Compendium: Illicit and Psychotropic Drug Use, Risk/Harm and Intervention Indicators and Data for Ontario

Compiled by: Cayley Russell (MA); Sarah Miles (PhD); Benedikt Fischer (PhD) for OCRINT

Ontario CRISM Node Team (OCRINT)/Institute for Mental Health Policy, Centre for Addiction and Mental Health, Toronto

Preface

The ***Compendium: Illicit and Psychotropic Drug Use, Risk/Harm and Intervention Indicators and Data for Ontario*** is compiled by the Ontario CRISM (Canadian Research Initiative in Substance Misuse) Node Team [OCRINT] as a basic information resource for CRISM's scope in Ontario. It draws on and compiles relevant – while select – data and information from a multitude of sources (including surveys, epidemiological/surveillance reports, various types of studies, others) intended as a resource for both scientific, policy/program, stakeholder and lay audiences in relevant fields and to support OCRINT/CRISM's scientific and knowledge translation mission with data and information. The Compendium is meant as a 'living document', i.e. is designed to be updated with newly relevant information. The Compendium's main content organization is by major drug categories, with sub-ordinated specific indicator (e.g., use, risks/harms, interventions) sub-sections further organized by (e.g., general, special) population categories.

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1 Cannabis

1.1 Use

General Population

- Cannabis is the most commonly used illicit drug in Ontario. One in ten (9.1%) adults (aged 15+) in Ontario (compared to 10.2% of adults Canada-wide) reported (past-year) cannabis use, according to the 2012 Canadian Alcohol and Drug Use Monitoring Survey (CADUMS), an annual representative survey of the Canadian adult population, including a sub-sample of 1,011 Ontarians.[1]
- Among Ontario adults (aged 18+), 14. 5% reported cannabis use in the past year, and 45.3% had a lifetime history of cannabis use as per the Centre for Addiction and Mental Health (CAMH) Monitor, an annual representative cross-sectional survey of (n=5,013) Ontario adults in 2015. Cannabis use (past-year) rates among Ontario adults have increased steadily from 8.7% in 1996. In 2015, rates were higher among men (19.2%) than women (10.2%).[2]

Youth and Young Adults

- Past year cannabis use was higher (37.9%) among young adults (ages 18-29) than older adults (8.3% among those 30+) in Ontario, and has doubled from 18.3% in 1996, according to the CAMH Monitor (n=5,013; 2015).[2]
- One in five (21.3%) Ontario students (grades 7-12) used cannabis in the past year, and 23.9% used in their lifetime, based on the 2015 Ontario Student Drug Use and Health Survey (OSDUHS), a biennial representative cross-sectional survey of (n=10,426) Ontario public school students.[3] Slightly fewer (16.1%) Ontario students (grade 7-12) reported cannabis use (past-year) in the 2014-15 Canadian Student Tobacco, Alcohol and Drugs Survey (CSTADS) (a biennial, nationally representative survey of public school students, including a sub-sample of 5,253 Ontario students); this was similar to the cannabis use rate (16.5%) reported by the entire Canadian sample (n=36,665).[4]
- Past-year cannabis use among grade 7-12 students in Ontario has remained stable since 2011 (22.0%). Female (20.5%) and male (22.0%) students (grade 7-12) reported similar (past-year) cannabis use rates in 2015; rates increased steadily by grade from 10.3% among grade 10 students to 37.2% among grade 12 students. A minority (2.1%) of all students reported daily cannabis use. The majority (58.0%) of students (grade 9-12) found cannabis easy to obtain, with most (80.8%) obtaining it through a friend, as per the 2015 OSDUHS (n=10,426).[3]
- One in three (33.0%) Ontario undergraduate students used cannabis in the past year and 17.5% did so in the past month, according to the 2004 Canadian Campus Survey, a national survey of Canadian undergraduates, including a random sub-sample of 2,107 students from 12 self-selected Ontario universities.[5]
- 1.9% of postsecondary students in Ontario used cannabis daily, based on the National College Health Assessment (NCHA) which included a random sub-sample of 16,123 students from 16 self-selected Ontario postsecondary institutions in 2013 as part of a national study.[6]

- Eight percent of high school students (grade 9-12) reported using an e-cigarette for marijuana, hash oil, liquid, or wax in the previous 12 months (n=3,171; OSDUHS).[7]
- Between 1.6% and 2.0% of grade 10-12 students reported (past-year) use of synthetic cannabis (a variety of herbal mixtures that contain synthetic cannabinoid compounds). Past-year use did not change significantly between 2013 (1.8%) and 2015 (1.3%), according to the OSDUHS representative Ontario (n=10,426) student survey (2015).[3]

Special Populations

Indigenous Populations

- One quarter (25.0%) of (n=1,500) Ontario First Nations adults (aged 18+) living on reserve used cannabis in the past-year. 35.3% of Ontario First Nations youth (n=600; aged 12-17) living on reserve reported past-year cannabis use, while 6.1% reported using cannabis daily or almost daily based on the 2008-10 cross-sectional representative Regional Health Survey of First Nations individuals living in 24 Ontario-based First Nations communities.[8,9]

Racialized Populations

- Asian students in grades 7-12 in Ontario were significantly less likely than white students to have used cannabis in the past year (controlling for other demographic factors). Black/Afro-Caribbean students and students of other ethnicities did not differ from white students on cannabis use, according to data from the 2011 OSDUHS (n=9,288).[10]

Homeless and Street-Involved Populations

- Among (n=368) Toronto-based homeless adults, 48% reported regular (3+ times/week) use of marijuana (past-year), based on a random sample (2006-07).[11] 40% of (n=1,191) Toronto-based homeless adults reported marijuana use within the past two years, according to a 2004-05 stratified random sample.[12]
- Nearly all (89%) of a sample of Toronto-based 'street-entrenched' adults who use drugs (aged 19+), and 98% of a sample of 'street-involved' youth who use drugs (aged 15-24), reported (past-year) cannabis use according to the 2012-13 Health Canada Monitoring of Alcohol and Drug use Among High Risk Populations study (HRPS).[13]
- Most males (86%) and females (75%) in a sample of (n=100) polysubstance-using homeless youth (aged 16-24) in Toronto reported (past 6 month) cannabis use, according to the Drugs, Homelessness and Health survey, convenience sampled in 2008-09.[14]

Medical Users

- Among a sample of Ontario-based users of cannabis for therapeutic purposes, 41% accessed therapeutic cannabis from a dispensary, 68% from a friend or someone they know, 29% from a dealer/on the street and 3% through Health Canada, based on a 2011-12 online convenience sample (n=242).[15]
- The majority (57%) of Ontarians believed medical marijuana should be accessible by prescription rather than by permit, through a pharmacist, based on a legal age, or without restriction, according to an Ontario subsample of a nationally representative (n=3,824; 2016) online survey. Distribution through a pharmacy was chosen as the preferred method of distribution (53%), with most (75%) believing availability through a pharmacy would improve patient safety and oversight.[16]

Injection Drug Users

- 75% of injection drug users (IDUs) reported cannabis use (past 6 month) in a convenience sample of (n=1,643) IDUs recruited from 26 select Ontario sites (2007) in the Ontario Harm Reduction Distribution Program Evaluation.[17] 75.2% of a sub-sample of (n=775) IDUs (aged 15+) from four sentinel sites in Ontario (Thunder Bay, Sudbury, Toronto, Kingston) reported past 6 month marijuana use according to the I-Track cross-sectional national Canadian convenience sample of IDUs (2005-08).[18]

Recreational Drug Users

- Past year cannabis use prevalence was 94% among a Health Canada study of 'recreational drug users' in Toronto recruited from event-specific sites such as raves or permanent nightclubs in Toronto (2012-13).[13]
- Nearly three-quarters (73%) of a sample of youth involved in party scenes in Toronto used cannabis (past 6 months) based on the Toronto Youth Drug online survey (2014).[13]

Pregnant and Parenting Women

- There are no publicly-available provincial data on women's cannabis use during pregnancy.

