

# **TECHNICAL NOTES**

# Substance Use and Harms Tool

Updated: July 2025

## Introduction

Following an increase in public health, health care and media concern about substance-related harms in Ontario and across Canada, understanding and addressing this problem became a provincial priority. Public Health Ontario (PHO) has developed an interactive surveillance report to describe the magnitude and distribution of substance-related morbidity and mortality, as well as harm reduction, in Ontario. This report enables the user to view trends in emergency department visits, hospitalizations and deaths, presented by public health unit, age group, sex, and drug type (in some instances), as well as indicators of harm reduction such as distribution of naloxone, needles, and foils by various provincial partners.

## **Indicators**

## Substance-related Harms

### **Emergency department visits for opioid poisonings**

#### Includes:

- Unscheduled emergency department (ED) visits for opioid poisoning (all diagnosis types)
- ICD-10-CA codes:
  - T40.0 (poisoning by opium)
  - T40.1 (poisoning by heroin)
  - T40.20-T40.28 (poisoning by codeine and derivatives [T40.20], poisoning by morphine [T40.21], poisoning by hydromorphone [T40.22], poisoning by oxycodone [T40.23], poisoning by other opioids not elsewhere classified [T40.28])
  - T40.3 (poisoning by methadone)
  - T40.40-T40.48 (poisoning by fentanyl and derivatives [T40.40], poisoning by tramadol [T40.41], poisoning by other synthetic narcotics not elsewhere classified [T40.48])
  - T40.6 (poisoning by other and unspecified narcotics)

### **Excludes:**

Cases with a query/suspected diagnosis (diagnosis prefix = Q)

## Hospitalizations for opioid poisonings

#### Includes:

- Hospitalizations for opioid poisoning (all diagnosis types)
- ICD-10-CA codes:
  - T40.0 (poisoning by opium)
  - T40.1 (poisoning by heroin)
  - T40.20-T40.28 (poisoning by codeine and derivatives [T40.20], poisoning by morphine [T40.21], poisoning by hydromorphone [T40.22], poisoning by oxycodone [T40.23], poisoning by other opioids not elsewhere classified [T40.28])
  - T40.3 (poisoning by methadone)
  - T40.40-T40.48 (poisoning by fentanyl and derivatives [T40.40], poisoning by tramadol [T40.41], poisoning by other synthetic narcotics not elsewhere classified [T40.48])
  - T40.6 (poisoning by other and unspecified narcotics)

#### **Excludes:**

Cases with a query/suspected diagnosis (diagnosis prefix = Q)

## Deaths due to opioid toxicity

- All deaths where acute opioid toxicity was considered as contributing to the cause of death
- Confirmed opioid-related deaths where a stimulant, benzodiazepine, or alcohol also contributed to cause of death are reported as separate indicators
- Both confirmed and probable opioid-related deaths:
  - Confirmed opioid-related deaths are those for which conclusions on cause of death and autopsy results have indicated an opioid directly contributed to the cause of death
  - Probable opioid-related deaths are suspect drug-related deaths (with conclusions on cause of death/autopsy results pending) where toxicology is positive for opioids. These deaths should be considered as preliminary and are subject to change as remaining cases are closed by the Office of the Chief Coroner for Ontario
- Deaths from specific types of opioids:
  - Codeine
  - Fentanyl (including carfentanil and other fentanyl analogues)
  - Heroin
  - Hydrocodone
  - Hydromorphone
  - Methadone
  - Morphine
  - Nitazenes
  - Oxycodone

#### **Excludes:**

• Deaths due to chronic substance use, medical assistance in dying, or trauma where an intoxicant contributed to the circumstances of the injury and deaths classified as homicide

### **Emergency department visits for stimulant poisonings**

#### Includes:

- Unscheduled emergency department (ED) visits for stimulant poisoning (all diagnosis types)
- ICD-10-CA codes:
  - T40.5 (poisoning by cocaine)
  - T43.6 (poisoning by psychostimulants with abuse potential
  - T43.60 (poisoning by methamphetamine with abuse potential
  - T43.68 (poisoning by other specified psychostimulants with abuse potential
  - T43.69 (poisoning by unspecified psychostimulants with abuse potential

