13.5)
2006	3.2 (0.4, 11.5)	3.1 (0.4, 11.2)
2007	4.8 (1.0, 13.9)	1.6 (0.0, 8.7)
2008	6.3 (1.7, 16.3)	4.7 (1.0, 13.6)
2009	11.1 (4.5, 22.9)	1.6 (0.0, 8.7)
2010	6.3 (1.7, 16.2)	17.0 (8.5, 30.5)
2011	12.6 (5.4, 24.8)	7.7 (2.5, 18.0)
2012	12.6 (5.4, 24.9)	9.3 (3.4, 20.1)
2013	12.6 (5.5, 24.9)	7.7 (2.5, 18.0)
2014	19.0 (9.8, 33.2)	6.2 (1.7, 15.8)
2015	11.1 (4.5, 22.8)	6.2 (1.7, 15.9)
2016	6.3 (1.7, 16.2)	4.6 (1.0, 13.5)

Age-Specific Rates

Age-specific rates for opioid-related emergency department visits between 2013 and 2017 are illustrated by age group in Figure 5 and Table 5. The rate of opioid-related emergency department visits among the population 25 to 44 years significantly higher in the NBPSDHU region compared to Ontario.

The age-specific rates of opioid-related deaths between 2012 and 2016 among 25 to 44 year olds and 45 to 64 year olds in the NBPSDHU region were about double and significantly higher than the rates among the same populations in Ontario (Figure 6 & Table 6).

Figure 5. Crude Rates for Opioid-Related Emergency Department Visits, by Age Group & Region, 2013 – 2017 Combined



Note: Emergency department visit data for 2017 should be considered as preliminary and is subject to change.

Figure 6. Crude Rates for Opioid-Related Deaths, by Age Group & Region, 2012 – 2016 Combined

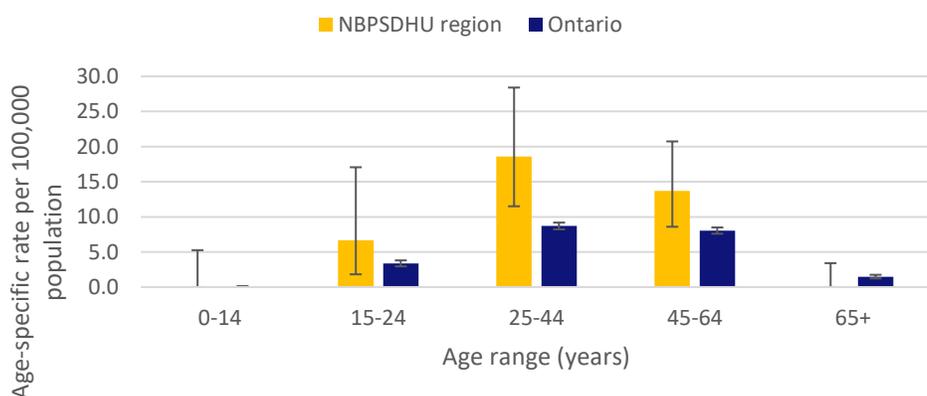


Table 5. Crude Rate of Opioid-Related Emergency Visits, by Age Group & Region, 2012-2016 Combined

Age Group (Years)	NBPSDHU Crude Rate (95% CI)	Ontario Crude Rate (95% CI)
0 - 14	4.6 (1.2, 11.7)	3.5 (3.2, 3.9)
15 - 24	52.3 (37.2, 71.6)	39.1 (37.8, 40.4)
25 - 44	67.2* (54.4, 82.2)	51.7 (50.7, 52.8)
45 - 64	40.9 (32.6, 50.8)	32.9 (32.0, 33.7)
65 or older	30.1 (21.6, 40.8)	20.8 (20.0, 21.7)

*Estimate is significantly higher compared to provincial estimate of the same time period

Note: Emergency department visit data for 2017 should be considered as preliminary and is subject to change.

Table 6. Crude Rate of Opioid-Related Deaths, by Age Group & Region, 2012-2016 Combined

Age Group (Years)	NBPSDHU Crude Rate (95% CI)	Ontario Crude Rate (95% CI)
0 - 14	0.0 (0.0, 5.3)	0.0 (0.0, 0.1)
15 - 24	6.7 (1.8, 17.1)	3.4 (3.0, 3.8)
25 - 44	18.6* (11.5, 28.4)	8.7 (8.2, 9.2)
45 - 64	13.7* (8.6, 20.7)	8.0 (7.6, 8.5)
65 or older	0.0 (0.0, 3.4)	1.5 (1.2, 1.7)

*Estimate is significantly higher compared to provincial estimate of the same time period

Types of Drugs Present in Opioid-Related Deaths

In 2016, the top three types of drug present among opioid-related deaths in the NBPSDHU region were oxycodone, hydromorphone, and methadone (see Table 7). In the same year, fentanyl, hydromorphone, and oxycodone were the top three types of drug present among opioid-related deaths in Ontario.