1.2 Risks and Harms

Cannabis and Driving

- Cannabis was the drug most frequently detected in toxicological testing of drivers involved in fatal motor vehicle collisions (MVCs) in Ontario, among (n=229) samples that were submitted for testing between 2011-12; drugs were detected in 44% of cases and cannabis was detected in 27% of those.[19]
- Among all Ontario adults (aged 18+) with a driver's licence in 2015, 2.9% reported driving within 1 hour after using cannabis in the past year; this rate has been relatively stable since 2005. In 2015, almost all driving after cannabis use was reported by young adults (18-29 years), 7.5% of whom had done so in the past year, based on data from the 2015 CAMH Monitor (n=5,013).[2]
- Ontario adults (aged 18+) who reported driving within 1 hour after cannabis use in the past year were more likely to have been involved in a collision (20.2%) than those who did not report driving after cannabis use (7.2%); this represents a greater collision risk than for those who reported driving after drinking in the past year (12.0%), according to CAMH Monitor data from 2002-07 (n=8,481).[20] Those who reported both driving after cannabis use and after alcohol use in the past year were most likely to have been involved in a collision (30.5%) based on CAMH Monitor data from 2002-10 (n=16,224).[21]
- In 2015, one in ten (9.8%) of all Ontario students (grades 10-12) with a driver's licence reported driving within 1 hour after using cannabis in the past year, a significant decrease since 2001 when the rate was one in five (19.9%); males (11.6%) were significantly more likely than females (7.6%) to use cannabis and drive according to the 2015 OSDUHS (n=10,426).[3]
- Two thirds (64.5%) of a (2005) convenience sample of (n=45) Toronto university students who had driven after cannabis use in the past year had done so within 1 hour. Most drove <10km (66.7%), had one or more passengers who had also used cannabis (71.1%), and had at least one episode when they decided against driving after cannabis use (51.1%).[22]

Morbidity and Mortality

Dependence

- In 2015, 7.5% of Ontario adults (aged 18+) met the criteria for moderate or high risk of cannabis problems in the past year based on the Cannabis Involvement Score from the Alcohol, Smoking and Substance Involvement Screening Test; this rate increased significantly from 4.7% in 2012, although moderate and high risk of cannabis problems have been generally stable from 2004-15, varying between 4.7% and 7.5%. In 2015, rates were high (18.2%) among young adults (18-29 years) and past-year cannabis users (45.1%) according to the CAMH Monitor (n=5,013).[2]
- 1.2% of the general Ontario population (aged 15+) fulfilled the criteria for cannabis abuse or dependence in the past year, based on a sub-sample of 5,492 Ontarians in the 2012 Canadian Community Health Survey on Mental Health, a national cross-sectional survey representative of Canadian adults.[23]
- 2.2% of Ontario students (grades 9-12) reported symptoms of cannabis dependence, measured by the Severity of Dependence Scale; this rate was 7.2% among past-year cannabis users (2015 OSDUHS, n=10,426).[3]

Burden of Disease

- Hospital separations for people with a cannabis-related diagnosis in Ontario increased from 16/100,000 to 20/100,000 between 2000 and 2005, based on the Canadian Institute for Health Information's Hospital Morbidity Database of Canadian inpatient hospital separations (excluding psychiatric facilities, day procedure and emergency department visits).[24]

1.3 Interventions

Treatment

- Approximately one third (32.7%; 32,999 admissions) of patients presenting to publicly-funded substance abuse treatment reported cannabis as a problem substance in 2012-13. Cannabis was the most common problem drug (excluding alcohol and tobacco) at admission, and this rate has remained stable since 2007-08, based on data from the Drug and Alcohol Treatment Information System (DATIS), collected from over 170 publicly-funded substance abuse agencies across Ontario.[25]
- Cannabis was the most common drug for which children and youth (0-24 years) were treated in Ontario between 2003 and 2012 (around 25/10,000 population). Treatment for cannabis use was most common among 15-19 year olds, males and children/youth living in the North East and North West Local Health Integration Networks (LHINs) in 2009-12, according to various data sources compiled into the Mental Health of Children and Youth in Ontario Baseline Scorecard report.[26]

2 Opioids

2.1 Medical Use and Dispensing

General Population

- Ontario had the highest total dispensing rate for oral and transdermal opioids of any province consistently between 2007 and 2013 (~50,000-60,000 morphine equivalents [MEQ]/1,000 population), based on Canadian retail pharmacy dispensing data in the IMS Brogan database.[27]
- Ontario's high opioid consumption relative to other provinces was driven by long-acting opioids (e.g., codeine, fentanyl, hydromorphone, morphine, oxycodone) in 2013. Approximately 33,500 long-acting MEQ per 1,000 population/month were dispensed in Ontario compared to the national average of 25,350; however, similar amounts of short-acting opioids were dispensed in Ontario (approximately 18,500 MEQ/1,000) compared to the national average (18,100 MEQ/1,000). In 2013, oxycodone accounted for the highest portion of long-acting opioids dispensing in Ontario, with approximately 12,500 MEQ dispensed per 1,000 population/month. Hydromorphone (~8,000 MEQ/1,000 population), fentanyl (~6,000 MEQ/1,000 population) and morphine (~5,500 MEQ/1,000 population) accounted for the bulk of the remaining long-acting opioids dispensed in Ontario during that period, as reported in the IMS Brogan database of retail pharmacy dispensing.[27]
- Annual prescriptions for all opioid analgesics increased by 29% in Ontario between 1991 (458 prescriptions/1,000 population) and 2007 (591 prescriptions/1,000 population) and for oxycodone increased by 850% (from 23 to 197/1,000 population), according to the IMS Brogan database of retail pharmacy dispensing.[28]
- Ontario's dispensing rate for all opioids peaked in 2010-11 at over 60,000 MEQ/1,000 population/month and decreased to slightly over 50,000 MEQ/1,000 population/month in mid-2013, primarily because of decreased oxycodone dispensing following the introduction of OxyNeo (IMS Brogan database).[27] Prescribing of oxycodone formulations decreased 44.2% between 2010-13, whereas hydromorphone (+56.0%) and fentanyl (+15.9%) prescribing rates increased during the same time period according to the IMS Brogan database of retail pharmacy dispensing.[29]
- Ontario's dispensing rates for strong opioids (i.e., fentanyl, hydrocodone, hydromorphone, oxycodone, meperidine and morphine) also peaked in 2011 to approximately 14 defined daily doses per 1,000 population/day, and subsequently decreased by 15.2% in 2012, as per data from the IMS Brogan database of retail pharmacy dispensing.[30]
- One in five (20.5%) Ontario public drug plan recipients received opioids in 2015.[31] In 2012-13, Ontario public drug plan recipients received the highest proportion in Canada based on data from the National Prescription Drug Utilization Information System.[32]
- 22.6% of Ontario adults (aged 18+) reported past-year use of any prescription opioids (POs) (2015 CAMH Monitor, n=5,013).[2] One in five (19.3%) Ontario adults (15+ years) reported using PO analgesics in the previous year based on an Ontario sub-sample (n=1,008) from the 2009 CADUMS[1]; this Ontario rate was very similar to the national average of 19.2%.[33]

Youth and Young Adults

- Use of any POs in the past year was similar among young adults (20.3% among ages 18-29) and older adults (24.1% among those 30+) in Ontario, according to the CAMH Monitor (n=5,013; 2015).[2]

Special populations

Indigenous Populations

- The percent of First Nations people (on- and off-reserve, 15 years and older) in Ontario who received an opioid prescription through the Non-Insured Health Benefits remained relatively stable around 20% between 2000 and 2009. The quantity of opioids dispensed (tablets /1000 people) and the percent receiving short-acting oxycodone products increased during the same period, based on the Non-Insured Health Benefits pharmacy claims database.[34]

Pregnant and Parenting Women

- Among women who gave birth to an infant with neonatal abstinence syndrome (NAS) and were eligible for publicly funded prescription drugs in Ontario, 70% received a prescription for an opioid in the 100 days prior to delivery. Prescriptions for non-methadone opioids decreased as delivery approached (from 22.7% in the 1-2 years before delivery to 11.5% in the 100 days before delivery) and prescriptions for methadone increased (from 28.6% in the 1-2 years before delivery to 53.3% in the 100 days before delivery), based on administrative health data from 2007-2011.[35]

Racialized Populations

- There are no publicly available provincial data on opioid use among racialized populations.

2.2 Non-medical and Illicit Use

General Population

- An estimated 115,000 to 327,000 non-medical PO users existed in the Ontario adult (15-49 years) population in 2003 (1,805 to 5,139 per 100,000 population), based on US data and various Canadian data sources (e.g., key informant estimates, narcotic drug consumption). It was estimated that 18,000 to 36,000 of the street drug-using population in Ontario used non-medical POs, heroin, or both in 2002-03 based on overdose death data and a key informant survey.[36]
- In 2015, 4.1% of Ontario adults (aged 18+; n=5,013) reported past-year non-medical prescription opioid use (NMPOU) (i.e., without a prescription or doctor's instructions), which was a significant decrease from 7.7% in 2010, according to the 2015 CAMH Monitor.[2]
- Less than 1% of Ontario adults had a lifetime history of heroin use in 2004, according to the national Canadian Addiction Survey (CAS), a cross-sectional, representative survey including a sub-sample of (n=1,000) Ontario adults (aged 15+).[37] Estimates for subsequent years (both lifetime and past-year use) have not been released due to high sampling variability.