#### **Excludes:**

Cases with a query/suspected diagnosis (diagnosis prefix = Q)

### Hospitalizations for stimulant poisonings

#### Includes:

- Hospitalizations for opioid poisoning (all diagnosis types)
- ICD-10-CA codes:
  - T40.5 (poisoning by cocaine)
  - T43.6 (poisoning by psychostimulants with abuse potential
  - T43.60 (poisoning by methamphetamine with abuse potential
  - T43.68 (poisoning by other specified psychostimulants with abuse potential
  - T43.69 (poisoning by unspecified psychostimulants with abuse potential

### **Excludes:**

Cases with a query/suspected diagnosis (diagnosis prefix = Q)

### Deaths due to stimulant toxicity

- All deaths where acute opioid toxicity was considered as contributing to the cause of death
- Confirmed stimulant-related deaths (those for which conclusions on cause of death and autopsy results have indicated a stimulant directly contributed to the cause of death)
- Deaths from specific types of stimulants:
  - Cocaine
  - Methamphetamines
  - Other stimulants (Amphetamine, methylenedioxyamphetamine (MDA), methylenedioxymethamphetamine (MDMA), mephedrone, methylphenidate, phentermine, pseudoephedrine, and methylenedioxypyrovalerone)

#### **Excludes:**

• Deaths due to chronic substance use, medical assistance in dying, or trauma where an intoxicant contributed to the circumstances of the injury, and deaths classified as homicide

## **Emergency department visits for benzodiazepine poisonings**

### Includes:

- Unscheduled emergency department (ED) visits for benzodiazepine poisoning (all diagnosis types)
- ICD-10-CA codes:
  - T42.4 (poisoning by benzodiazepines)

#### **Excludes:**

• Cases with a query/suspected diagnosis (diagnosis prefix = Q)

## Hospitalizations for benzodiazepine poisonings

#### Includes:

- Hospitalizations for opioid poisoning (all diagnosis types)
- ICD-10-CA codes:
  - T42.4 (poisoning by benzodiazepines)

#### **Excludes:**

• Cases with a query/suspected diagnosis (diagnosis prefix = Q)

### Deaths due to benzodiazepine toxicity

### Includes:

- All deaths where acute benzodiazepine toxicity was considered as contributing to the cause of death
- Confirmed benzodiazepine-related deaths (those for which conclusions on cause of death and autopsy results have indicated a benzodiazepine directly contributed to the cause of death)
- Deaths from specific types of benzodiazepines
  - Approved benzodiazepines with Canadian federal approval for medical use (including diazepam, lorazepam, alprazolam, temazepam, clonazepam, oxazepam, nitrazepam, bromazepam, chlordiazepoxide, demoxepam (chlordiazepoxide metabolite), clobazam, flurazepam and midazolam)
  - Unapproved benzodiazepines without Canadian federal approval for medical use (including etizolam, flualprazolam and flubromazolam)

### **Excludes:**

• Deaths due to chronic substance use, medical assistance in dying, or trauma where an intoxicant contributed to the circumstances of the injury, and deaths classified as homicide

## **Emergency department visits for alcohol poisonings**

### Includes:

- Unscheduled emergency department (ED) visits for alcohol poisoning (all diagnosis types)
- ICD-10-CA codes:
  - T51.0 (toxic effect of ethanol)
  - T51.1 (toxic effect of methanol)
  - T51.2 (toxic effect of 2-propanol)
  - T51.3 (toxic effect of fusel oil)
  - T51.8 (toxic effect of other alcohols)
  - T51.9 (toxic effect of alcohol, unspecified)

#### **Excludes:**

• Cases with a query/suspected diagnosis (diagnosis prefix = Q)

## Hospitalizations for alcohol poisonings

#### Includes:

- Hospitalizations for alcohol poisoning (all diagnosis types)
- ICD-10-CA codes:
  - T51.0 (toxic effect of ethanol)
  - T51.1 (toxic effect of methanol)
  - T51.2 (toxic effect of 2-propanol)
  - T51.3 (toxic effect of fusel oil)
  - T51.8 (toxic effect of other alcohols)
  - T51.9 (toxic effect of alcohol, unspecified)