Deaths occurring between 2012 and 2016 were combined to examine overall trends. As in 2016, a higher percentage of deaths in the NBPSDHU region had oxycodone or methadone present at death compared to deaths in Ontario (see Table 8 & Figure 7).

Table 7. Number and Percentage of Type of Drugs Present in Opioid-Related Deaths, by Region, 2016

Year	NBPSDHU Number & Percentage of Opioid-Related Deaths (n=7)	Ontario Number & Percentage of Opioid-Related Deaths (n=867)
Oxycodone	4 (57.1%)	185 (21.3%)
Methadone	2 (28.6%)	157 (18.1%)
Hydromorphone	2 (28.6%)	195 (22.5%)
Codeine	1 (14.3%)	126 (14.5%)
Morphine	1 (14.3%)	158 (18.2%)
Fentanyl	0 (0.0%)	353 (40.7%)
Hydrocodone	0 (0.0%)	15 (1.7%)
Heroin	0 (0.0%)	78 (9.0%)

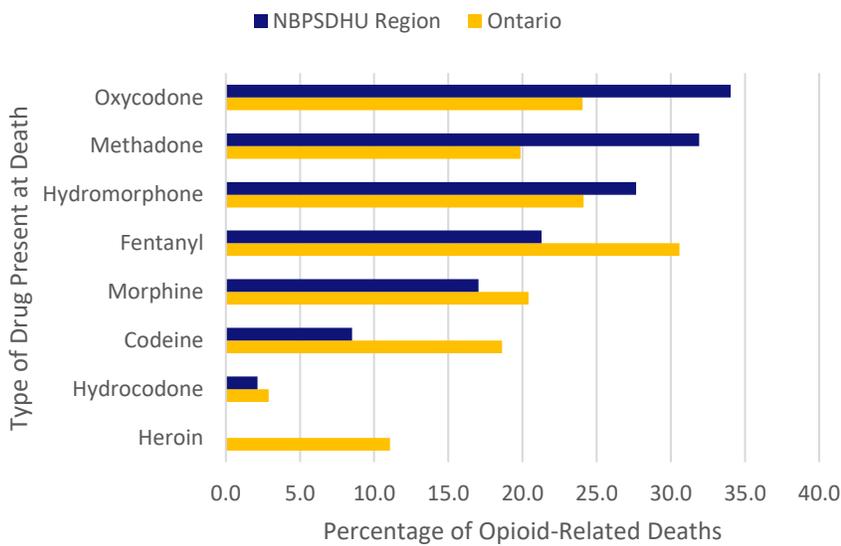
Note: Drug type was missing from two cases (0.1%) in Ontario between 2015 and 2016. Total deaths may not add up to deaths by drug type as multiple drugs may have been present in a single death (i.e., drug categories are not mutually exclusive). Drugs not currently tested in Ontario are not included in the list.

Table 8. Number and Percentage of Type of Drugs Present in Opioid-Related Deaths, by Region, 2012-2016 Combined

Year	NBPSDHU Number & Percentage of Opioid-Related Deaths (n=47)	Ontario Number & Percentage of Opioid-Related Deaths (n=2,910)
Oxycodone	16 (34.0%)	700 (24.1%)
Methadone	15 (31.9%)	578 (19.9%)
Hydromorphone	13 (27.7%)	702 (24.1%)
Fentanyl	10 (21.3%)	890 (30.6%)
Morphine	8 (17.0%)	594 (20.4%)
Codeine	4 (8.5%)	542 (18.6%)
Hydrocodone	1 (2.1%)	84 (2.9%)
Heroin	0 (0.0%)	322 (11.1%)

Note: Drug type was missing from two cases (0.1%) in Ontario between 2015 and 2016. Total deaths may not add up to deaths by drug type as multiple drugs may have been present in a single death (i.e., drug categories are not mutually exclusive).
 Drugs not currently tested in Ontario are not included in the list.

Figure 7. Percentage of Type of Drugs Present in Opioid-Related Deaths, by Region, 2012-2016 Combined



Note: Drug type was missing from two cases (0.1%) in Ontario between 2015 and 2016. Total deaths may not add up to deaths by drug type as multiple drugs may have been present in a single death (i.e., drug categories are not mutually exclusive).
 Drugs not currently tested in Ontario are not included in the list.