Youth and Young Adults

- NMPOU rate was 5.1% among young adults (18-29 years) in 2015 and has remained relatively steady (around 7%) since 2010, according to the CAMH Monitor (n=5,013).[2]

- One in ten (10.0%) Ontario students (grades 7-12) reported (past-year) NMPOU (2015), which was a significant decrease from 20.6% in 2007, according to the OSDUHS (n=10,426).[3] Grade 12 students were more likely (13.0%) than younger grades (6.9-10.9%) to report (past-year) NMPOU in 2015. 3.7% of all grade 7-12 students reported frequent (6+ times/year) NMPOU use; the majority (55.7%) of students who reported NMPOU obtained POs from a parent or a sibling.
- Less than 1% (0.5%) of grade 9-12 students reported (past-year) heroin use in the 2015 OSDUHS (n=10,426).[3]
- 6.1% of Ontario postsecondary students reported (past-year) NMPOU and 1.2% heroin (0.3% in the past month) according to the 2013 NCHA Canadian survey (Ontario sub-sample n=16,123).[6]

Special populations

Indigenous Populations

- 6.8% of Ontario First Nations adults (aged 18+) reported NMPOU in the past year (2.3% daily or almost daily). Rates were highest (~14%) among 18-29 year olds, according to the 2008-10 Regional Health Survey (n=1,500) representative of Ontario First Nation adults living on reserve.[9]
- In non-reserve contexts, 19% of a sample of (n=554) First Nations adults (aged 18+) in Hamilton, Ontario reported PO use (past-year) according to a (2009-10) respondent-driven sample.[38]
- In North Caribou Lake First Nation in northwestern Ontario, 41% of adults had participated in opioid substitution therapy between 2012 and 2014, indicating high rates of opioid dependence in the community.[39]
- In 2009, the Nishnawbe Aski Nation Chiefs declared a PO misuse state of emergency. An estimated 50-80% of First Nations adults, and up to 50% of youth, were PO addicted/dependent in some remote Northern Ontario reserve communities according to anecdotal evidence from the Nishnawbe Aski Nation.[40]

Racialized Populations

- Among a sub-sample (n=124) of regular illicit opioid users in Toronto, 16.1% identified as an ethnicity other than white or Aboriginal based on 2005 data from the national multi-site (5 Canadian cities), multi-phase (2002, 2005) convenience sample of illicit opioid users (aged 18+) outside of treatment (OPICAN study).[41]
- Seven percent of (n=183) Toronto- and Kingston-based opioid dependent adults (18+) recruited into methadone maintenance therapy (MMT) (2001-04) reported a race other than Caucasian, First Nations or Métis.[42]

Homeless and Street Involved Populations

- 8% of (n=1,191) Toronto-based homeless adults reported opioid use (other than heroin and methadone) in the past two years and 3% reported heroin use in a 2004-05 stratified random sample.[12]
- 15% of a 2006-07 sample of (n=368) homeless adults in Toronto reported regular (3+ times/week) use of OxyContin (past year), 16% other POs, 7% heroin.[11]
- Oxycodone was the most frequently used PO among a sample of street-entrenched adults who use drugs in Toronto; roughly half (52%) reported oxycodone use (past-year), 41%

codeine, 34% morphine, and 32% heroin (2012-13 Health Canada High Risk Populations study).[13]

- One third (29%) of a sample of 'street-involved' youth who used drugs reported (past-year) oxycodone use, 15% codeine use, and 13% heroin use (2012-13 Health Canada High Risk Populations study).[13]
- 63% of females and 36% of males reported oxycodone use (past 6 months) and 21% females and 30% males reported heroin use among a convenience sample of (n=100) substance-using homeless youth (aged 16-24) in Toronto (Drugs, Homelessness and Health survey, 2008-09).[14]

Correctional Populations

- Almost one in three (29.7%) Ontario-based Federal inmates reported Oxycodone use (in the year prior to MMT initiation), 51.2% morphine/hydromorphone, and 47.1% heroin, based on an Ontario sub-sample (27.4% of a total national sample of n=1,272) initiated into Correctional Service Canada's MMT program between 2003 and 2008.[43]
- 35.3% of a sample of the Ontario correctional population reported opioid use (other than heroin) in the year prior to incarceration and 7.4% reported heroin use, based on a 2009 representative sample of (n=499) male adults (aged 18+) in an Ontario provincial detention centre.[44]

Pregnant and Parenting Women

- There are no publicly-available provincial data on women's non-medical opioid use during pregnancy.
- Poly-substance use was common among (n=44) opioid dependent women who attended a comprehensive substance use program for pregnant women in Toronto; at the first visit, 48% used POs, 34% used cocaine or crack-cocaine, 32% used marijuana, and 16% used heroin, based on a retrospective (1997-2009) chart review. By delivery, 11% used each of POs, cocaine/crack-cocaine, and marijuana and 3% used heroin.[45] Among (n=121) women attending the program between 2000 and 2006, decreased drug use from the first visit to delivery was most common among women who presented to the program during the first trimester of pregnancy.[46]
- Incidence of narcotic use during pregnancy rose from 8.4% in 2009 to 28.6% in 2013 in the Meno Ya Win Health Centre in the Sioux Lookout, which provides obstetric services to a primarily First Nations population in Northern Ontario.[47,48]

Opioid Users

- Among a sub-sample (n=124) of regular illicit opioid users in Toronto, most (75.5%) used only POs, a minority (23.6%) used POs and heroin, and few (0.9%) used heroin only (past 30 days). Some of the commonly reported opiates used were morphine (37.9%) and oxycodone (32.3%)[41] based on 2005 data from the national multi-site (5 Canadian cities), multi-phase (2002, 2005) convenience sample of illicit opioid users (aged 18+) outside of treatment (OPICAN study).[49]
- Based on a retrospective chart review of (n=250) MMT patients in 3 Ontario MMT clinics (Oshawa, Peterborough, and Scarborough), there was a decrease in oxycodone-positive urine drug screens from the period when only non-tamper resistant oxycodone (i.e., OxyContin) was available to when only tamper-resistant oxycodone (i.e., OxyNEO) was available.[50]

Injection Drug Users

- Almost half (44.5%) of a sample of IDUs in Ontario sites reported non-injection oxycodone use (past 6 months), 41.4% methadone, 37.7% Tylenol with Codeine, 24.3% hydromorphone, 35.4% non-prescribed morphine, and 14.7% heroin among an Ontario sub-sample of (n=775) IDUs from the national I-Track survey (2005-08).[18]

Recreational Drug Users

- 11% reported (past-year) opiate use among a Toronto sample of 'recreational drug users' (2012-13 Health Canada High Risk Populations study).[13]
- 31.2% of a sample of Toronto-based crystal meth users had used non-injection heroin or other opiates (past-year) among a convenience sample (n=32) in 2011.[51]

2.3 Risks and Harms

Improper and Anomalous Opioid Prescribing

- Between 2007 and 2013, 1.6% of publicly-funded opioid prescriptions in Ontario were dispensed within 7 days of another large prescription of opioids from a different physician/pharmacy. The prevalence of potentially inappropriate opioid prescriptions decreased by 12.5% (from 1.6% to 1.4%) in the 6 months following 2011 legislation allowing the collection of information on opioid prescriptions, based on data from the Ontario Public Drug Benefit Database.[52]
- Almost one fifth (18.4%) of patients (aged 15-64) who received at least 30 consecutive days of publicly-funded MMT were also prescribed a non-methadone opioid for more than 7 days, most commonly oxycodone and codeine. Nearly half (45.8%) of those prescriptions originated from a physician or pharmacy not involved in the patient's MMT, based on a retrospective cohort study of 18,759 patients who received publicly-funded drug coverage in Ontario between 2003 and 2010.[53]
- An estimated 242,075 excess non-tamper-resistant OxyContin tablets were dispensed in Windsor near the Detroit-Windsor border crossing following the introduction of tamper-resistant oxycodone in the United States (2010-11) according to the IMS Brogan database of retail pharmacy dispensing.[54]
- Family physicians falling into the upper quintile of opioid prescribing - with an average of 931.5 opioid prescriptions/1,000 population, a rate 55 times higher than physicians in the lowest quintile – issued the final prescription before death to 62.7% of the 102 individuals enrolled in the Ontario Public Drug Plan whose 2006 deaths were related to opioids. These figures were based on an analysis of Ontarians (aged 15-64) enrolled in the Ontario Public Drug Plan in 2006.[55]
- The vast majority (96%) of Ontario pharmacists surveyed (n=668; 2014) were knowledgeable that inadvertent prescription opioid overdoses have been increasing but only half (48%) were familiar with the Canadian Guideline For The Safe And Effective Use Of Opioids In Chronic Non-Cancer Pain and only half (52%) knew the 'watchful dose' of opioids per day recommended in the guideline.[56]