## Excludes:

• Cases with a query/suspected diagnosis (diagnosis prefix = Q)

## Deaths due to alcohol toxicity

### Includes:

- All deaths where acute alcohol toxicity was considered as contributing to the cause of death
- Confirmed alcohol-related deaths (those for which conclusions on cause of death and autopsy results have indicated alcohol directly contributed to the cause of death)

#### **Excludes:**

• Deaths due to chronic substance use, medical assistance in dying, or trauma where an intoxicant contributed to the circumstances of the injury, and deaths classified as homicide

## Emergency department visits for conditions entirely attributable to alcohol

- Unscheduled emergency department (ED) visits for conditions entirely attributable to alcohol (all diagnosis types)
- ICD-10-CA codes:
  - E24.4 Alcohol-induced pseudo-Cushing's syndrome
  - F10 Mental and behavioural disorders due to use of alcohol
    - F10.0 Mental and behavioural disorders due to use of alcohol, acute intoxication
    - F10.1 Mental and behavioural disorders due to use of alcohol, harmful use
    - F10.2 Mental and behavioural disorders due to use of alcohol, dependence syndrome
    - F10.3 Mental and behavioural disorders due to use of alcohol, withdrawal state
    - F10.4 Mental and behavioural disorders due to use of alcohol, withdrawal state with delirium
    - F10.5 Mental and behavioural disorders due to use of alcohol, psychotic disorder
    - F10.6 Mental and behavioural disorders due to use of alcohol, amnesic syndrome
    - F10.7 Mental and behavioural disorders due to use of alcohol, residual and late-onset psychotic disorder
    - F10.8 Mental and behavioural disorders due to use of alcohol, other mental and behavioural disorders
    - F10.9 Mental and behavioural disorders due to use of alcohol, unspecified mental and behavioural disorder
  - G31.2 Degeneration of nervous system due to alcohol
  - G62.1 Alcoholic polyneuropathy
  - G72.1 Alcoholic myopathy
  - 142.6 Alcoholic cardiomyopathy
  - K29.2 Alcoholic gastritis
  - K70 Alcoholic liver disease
    - K70.0 Alcoholic fatty liver
    - K70.1 Alcoholic hepatitis
    - K70.2 Alcoholic fibrosis and sclerosis of liver
    - K70.3 Alcoholic cirrhosis of liver
    - K70.4 Alcoholic hepatic failure
    - K70.9 Alcoholic liver disease, unspecified
  - K85.2 Alcohol-induced acute pancreatitis
  - K86.0 Alcohol-induced chronic pancreatitis

- O35.4 Maternal care for (suspected) damage to fetus from alcohol
- Q86.0 Fetal alcohol syndrome (dysmorphic)
- R78.0 Finding of alcohol in blood
- T51 Toxic effect of alcohol
  - T51.0 Toxic effect of ethanol
  - T51.1 Toxic effect of methanol
  - T51.2 Toxic effect of 2-Propanol
  - T51.3 Toxic effect of fusel oil
  - T51.8 Toxic effect of other alcohols
  - T51.9 Toxic effect of alcohol, unspecified
- X45 Accidental poisoning by and exposure to alcohol
- X65 Intentional self-poisoning by and exposure to alcohol
- Y15 Poisoning by and exposure to alcohol, undetermined intent