Prescription Opioids and Driving

- Opioids were the fourth most common drugs detected in toxicological testing of drivers involved in fatal MVCs in Ontario, among (n=229) samples that were submitted for testing between 2011 and 2012; drugs were detected in 44% of cases and opioids were detected in 15% of those.[19]
- The odds of road trauma increased by 23% among Ontario adults who were prescribed a very high dose of opioids (>200 MEQ /day) compared with patients who were prescribed a very low dose (<20 MEQ). Odds increased by 42%, 29% and 21% for high (100-199 MEQ), moderate (50-99 MEQ) and low (20-49 MEQ) doses, respectively, according to a population-based nested case-control study of Ontario adults (aged 18-64) who received at least 1 publicly-funded prescription for an opioid in 2003-11.[57]

Morbidity and Mortality

Neonatal Abstinence Syndrome

- Neonatal Abstinence Syndrome in Ontario has increased approximately 5 times between 2002-03 and 2011-12 from 1/1,000 to 5/1,000 hospital births, and nearly 15 times since 1992. Population-based administrative health records show that NAS was highest (~9/1,000 hospital births) among babies of young (<19 years) mothers compared older (19+ years) mothers (<2/1,000 hospital births) and NAS rates were high (55 per 1,000 hospital births) in the North West LHIN (Mental Health of Children and Youth in Ontario Baseline Scorecard).[26,35]

Burden of Disease

- A 3-fold increase in annual Years of Potential Life Lost due to premature opioid-related mortality occurred in Ontario from 1.3 per 1,000 population in 1992 to 3.3 per 1,000 population in 2010. Nearly 1 in every 8 deaths (12.1%) among individuals aged 25-34 were opioid-related by 2010, based on administrative health records.[58]
- There were an estimated 10,762 Health-Adjusted Life Years Lost (a health gap measure that incorporates mortality and morbidity associated with disease or injury) due to 24,308 new cases of NMPOU in Ontario in 2009. The burden of PO misuse was highest among adults aged 25-44 years, according to diverse data sources.[59]

Overdose

- There were approximately 685 deaths related to codeine, fentanyl, heroin, hydromorphone, methadone, morphine, and oxycodone in Ontario in 2015. Fentanyl was present in the most deaths (198), followed by hydromorphone (148), oxycodone (144), methadone (120), and morphine (110) (Office of the Chief Coroner of Ontario).[60]
- PO-related deaths in Ontario more than doubled, from 258/year in 2005 to 577/year in 2013. Between 2005 and 2011, fentanyl-related deaths increased 3.6 times, hydromorphone-related deaths increased almost 3 times, oxycodone-related deaths increased almost 2.5 times and morphine-related deaths increased 1 time. Further, there were strong positive correlations between PO dispensing and PO-related mortality rates between 2005 and 2011 for fentanyl, hydromorphone, and oxycodone but not morphine, based on data from the Office of the Chief Coroner of Ontario and the IMS Brogan database of retail pharmacy dispensing.[29,61]

- A 5-fold increase in oxycodone-related mortality and a 41% increase in overall opioid-related mortality occurred between 1999 and 2004, associated with the introduction of long-acting oxycodone to Ontario's drug formulary in 2000, based on data from the Office of the Chief Coroner of Ontario and the IMS Brogan database of retail pharmacy dispensing.[28]
- At least 7% of (n=1,359) individuals who died due to opioid-related causes between 2006 and 2008 used diverted POs. One in five (19.2%) inappropriately self-administered opioids (injection, inhalation, chewed patch) and 5% had recently been switched to a more potent opioid medication as per an analysis of drug-related deaths in Ontario in 2006-08 (Office of the Chief Coroner of Ontario, medical, toxicology, pathology, and police reports).[62]
- Two-year opioid-related mortality rates were 7.92/1,000 population and 9.94/1,000 population among patients whom high (201-400 MEQ) or very high (>400 MEQ) doses of opioids were dispensed in 2004 among beneficiaries (aged 15-64) of Ontario's public drug plan.[63]
- 175 Ontario patients receiving MMT died of opioid-related causes between 1994 and 2010, and a 2-fold increased risk of opioid-related death was associated with psychotropic drug use (mainly benzodiazepines and antipsychotics), as per a population-based nested case-control study linking prescription and coroner's records among (n=43,545) MMT-enrolled beneficiaries of Ontario's public drug plan.[64]
- For every 10,000 Ontarians (aged 15-64 years) there were 1.1 hospitalizations related to opioid toxicity annually between 2006 and 2010; this rate increased to 1.5 in 2011-13 and decreased to 1.2 in 2014 (compared to a national average of 1.3).[31,65] Rates were elevated among older adults (65 years and older; 1.3 in 2006-10 and 1.8 in 2011-13) and in some counties in Northern Ontario (e.g., as high as 4.0/10,000 younger adults in Algoma District in 2010-13), according to provincial administrative data.[31,66,67] Similarly, emergency department visits related to opioid toxicity in 2014 were highest among adults 25-44 years (3.1 visits/10,000 Ontarians), elevated in Northern Ontario (4.4/10,000 in the North East LHIN and 4.1 in the North West LHIN), and increased from 2006-10 (2.2 annual visits/10,000 Ontarians 15-64 years).[31,67]
- For every 10,000 Ontarians there were 2.6 emergency department visits for mental and behavioural disorders due to the use of opioids in 2008-09; this rate increased to 3.7 in 2010-11. Rates were elevated in Northern Ontario (22.9/10,000 population) and among First Nations (55/10,000 population) in 2010-11, according to provincial administrative data.[66]
- Between 2002 and 2005, the rate of nonfatal overdose (past 6 months) fell from 19.9% to 5.6% among a sub-sample (n=141 in 2002; n=124 in 2005) of illicit opioid users in Toronto, based on the pan-Canadian OPICAN study.[41,68]

2.4 Interventions

Treatment

- Nearly one fifth (18.2%; 18,323 admissions) of patients admitted to publicly-funded substance abuse treatment in Ontario (2012-13) reported POs as a problem drug, which was the third most common presenting problem drug behind cannabis and cocaine. More women (26.4%) reported opiates as a presenting problem substance than men (21.5%). In

addition 3.4% reported heroin/opium as a problem drug and 1.4% reported over-the-counter codeine preparations, according to data obtained from DATIS.[25]

- There were roughly 9 per 10,000 children and youth (aged 0-24) in treatment for opioid use in 2011-12 in Ontario, which was an increase from about 3/10,000 in 2003-04; this increase was most marked among 20-24 year olds where it increased from ~9 to ~34/10,000. Further, the North East and North West LHINs held the highest rates (among 0-24 year-olds in 2009-12). Opioids were the second most common drug for which children and youth received treatment in 2011-12., according to administrative health data reported in the Mental Health of Children and Youth in Ontario Baseline Scorecard report.[26]

Opioid Agonist Maintenance Treatment

- In Ontario, the current gold standard for treatment of opioid dependence is MMT. Suboxone - a combination of buprenorphine and naloxone – is another form of opioid agonist maintenance therapy that has a lower risk of overdose than methadone. In its 2016 Strategy to Prevent Opioid Addiction and Overdose, Ontario's Ministry of Health and Long Term Care announced it would expand access to Suboxone, including making it available as a General Benefit on the Ontario Drug Benefit Formulary.[69]
- The number of Ontarians enrolled in MMT was approximately 50,000 in 2014, an increase from under 30,000 in 2010, based on administrative data.[70] The average daily cost of MMT in Ontario was estimated at $15.48 per patient in 2010, corresponding to $5,651.00/year (comprised of 9.8% physician billing, 39.8% pharmacy costs, 3.8% methadone and 46.7% urine toxicology screens), according to a (2003-09) database from a group of methadone clinics which provide ~25% of MMT in Ontario.[71] Based on these annual enrolment and cost estimates, the total annual cost of MMT in Ontario could be over $280,000,000.
- Overall, 6.2% of people enrolled in publicly-funded drug treatment in Ontario were prescribed opioid substitution therapy in 2012-13, an increase from 4.0% in 2007-08 (DATIS).[25] One percent of Ontario public drug plan recipients received MMT in 2015.[31] Of the (n=5,127) people in publicly-funded opioid substitution treatment in Ontario (2012-13), the majority (52.8%) were male. The largest proportion (43.3%) was among those aged 25-34, followed by those aged 35-44 (21.9%) and 18-24 year olds (18.6%), based on information from DATIS, compiled in the National Treatment Indicators Report.[72]
- Among a sample of people with opioid dependence (DSM-IV diagnosed) receiving MMT (n=492) from 13 clinics, almost half (44.2%) reported their first opioid use was from a prescription - especially among women (51.6%) - and over one third (35.0%) reported chronic pain.[73]
- Among (n=233) patients on MMT recruited from 13 clinics across Ontario, past history of injection drug use (hazard ratio=2.25, 95% CI: 1.12-4.47) and days of benzodiazepine use (hazard ratio=1.06, 95% CI: 1.01-1.10) were predictive of relapse (i.e., using opioids) while on MMT, based on interviews.[74]
- IDU decreased significantly from 83% to 66% in the 6 months after enrolling into MMT among (n=183) Toronto- and Kingston-based opioid dependent (DSM-IV diagnosed) adults (18+) recruited into one of two low-threshold MMT programs (2001-04).[42]
- Among women from rural and remote communities in Northwestern Ontario, treatment with buprenorphine and naloxone (n=62) decreased the odds of polysubstance use in pregnancy

(OR=0.13, 95% CI: 0.06-0.29) compared to women with ongoing illicit opioid use (n=159). Compared to women taking no opioids during pregnancy (n=618), there was no difference in birth weight, number of preterm deliveries, congenital malformations or stillbirths in women taking buprenorphine and naloxone, based on consecutive births in a district hospital (2010-15).[75]

- 462 physicians in Ontario held exemptions to prescribe methadone in 2014 according to the College of Physicians and Surgeons of Ontario.[76]

Naloxone distribution

- Ontario's take-home naloxone program has been in operation since 2013. In 2016, in response to the growing opioid-overdose crisis, naloxone was reclassified as a Schedule II drug in Canada, making it available without a prescription.[77] Ontario's comprehensive Strategy to Prevent Opioid Addiction and Overdose includes initiatives to increase the accessibility of naloxone, such as providing take-home naloxone kits free of charge to people currently using opioids, people at risk of returning to opioid use, people likely to witness an opioid overdose, and at-risk inmates released from provincial correctional institutions.[69,78]
- As of March 2016, over 2,700 naloxone kits have been distributed across Ontario, almost 500 clients have reported administering naloxone and almost 100 reported receiving naloxone to reverse an overdose.[79] Although take-home naloxone kits are available in pharmacies and other organizations across the province, data on the number of pharmacies dispensing naloxone kits and the number of kits dispensed since naloxone was made available without a prescription is not yet available.

3 Cocaine and Cocaine Substances

3.1 Use

General Population

- In 2015, 1.6% of Ontario adults (aged 18+) reported cocaine use in the past year and 8.3% reported a lifetime history of cocaine use. Men (11.5%) had higher (lifetime) rates than women (5.4%) (CAMH Monitor, n=5,013).[2] Estimates of lifetime cocaine/crack-cocaine use in Ontario were similar (6.8%; 7.5%) based on Ontario sub-samples from the national representative surveys Canadian Tobacco Alcohol and Drugs Survey (CTADS; n=1,451; aged 15+; 2015) and CADUMS (n=1,011; aged 15+), respectively.[1,80]

Youth and Young Adults

- Cocaine use (past-year) was more common (5.9%) among ages 18-29 than among older adults (0.6% among ages 30+), however lifetime cocaine use did not differ substantially among young adults (12.2%) and older adults (7.5%) in Ontario in 2015. Lifetime cocaine use among young adults has more than tripled since 1996 (4.0%), according to the CAMH Monitor (2015, n=5,013).[2]
- Cocaine use (past-year) was reported by 2.5% of grade 9-12 students in Ontario in 2015 (3.2% lifetime use), with the highest rate (4.5%) of past-year use among grade 12 students. Among all students, rates of (past-year) cocaine use peaked in 2003 (5.7%) and have been declining since. Crack-cocaine use (past-year) was <0.5% among grade 9-12 students in 2015 (OSDUHS, n=10,426).[3]
- Among a sample of Ontario postsecondary students, 1% reported past-month cocaine/crack-cocaine use and 4.4% reported lifetime use (2013 NCHA survey, Ontario sub-sample n=16,123).[6]

Special Populations

Indigenous Populations

- Past-year cocaine/crack-cocaine use was reported by 5.7% of adults (aged 18+) in Ontario First Nations communities (2008-10). Rates were highest (11.0%) among 18-29 year olds and have increased from 4.0% among all adults (aged 18+) in 2002-03, according to the 2008-10 Regional Health Survey (n=1,500) representative of Ontario First Nation adults living on reserve.[8,9]

Racialized Populations

- There are no publicly available provincial data on cocaine use among racialized populations.

Homeless and Street-Involved Populations

- Over one quarter (27%) of homeless adults in Toronto reported cocaine use (past two years) based on a stratified random sample of (n=1,191) in 2004-05.[12] 30% of a random sample (n=368) of Toronto homeless adults used cocaine and almost half (49%) used crack-cocaine regularly (3+ times/week) in the past year (2006-07).[11]
- Among a sample of Toronto's 'street-entrenched' adults who use drugs, 62% reported cocaine use and 78% reported crack-cocaine use in the past year (2012-13). Among a sample

of 'street-involved' youth who use drugs, 44% reported cocaine use and 19% reported crack-cocaine use in the past year (2012-13 Health Canada High Risk Populations study).[13]

- 69% of male and 74% of female homeless youth in Toronto reported cocaine use (past-month); similar rates (68%; 71%) of crack-cocaine use were found among males and females, respectively. 26% of the respondents who had used crack-cocaine reported at least daily use among a convenience sample of (n=100) substance-using homeless youth (aged 16-24) in Toronto (Drugs, Homelessness and Health survey, 2008-09).[14]

Correctional Populations

- Two in five (37.8%) incarcerated adult (aged 18+) males in Ontario reported cocaine use and 29.1% reported crack-cocaine use in the year prior to incarceration according to a (2009) representative sample (n=499) from a provincial detention centre.[44]

Pregnant and Parenting Women

- There are no publicly-available provincial data on women's cocaine use during pregnancy.

People Living with HIV

- One in ten (10.3%) of a sample of HIV-positive men who have sex with men reported (past 6-month) cocaine use based on a sample (n=1,997) recruited from HIV clinics across Ontario (2010-13; Ontario HIV Treatment Network Cohort Study).[81]

Opioid Users

- Almost half (46.1%) of a sample of Toronto-based regular illicit opioid users (age 18+) reported past-month cocaine use; 62.4% reported past-month crack-cocaine use among a convenience sub-sample (n=141) from the pan-Canadian OPICAN study (2002).[68,82]

Injection Drug Users

- The majority (61.9%) of a sample of IDUs in Ontario sites reported (past 6 month) cocaine use and 55.5% reported crack-cocaine use (2007 Ontario Harm Reduction Distribution Program Evaluation).[17] Similarly, 56.9% and 59.9% of IDUs in select Ontario sites reported (past 6 month, non-injection) use of cocaine and crack, respectively, among an Ontario sub-sample of (n=775) IDUs from the national I-Track survey (2005-08).[18]

Recreational Drug Users

- Almost three quarters (71.9%) of a sample of Toronto-based crystal meth users used crack/cocaine (past-year) among a convenience sample (n=32) in 2011.[51]
- Cocaine use "from time to time" was also high (52.7%) in a convenience sample of (n=74) gay and bisexual men who used drugs and attended gay dance clubs in Toronto in 2003.[83]

3.2 Risks and Harms

Cocaine and Driving

- One in five (18.9%) Ontario adults (aged 18+) who reported (past year) cocaine use were involved in a MVC, compared to 7.4% among those who did not report cocaine use, according to self-reported data from the CAMH Monitor (n=8,107; 2002-08).[84]
- Cocaine was detected in 8% of drivers involved in fatal MVCs in Ontario who tested positive for drugs, among (n=229) samples submitted for toxicological testing between 2011 and 2012.[19]

Morbidity and Mortality

Burden of Disease

- There were 12,278 Health-Adjusted Life Years Lost due to an estimated 17,282 new cases of cocaine use disorder in Ontario in 2009. The burden of cocaine use disorders was highest among adults aged 25-44 years, according to diverse data sources.[59]

Overdose

- Hospital separations related to cocaine increased from ~16 to ~24/100,000 population in Ontario between 2000 and 2005 based on administrative health records (Canadian Institute for Health Information's Hospital Morbidity Database).[24]