## Hospitalizations for conditions entirely attributable to alcohol

- Hospitalizations for conditions entirely attributable to alcohol (all diagnosis types)
- ICD-10-CA codes (DAD):
  - E24.4 Alcohol-induced pseudo-Cushing's syndrome
  - F10 Mental and behavioural disorders due to use of alcohol
    - F10.0 Mental and behavioural disorders due to use of alcohol, acute intoxication
    - F10.1 Mental and behavioural disorders due to use of alcohol, harmful use
    - F10.2 Mental and behavioural disorders due to use of alcohol, dependence syndrome
    - F10.3 Mental and behavioural disorders due to use of alcohol, withdrawal state
    - F10.4 Mental and behavioural disorders due to use of alcohol, withdrawal state with delirium
    - F10.5 Mental and behavioural disorders due to use of alcohol, psychotic disorder
    - F10.6 Mental and behavioural disorders due to use of alcohol, amnesic syndrome
    - F10.7 Mental and behavioural disorders due to use of alcohol, residual and late-onset psychotic disorder
    - F10.8 Mental and behavioural disorders due to use of alcohol, other mental and behavioural disorders
    - F10.9 Mental and behavioural disorders due to use of alcohol, unspecified mental and behavioural disorder
  - G31.2 Degeneration of nervous system due to alcohol
  - G62.1 Alcoholic polyneuropathy

- G72.1 Alcoholic myopathy
- 142.6 Alcoholic cardiomyopathy
- K29.2 Alcoholic gastritis
- K70 Alcoholic liver disease
  - K70.0 Alcoholic fatty liver
  - K70.1 Alcoholic hepatitis
  - K70.2 Alcoholic fibrosis and sclerosis of liver
  - K70.3 Alcoholic cirrhosis of liver
  - K70.4 Alcoholic hepatic failure
  - K70.9 Alcoholic liver disease, unspecified
- K85.2 Alcohol-induced acute pancreatitis
- K86.0 Alcohol-induced chronic pancreatitis
- O35.4 Maternal care for (suspected) damage to fetus from alcohol
- Q86.0 Fetal alcohol syndrome (dysmorphic)
- R78.0 Finding of alcohol in blood
- T51 Toxic effect of alcohol
  - T51.0 Toxic effect of ethanol
  - T51.1 Toxic effect of methanol
  - T51.2 Toxic effect of 2-Propanol
  - T51.3 Toxic effect of fusel oil
  - T51.8 Toxic effect of other alcohols
  - T51.9 Toxic effect of alcohol, unspecified
- X45 Accidental poisoning by and exposure to alcohol
- X65 Intentional self-poisoning by and exposure to alcohol
- Y15 Poisoning by and exposure to alcohol, undetermined intent
- DSM IV/5 codes (OMHRS):
  - DSM-IV Axis I Primary or DSM-IV Axis I Sec Dx or DSM-IV Axis I Tert Dx or DSM-IV Axis I Quat Dx or DSM-IV Axis II Other Primary Dx or DSM-IV Axis II Other Sec Dx = 291.0, 291.1, 291.2, 291.3, 291.5, 291.81, 291.82, 291.89, 291.9, 303.00, 303.90, 305.00
  - DSM-5 Psychiatric Dx A or DSM-5 Psychiatric Dx B or DSM-5 Psychiatric Dx C or DSM-5 Psychiatric Dx D or DSM-5 Psychiatric Dx E or DSM-5 Psychiatric Dx F = 291.0, 291.1, 291.2, 291.81, 291.82, 291.89, 291.9, 303.00, 303.90, 305.00, F10.0, F10.1, F10.2, F10.3, F10.4, F10.5, F10.6, F10.7, F10.8, F10.9
  - Includes those in designated acute adult mental health bed

## Harm Reduction

#### Total number of naloxone doses

#### Includes:

- Total number of naloxone doses provided through the Ontario Naloxone Program (ONP) and the Ontario Naloxone Program for Pharmacies (ONPP)
- The Ontario Naloxone Program provides naloxone doses to Public Health Units for distribution through eligible community-based organizations, including Community Health Centres, Aboriginal Health Access Centres, shelters, withdrawal management programs, AIDS Service Organizations, outreach programs, Consumption Treatment Services, and hospitals with an emergency department and/or urgent care centre
- The Ontario Naloxone Program for Pharmacies provides naloxone doses through participating community pharmacies
- This indicator includes both injectable and intranasal naloxone
- Naloxone kits provided by pharmacies and community include 2 naloxone doses
- Kits are counted as 2 doses within the numerator of this indicator