3.3 Interventions

Safer Crack Use Kits

- Ontario's 36 Needle Syringe Programs reported distributing 263,888 glass stems in 2014, (+29% from 2013) (Ontario Harm Reduction Distribution Program).[85]
- In Ottawa, the needle exchange program (NEP) distributed a total of 1,633 safer crack use kits (SCUKs), 49,952 individual glass stems, 18,566 rubber mouthpieces and 81,667 brass screens in the first year of distributing safer smoking supplies (2005-06).[86]
- In Toronto, an estimated 2,000 SCUKs were handed out monthly by The Safer Crack Use Coalition in 2005.[87]
- In London, Ontario, approximately 740 SCUKs were distributed between September and January 2015, according to a local news report.[88]
- The majority (87%) of a sample of Ottawa-based IDUs who also smoked crack-cocaine accessed safer smoking supplies from Ottawa's NEP within the first year of the initiative (2005-06). Following the introduction of SCUKs, there was a significant decrease in the proportion of IDUs reporting (past month) injection (from 96% to 78% at 12 month follow-up). Among those who reported sharing crack-cocaine pipes, the proportion who shared 'every time' declined from 37% to 13%, based on self-reported data from a sub-sample of (n=550) Ottawa-based I-Track participants (a street-recruited convenience sample of active IDUs).[86]
- 61% of a sub-sample of homeless youth in Toronto who used crack-cocaine (past 6 months) had shared a pipe. Two thirds (64%) reported getting an SCUK from an on-site NEP while one in three (29%) reported never having done so, based on a convenience sample of (n=71) homeless youth (aged 16-24) who used crack-cocaine (Drugs, Homelessness and Health survey, 2008-09).[14]

Treatment

- Cocaine was reported as a problem substance by 16.3% (16,387 admissions) of patients presenting to Ontario publicly-funded substance abuse treatment in 2012-13; 13.6% (13,380 admissions) reported crack-cocaine. Since 2007, these numbers have decreased from 29% and 35%, respectively (DATIS).[25]
- Approximately 10 per 10,000 children and youth (aged 0-24) in Ontario were in treatment for stimulant use, including cocaine and crack-cocaine in 2011-12, which was the third most

common drug category for which youth received treatment. These rates were highest among ages 20-24 (Mental Health of Children and Youth in Ontario Baseline Scorecard).[26]

4 Other Stimulants and Hallucinogens

4.1 Use

General Population

- Among Ontario adults (aged 15+), 4.3% reported a lifetime history of speed use, 4.4% ecstasy, 12.8% hallucinogens, and 1.9% salvia (Ontario sub-sample n=1,011; 2012 CADUMS).[1] In the CTADS, Ontarians' lifetime use rates were 5.5% for ecstasy, 12.0% for hallucinogens, 1.9% for speed/methamphetaime/crystal meth and 2.1% for salvia (Ontario sub-sample n=1,451 in 2015).[80]

Youth and Young Adults

- Among Ontario high school students (grades 9-12; n=10,426), 1.1% used methamphetamine/crystal methamphetamine (past-year) in 2015. 5.4% used ecstasy (an increase from 3.3% in 2013) with highest use (9.6%) among grade 12 students. 3.2% used hallucinogens (mushrooms or mescaline), 1.6% salvia (grades 7-12), 1.5% LSD, and <1% bath salts (mephedrone) (2015 OSDUHS, n=10,426).[3]
- Reported lifetime use rates were: 1.1% for methamphetamines (0.1% past-month), 6.4% for ecstasy (1.4% past-month), and 4.7% for hallucinogens (0.5% past-month), according to the Ontario sub-sample (n=16,123) in the 2013 NCHA Canadian survey of postsecondary students.[6]

Special Populations

Indigenous Populations

- 1.0% of First Nations adults (aged 18+) reported amphetamine-type stimulant (crystal methamphetamine, speed, ecstasy) use in the past year and 3.1% reported hallucinogen use, according to the 2008-10 Regional Health Survey (n=1,500) representative of Ontario First Nations adults living on reserve.[9]

Racialized Populations

- 19% of a sample of Toronto-based crystal meth users identified as an ethnicity other than white or First Nations among a convenience sample (n=32) in 2011.[51]

Homeless and Street-Involved Populations

- Among homeless adults in Toronto, 5% reported non-cocaine stimulant use and 6% reported hallucinogen use (past two years) based on a stratified random sample (n=1,191) in 2004-05.[12] In another survey of Toronto-based homeless adults, 4% used methamphetamines (speed, crystal meth, uppers), 4% used amphetamines, and 7% used hallucinogens regularly (+3 times/week) in the past year based on a random sample of n=368 (2006-07).[11]
- Among 'street-entrenched' adults (aged 19+) who use drugs in Toronto, almost a quarter (24%) used methamphetamine (past-year), 31% used MDMA, 25% used mushrooms. Among 'street-involved' youth (aged 15-24) with drug use in Toronto, 40% reported crystal methamphetamine use, 61% ecstasy use, and 24% ketamine use (past-year) (2012-13 Health Canada High Risk Populations study).[13]
- 47% of a sample of Toronto-based young, homeless, substance-using males and 38% of females reported methamphetamine use (past 6 month), the majority (52%) used it at least

weekly. 69% of males and 63% of females reported ecstasy use (past 6 month) among a convenience sample (n=100; aged 16-24) in the Drugs, Homelessness and Health survey (2008-09).[14]

Correctional Populations

- Methamphetamine use (in the year prior to incarceration) was reported by 6.0% of a sample of the Ontario correctional population according to a representative sample of (n=499) male adults (aged 18+) in an Ontario provincial detention centre in 2009.[44]

Pregnant and Parenting Women

- There are no publicly-available provincial data on women's stimulant use during pregnancy.

People Living with HIV

- Nearly one in ten (9.4%) of a sample of HIV-positive men who have sex with men reported (past 6-month) methamphetamine use and 10.9% reported using club drugs (Ecstasy/MDMA, ketamine, GHB [4-hydroxybutanoic acid], PCP [phencyclidine] and poppers [amyl nitrite]) based on a sample (n=1,997) recruited from HIV clinics across Ontario (2010-13; Ontario HIV Treatment Network Cohort Study).[81]

Recreational Drug Users

- The majority (84.4%) of a sample of Toronto-based crystal meth users had used ecstasy, ketamine or other club drugs (past-year) among a convenience sample (n=32) in 2011.[51]
- Almost a quarter (24.3%) of a sample of gay and bisexual men who used drugs and attended gay dance clubs in Toronto reported crystal methamphetamine use ("from time to time"), 82.4% ecstasy, 54.1% ketamine, and 36.5% GHB, among a convenience sample (n=74) in 2003.[83]

4.2 Risks and Harms

Pipe sharing

- Almost all (94%) of a sub-sample of (n=51) homeless youth (aged 16-24) in Toronto reporting methamphetamine use (past 6 months) did so by smoking it in a pipe. Of those, 81% used a shared pipe, according to a convenience sample in the Drugs, Homelessness and Health survey (2008-09).[14]

Other Stimulants and Hallucinogens and Driving

- Amphetamines were detected in 3% of drivers involved in fatal MVCs in Ontario who tested positive for drugs, among (n=229) samples submitted for toxicological testing between 2011 and 2012.[19]

Morbidity and Mortality

Overdose

- Hospital separations related to amphetamines in Ontario increased from ~2 to ~4 per 100,000 population between 2000 and 2005, based on administrative health records (Canadian Institute for Health Information's Hospital Morbidity Database).[24]

4.3 Interventions

Treatment

- 2.6% (2,648 admissions) of Ontario patients admitted to publicly-funded substance abuse treatment reported amphetamines and other stimulants (excluding cocaine, crack-cocaine and methamphetamines) as a problem drug upon admission in 2012-13. 3.0% (3,016 admissions) reported methamphetamines as a problem drug upon admission, which was an increase of over 160% since 2007-08. 1.5% (1,499 admissions) reported ecstasy and 0.8% (837 admissions) reported hallucinogens as problem drugs (DATIS).[25]

5 Other Psychoactive Pharmaceuticals

5.1 Medical Use and Dispensing

General Population

- There are no publicly available estimates of prescription stimulant or prescription sedative/tranquilizer use for Ontario adults based on representative surveys.
- Approximately 279,000 benzodiazepine prescriptions/month were dispensed to Ontario public drug plan beneficiaries 2007-13, based on data from the Ontario Public Drug Benefit Database.[52] Approximately 2.3-2.5 million people used the Ontario Public Drug Benefit each year between 2007-08 and 2012-13.[89]
- There was a 4.2% annual decrease in the volume of benzodiazepine prescriptions in Ontario (adjusted for inflation and age) between 2007-08 and 2012-13; in Canada, the annual decrease was 2.9% (IMS Brogan database of retail pharmacy dispensing).[90] Similarly, between 2002 and 2013, there was a decrease in benzodiazepine dispensing among older Ontario adults (66 years and older) living in the community (15.6% to 10.6%) and in long-term care facilities (30.8% to 17.5%), based on data from the Ontario Public Drug Benefit Database.[91]
- Approximately 14,000 stimulant prescriptions were dispensed/month to Ontario public drug plan beneficiaries between 2007 and 2013, based on data from the Ontario Public Drug Benefit Database.[52]
- There was a 4.2% annual increase in the volume of ADHD drug prescriptions in Ontario (adjusted for inflation and age) between 2007-08 and 2012-13; in Canada, the annual increase was 7.8% (IMS Brogan database of retail pharmacy dispensing).[90]

Youth and Young Adults

- There are no publicly available estimates of prescription stimulant or sedative/tranquilizer use for Ontario youth and young adults based on population-based surveys or dispensing data.