#### **Excludes:**

Naloxone doses provided to police, fire and St. John Ambulance

### Community provided naloxone doses

#### Includes:

- Total number of naloxone doses provided through the Ontario Naloxone Program (ONP)
- The Ontario Naloxone Program provides naloxone doses to Public Health Units for distribution through eligible community-based organizations, including Community Health Centres, Aboriginal Health Access Centres, shelters, withdrawal management programs, AIDS Service Organizations, outreach programs, Consumption Treatment Services, and hospitals with an emergency department and/or urgent care centre
- This indicator includes both injectable and intranasal naloxone
- Naloxone kits provided by pharmacies and community include 2 naloxone doses

### **Excludes:**

Naloxone doses provided to police, fire and St. John Ambulance

## Pharmacy provided naloxone doses

- Total number of naloxone doses provided (number of kits provided x 2) through the Ontario Naloxone Program for Pharmacies (ONPP)
- The Ontario Naloxone Program for Pharmacies provides naloxone doses through participating community pharmacies
- This indicator includes both injectable and intranasal naloxone

- Naloxone kits provided by pharmacies and community include 2 naloxone doses and are counted as 2 doses within the numerator of this indicator
- As of March 2018, there are some instances in which a pharmacist is permitted to provide more than one naloxone kit (each containing two doses) to a recipient in a given naloxone claim. In this case, each kit and respective dose would be counted
- This is restricted to naloxone doses dispensed by pharmacies participating in the Ontario Naloxone Program for Pharmacies

### Foils provided

#### Includes:

 Total number of foils provided through the Ontario Harm Reduction Distribution Program to a Public Health Unit

## **Needles provided**

#### Includes:

• Total number of needles provided through the Needle Exchange Program to a Public Health Unit

# Methodological Notes

- Some deaths are attributed to multi-drug toxicity therefore, a death can include more than one drug as a cause; the percentage attributed to any one drug is calculated using the total number of unique deaths.
- Testing for detection of nitazenes (benzimidazole-opioids) in post-mortem toxicology became
  routine in September 2021. Detection in opioid-related deaths may be under-reported for 2021;
  nitazenes may have been detected in combination with other opioids, and due to limited
  understanding of these emerging substances, may not always be attributed to the cause of death.
- Data presented for ED visits for opioid poisoning in the most recent quarter have been collected as part of a weekly reporting initiative by the Ministry of Health and Ontario hospitals and should be considered as preliminary and subject to change
- Data for ED visits and hospitalizations are updated quarterly, approximately 4–6 months after the quarter has passed (shortly after the data is made available to PHO); data for deaths are updated as that data is made available to PHO.
- Indicators are calculated by visit registration date (ED visits), admission date (hospitalizations) and death date (deaths).
- For hospitalization data which are discharged-based, updates to include a current quarter of data may include admissions which happened in a previous quarter.
- Demographic stratifiers include by sex and by age-group (<15, 20-24, 25-44, 45-64, 65+).
- Death data were geocoded to Public Health Unit (PHU) by joining the postal code of the case with Statistics Canada Postal Code Conversion File (PCCF) and health-region boundary correspondence files using the single-link indicator (SLI).