5.2 Non-medical and Illicit Use

General Population

- There are no publicly available estimates of non-medical prescription stimulant or sedative/tranquilizer use for Ontario adults based on surveys representative of the general population.

Youth and Young Adults

- In 2015, 2.1% of Ontario students (grades 7-12) reported (past-year) non-medical use of prescription stimulants (e.g., drugs to treat ADHD), an increase from 1.0% in 2007. Non-medical sedative/tranquilizer use was reported by 2.1% in 2015, according to the OSDUHS (n= 10,426).[3]
- In 2008-09, 3.0% of students (grade 7-12) reported (past-year) use of prescription stimulants (e.g., ADHD medication, diet pills, stay-awake pills) to get high, based on an Ontario sub-

sample from the national Youth Smoking Survey (n=44,344). Non-medical sedative/tranquilizer (e.g., Valium) use was reported by 1.8%.[92]

- 2.0% of Ontario postsecondary students took prescription sedatives not prescribed to them (past 30 days), 3.7% took prescription stimulants and 3.0% took antidepressants, according to the 2013 NCHA Canadian survey (Ontario sub-sample n=16,123).[6]
- Reported lifetime use rates were 3.8% for sedatives (e.g., downers, ludes) among Ontario postsecondary students, with 1.3% reporting past-month use, according to the 2013 NCHA Canadian survey (Ontario sub-sample n=16,123).[6]

Special populations

Indigenous Populations

- 3.8% of a sample of adults in Ontario First Nations Communities used sedatives without a prescription in the past year, as per the 2008-10 Regional Health Survey (n=1,500) representative of Ontario First Nation adults living on reserve.[8,9]
- In non-reserve contexts, 10% of a sample of (n=554) First Nations adults (aged 18+) in Hamilton, Ontario, reported sedative/downer (e.g., Valium) use within the last year according to a (2009-10) respondent-driven sample.[38]

Racialized Populations

- There are no publicly available provincial data on non-medical use of other psychoactive pharmaceuticals among racialized populations.

Homeless and Street-Involved Populations

- 3% of homeless adults surveyed in Toronto reported barbiturate use (past two years) according to a stratified random sample (n=1,191) in 2004-05.[12] Among a random sample of (n=368) Toronto-based homeless adults, 16% used sedatives, hypnotics or tranquilizers and 6% used downers regularly (+3 times/week) in the past year (2006-07).[11]
- Among 'street-entrenched' drug-using adults (aged 19+) sampled in Toronto, 11% used Ritalin and 32% used benzodiazepines (past-year) (2012-13). Among 'street-involved' youth (aged 15-24) who use drugs, 12% used benzodiazepines (past-year) (2012-13 Health Canada High Risk Populations study).[13]
- 18% of a sample of Toronto-based young homeless males who used substances and 29% of females used benzodiazepines in the past 6 months while 4% of both males and females used barbiturates among a convenience sample of (n=100) homeless youth (16-24 years) who use substances surveyed in Toronto (Drugs, Homelessness and Health survey, 2008-09).[14]

Pregnant and Parenting Women

- There are no publicly-available provincial data on women's non-medical use of other psychoactive pharmaceuticals during pregnancy.

Injection Drug Users

- 3.0% of a sample of IDUs in Ontario reported stimulant use and <1% reported depressant use (past 6 months; 2007) (Ontario Harm Reduction Distribution Program Evaluation).[17]

Recreational Drug Users

- 18% of 'recreational drug users' reported (past year) Ritalin/Dexedrine use among people recruited from event-specific sites such as raves or permanent nightclubs (2012-13 Health Canada High Risk Populations study).[13]

- 3% of a sample of drug-using youth involved in party scenes in Toronto used Ritalin/Dexedrine (past 6 months) (Toronto Youth Drug online survey, 2014).[13]

5.3 Risks and Harms

Improper and Anomalous Prescribing

- Between 2007 and 2011, 0.4% of publicly-funded benzodiazepine prescriptions in Ontario were dispensed within 7 days of another large benzodiazepine prescription by a different physician/pharmacy. The prevalence of potentially inappropriate benzodiazepine prescriptions decreased by 50.0% (to 0.2%) following enactment of narcotic-related legislation (2011) and a prescription monitoring system (2012), based on data from the Ontario Public Drug Database.[52]
- Potential double prescriptions for bupropion (an antidepressant prone to misuse) increased from <0.05% to 0.47% of (publicly-funded) prescriptions between 2000 and 2013 and were more common than other antidepressants not prone to abuse, in a population-based study of Ontarians (aged <65) who received prescriptions under Ontario's public drug plan.[93]

Pharmaceuticals and Driving

- Benzodiazepines and antidepressants were the most common drugs after cannabis found by toxicological testing of drivers involved in fatal MVCs in Ontario, among (n=229) samples submitted for testing 2011-12; drugs were detected in 44% of cases and benzodiazepines and antidepressants were each detected in 17% of those.[19]

Morbidity and Mortality

- Of the 464 oxycodone-related deaths in Ontario between 1991 and 2007, 59.5% also involved benzodiazepines, based on data from the Office of the Chief Coroner of Ontario.[28]

5.4 Interventions

Treatment

- Benzodiazepines were reported as a problem substance upon admission by 3.6% (3,581 admissions) of patients presenting to Ontario publicly-funded substance abuse treatment in 2012-13; 0.3% (282 admissions) reported barbiturates as a problem substance at admission (DATIS).[25]

6 Inhalants

6.1 Use

General Population

- There are no publicly available estimates of inhalant use for Ontario adults based on surveys representative of the adult population.

Youth and Young Adults

- 2.8% of Ontario students (grades 7-12) reported inhalant use in the past year. Rates have decreased from 3.4% in 2013 and were highest (6.2%) among students in grade 7 according to the 2015 OSDUHS (n=10,426).[3]
- 2% of Ontario high school students (grade 7-12) reported (past-year) glue, gasoline, solvent or salvia use to get high in the 2012-13 Youth Smoking Survey (Ontario sub-sample n=7,018).[94]
- Reported lifetime use rates were 1.0% for inhalants among Ontario postsecondary students, with 0.2% reporting past-month use, according to the 2013 NCHA Canadian survey (Ontario sub-sample n=16,123).[6]

Special Populations

Indigenous Populations

- Less than 0.5% of (n=1,425) First Nations adults (aged 18+) used inhalants (past-year) according to the 2008-10 Regional Health Survey representative of Ontario First Nation adults living on reserve.[8,9]

Racialized Populations

- There are no publicly available provincial data on inhalant use among racialized populations.

Homeless and Street-Involved Populations

- 3% of homeless adults in Toronto reported using inhalants (past two years) among a stratified random sample (n=1,191) in 2004-05.[12] Among Toronto-based homeless adults, 2% used solvents and other inhalants regularly (+3 times/week) in the past year, based on a random sample of (n=368) homeless adults in Toronto (2006-07).[11]
- One in five (20%) males and 13% of females reported popper use (past six months) among a convenience sample of (n=100) homeless youth (aged 16-24) who use substances surveyed in Toronto (Drugs, Homelessness and Health survey, 2008-09).[14]

Pregnant and Parenting Women

- There are no publicly-available provincial data on women's inhalant use during pregnancy.