- For ED visits and hospitalizations, the postal code represents the residence of the decedent. For deaths, the postal code represents the location of the incident, and if that was not available the location of death, followed by the location of residence. In death records prior to May 2017 the location of residence was used exclusively because incident and death location were not available.
- Records without a recorded sex, age or PHU were not included in stratified results but are included in the overall totals.
- Population data for month of year was calculated by interpolating the percent (%) change in population counts between the calendar year before and after with the annual estimates assigned to July (mid-year).
- Monthly and quarterly rates have been annualized for comparability between different time periods (i.e., monthly rates have been multiplied by 12 while quarterly rates have been multiplied by 4)
- Data for which sufficient risk of re-identification of an individual exists have been suppressed. For
  example, data for deaths by specific type of opioids, stimulants, and benzodiazepines have been
  suppressed when the denominator (total number of deaths in that drug class) was between 1 and
  4 deaths
- Data for all harm reduction indicators have been calculated and provided by the Ontario Drug Research Policy Network (ODPRN)
- The Ontario Drug Benefit (ODB) database contains claims for dispensed drugs that are reimbursed through the Ontario Drug Benefit program through the Ontario government. This includes drugs listed on the ODB formulary, drugs covered under the Exceptional Access Program, and products and services such as blood glucose test strips, certain vaccinations, and naloxone doses. The Ontario Naloxone Program for Pharmacies (ONPP) was introduced on June 3, 2016, and provides government funding for the provision of naloxone, a medication that can counter the effects of an opioid overdose, at community pharmacies in Ontario. Through this program, all individuals in Ontario can receive a free naloxone kit from participating pharmacies without a prescription. Prior to March 27, 2018, only injectable naloxone was funded through the ONPP. On March 27, 2018, funding of intranasal naloxone was added to the ONPP, and pharmacists were granted the ability to provide a naloxone kit to individuals who do not present an Ontario health card at the time of dispensing, as well as to provide two naloxone kits to an eligible recipient at one time. On March 27, 2018, a change was made to the Ontario Naloxone Program for Pharmacies allowing pharmacists to provide naloxone kits to individuals who do not present an Ontario health card. As a result, 38% of naloxone claims beyond this date could not be linked to the Registered Persons Database to determine the location of residence of the recipient. To try to preserve as much information as possible in reporting, the following method was used to report pharmacy provided naloxone doses by PHU:
  - For records that could be linked to the Registered Persons Database, geography was based on the recipient's PHU of residence
  - For records that could not be linked to the Registered Persons Database, geography was based on the PHU of the pharmacy from which the naloxone kit was dispensed
- For indicators derived from ODB program data, PCCF+ Version 6D was used to assign PHU based on FSA of residence

## Limitations

- Data from ED visits and hospitalizations only capture those who visit the ED/are hospitalized while only deaths investigated by the Office of the Chief Coroner are included and may not reflect the total burden in the population.
- Data for Ontario residents who visit an ED/hospital or die outside of the province are not included.

## **Data Sources**

#### **ED Visits**

National Ambulatory Care Reporting System. Ottawa, ON: Canadian Institute for Health Information [producer]; Toronto, ON: Ontario. Ministry of Health, IntelliHealth Ontario [distributor]; [unpublished]

## **ED Visits (Preliminary)**

National Ambulatory Care Reporting System. Ottawa, ON: Canadian Institute for Health Information [producer]; Toronto, ON: Ontario. Ministry of Health, Health Analytics Branch [distributor]; [unpublished]

## Hospitalizations

Discharge Abstract Database (DAD). Ottawa, ON: Canadian Institute for Health Information [producer]; Toronto, ON: Ontario. Ministry of Health, IntelliHealth Ontario [distributor]; [unpublished]

### **Deaths**

Ontario Substance-related Death Database. Toronto, ON: Office of the Chief Coroner for Ontario/Ontario Forensic Pathology Service (OCC/OFPS); [unpublished]

### **Pharmacy provided Naloxone**

Ontario Drug Benefit (ODB) Database, Toronto, ON: Ministry of Health [producer]; Toronto, ON: Ontario Drug Research Policy Network [distributor]; [unpublished]

### **Community provided Naloxone**

Ontario Naloxone Program, Toronto, ON: Ministry of Health [producer]; Toronto, ON: Ontario Drug Research Policy Network [distributor]; [unpublished]

### **Needles provided**

Needle Exchange Program, Toronto, ON: Ministry of Health [producer]; Toronto, ON: Ontario Drug Research Policy Network [distributor]; [unpublished]

### Foils provided

Ontario Harm Reduction Distribution Program, Toronto, ON: Ministry of Health [producer]; Toronto, ON: Ontario Drug Research Policy Network [distributor]; [unpublished]

### **Population**

Population estimates and projections. Ottawa, ON: Statistics Canada [producer]; Toronto, ON: Ontario Ministry of Health , IntelliHealth Ontario [distributor]; [unpublished]

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## How to Cite this Tool

#### **Generic Citation**

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### **Example Citation**

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