Injection Drug Users

- Solvent use among IDUs increased from 1.0% to 1.6% between 2006-08; less than 1.0% of participants reported inhalant use (past 6 months) among a convenience sample (n=1,643) (Ontario Harm Reduction Distribution Program Evaluation).[17]

Recreational Drug Users

- 16% of Toronto 'recreational drug users' used poppers in the past year (2012-13 Health Canada High Risk Populations study).[13]

- Almost a quarter (24.3%) of a sample of gay and bisexual men who used drugs and attended gay dance clubs in Toronto reported using poppers "from time to time" among a convenience sample (n=74) in 2003.[83]

6.2 Interventions

Treatment

- 0.3% (327 admissions) of patients presenting to Ontario publicly-funded substance abuse treatment reported glue and inhalants as a problem substance upon admission in 2012-13; a decrease of 50.2% (from 657 admissions) in 2007-08, according to data obtained from DATIS.[25]

7 Injection Drug Use

7.1 Use

General Population

- There were an estimated 41,000 IDUs in Ontario in 2002, based on capture-recapture analyses and modeling using data from various sources.[95]

Youth and Young Adults

- Less than 0.5% of Ontario high school students (grades 9-12) reported IDU in the past year (2015), a decrease from 1.4% in 2011, according to the OSDUHS (n=10,426).[3]

Special Populations

Indigenous Populations

- 20.4% of IDUs self-identified as Aboriginal (17% First Nations; 2.8% Metis) among an Ontario sub-sample of (n=775) IDUs from the national I-Track survey (2005-08).[18]

Racialized Populations

- A small minority (5.9%) of IDUs identified as an ethnicity other than North American, Aboriginal or European among an Ontario sub-sample of (n=775) IDUs from the national I-Track survey (2005-08).[18]

Homeless and Street-Involved Populations

- One quarter (23%) of Toronto-based homeless adults reported injecting drugs (past-year) based on a random sample (n=368; 2006-07).[11]
- One third (35%) of a sample of Toronto's homeless youth reported previously injecting drugs, 33% did so in the past 6 months, 39% did so daily. Of those who had injected, 23% injected heroin, 19% oxycodone and 19% cocaine, based on a convenience sample of (n=100) homeless youth (aged 16-24) who use substances surveyed in Toronto (Drugs, Homelessness and Health survey, 2008-09).[14]
- 30.4% of Thunder Bay street-involved/at-risk youth (age ≤24) reported previously injecting drugs in a (2004) convenience sample of (n=313) youth who use or were at risk of using drugs.[96]

Correctional Populations

- Of the 61.6% Ontario-based Federal inmates who reported opioid use during their current incarceration period, 83.2% injected while incarcerated, based on an Ontario sub-sample of the 1,272 Federal inmates who were initiated into Correctional Service Canada's MMT program between 2003 and 2008.[43]
- One in five (21.6%) of a sub-sample of (n=283) incarcerated adult (aged 18+) males in Ontario who used drugs (in the year prior to incarceration) reported injecting drugs according to a (2009) representative sample from a provincial detention centre.[44]
- In remand facilities, 30.3% of a sample of (n=1,576) adults and 4.7% of a sample of (n=299) young offenders reported a history of IDU based on a (2003-04) survey in 13 selected Ontario facilities.[97]

Pregnant and Parenting Women

- There are no publicly-available provincial data on women's IDU during pregnancy.

Opioid Users

- Past-month IDU decreased from 64.8% to 37.5% between 2002 (n=141) and 2005 (n=124) among a sub-sample of regular opioid-using IDUs (aged 18+) in Toronto, based on the pan-Canadian OPICAN study.[41,68,98]

Injection Drug Users

- More than three quarters (78.0%) of a sample of IDUs in Ontario sites reported injecting at least once a week (past 6 months); 38.9% injected daily. The greatest proportion of IDUs (69.0%) reported injecting cocaine (past 6 months), followed by OxyContin (55.6%). Cocaine was injected most often (28.0% of the time), followed by non-prescribed morphine (20.5% of the time) (2007; Ontario Harm Reduction Distribution Program Evaluation).[17]
- Cocaine was the most commonly injected drug in Ontario, with more than three quarters (77.0%) reporting injecting cocaine (past 6 months) among an Ontario sub-sample of (n=775) IDUs from the national I-Track survey (2005-08). In addition, 60.3% reported injecting non-prescribed morphine, 49.5% hydromorphone and 43.7% oxycodone; 73.0% reported injecting at their own apartment/house and 63.9% reported injecting alone, while 28.6% injected daily (past-month).[18]
- Toronto illicit opioid users had the lowest rate (57.0%) of (past 30 day) injection compared to those in Edmonton, Montreal, Quebec City, and Vancouver, which all had injection rates over 80%, based on the 2002 pan-Canadian OPICAN study (n=677).[99]
- The average frequency of PO injection was 4-5 times/day among a convenience sample of (n=25) illicit PO users (aged 18+) in Toronto in 2007. Half (50%) reported a history of injecting fentanyl (past 3 months); OxyContin was reported as the most common and readily available PO on the streets.[100,101]

Recreational Drug Users

- Six in ten (59.4%) Toronto-based crystal meth users had injected drugs (past-year) among a convenience sample (n=32) in 2011.[51]

7.2 Risks and Harms

Needle Sharing

- The rate of shared needle use (past 6 month) decreased from 19.0% (2006) to 15.9% (2007) among a sample of (n=1,642) IDUs in Ontario sites. However, the rate of IDUs who lent or sold used needles remained stable (from 13.5% to 13.2%) (Ontario Harm Reduction Distribution Program Evaluation).[17]
- One in five (19.0%) IDUs in Ontario sites reported using a shared needle/syringe (past 6 months; 2005-08). A minority (16.7%) who injected with used equipment did so usually or always; the majority (65.8%) borrowed their needle from a regular sex partner. One quarter (23.1%) reported that a needle/syringe they had used was used by others among an Ontario sub-sample of (n=775) IDUs from the national I-Track survey.[18]
- One third (33.3%) of a sub-sample of (n=39) Toronto-based opioid-using IDUs (aged 18+) reported sharing injection equipment in the past month (2005); this rate was an increase from 27.8% in 2002 (n=79), based on Toronto-specific data from the convenience-sampled, pan-Canadian OPICAN study.[41,68]

- Over one in five (21%) of a sub-sample of (n=33) homeless youth (aged 16-24) in Toronto who reported IDU injected with a shared needle/syringe; 36% used other shared injection equipment (Drugs, Homelessness and Health survey, 2008-09).[14]

Injection Initiation

- 27.4% of a sample of (n=98) Toronto-based current IDUs reported giving anyone their first injection. Odds of initiating non-IDUs increased with length of IDU history, being unemployed and having ever spoken positively about injecting to a non-injector, based on a 2011 respondent-driven sample (age 16+).[102]
- An average of 2 people/year were initiated into IDU by IDUs who had previously injected someone else, based on qualitative interviews with a sample of (n=20) Toronto-based current IDUs (2009).[103]

Morbidity and Mortality

Human Immunodeficiency Virus

- 7.1% of new Human Immunodeficiency Virus (HIV) diagnoses in Ontario were among IDUs in 2012. This was a decrease from 16.4% in 1996 when monitoring of HIV by the Ontario HIV Epidemiologic Monitoring Unit began.[104]
- 4.1% of IDUs at Ontario harm reduction sites who underwent testing for HIV tested positive. The majority (86.4%) had previously been tested for HIV and 59.3% of those who had been tested had done so less than a year ago (2007; Ontario Harm Reduction Distribution Program Evaluation).[17]
- 4.9% tested positive for HIV among a sub-sample of (n=775) IDUs from Ontario sites in the national I-Track survey (2005-08). Most (92.3%) had been previously tested for HIV, among whom the majority (67.8%) had been tested in the past year. 82.1% of those who reported receiving a positive HIV test were in care for their HIV, with 61.1% currently taking prescribed drugs for HIV.[18]
- In 2002, 14.8% of a sub-sample of (n=141) Toronto-based opioid users (aged 18+) were HIV+, based on Toronto-specific data from the convenience-sampled, pan-Canadian OPICAN study.[68]
- While 2.4% of all new HIV diagnoses in Ontario (n=1,358) between 2009 and 2011 were among Aboriginals, 32.3% of those diagnoses were attributed to IDU, which was the highest rate of IDU-attributed cases among any group, based on all new HIV diagnoses in Ontario 2009-11.[105]

Hepatitis C Virus

- IDU was a main risk factor for an estimated 53.7% of all Hepatitis C Virus (HCV) infected persons in Ontario in 2007, with 48.5% of past IDUs and 58.0% of current IDUs estimated to be HCV+. IDUs were the vast majority (96.0%) of people in Ontario who were diagnosed to be co-infected with HCV and HIV (Ontario HIV Epidemiologic Monitoring Unit).[106]
- Almost half (47.3%) of a sub-sample of (n=1,346) Ontario-based IDUs tested reported a positive HCV result from their most recent HCV test. The majority (84.4%) reported previously being tested for HCV; of those tested, 56.8% had done so within the last year (2007; Ontario Harm Reduction Distribution Program Evaluation).[17]

- Most (61.3%) IDUs among a sub-sample in four Ontario sites who had been tested had a HCV+ test result, among an Ontario sub-sample of (n=775) IDUs from the national I-Track survey (2005-08). Almost half (49.5%) of those HCV+ were in care for their HCV, with 9.8% currently taking prescribed drugs.[18]
- Half (49.2%) of a sub-sample of (n=120) Toronto-based opioid users were HCV+ in 2002, based on Toronto-specific data from convenience sample of illicit opioid users (aged 18+) in the pan-Canadian OPICAN study.[107]
- 6.0% of a sample of (n=100) homeless youth in Toronto who reported drug use had previously been diagnosed with or treated for HCV (Drugs, Homelessness and Health survey, 2008-09).[14]

7.3 Interventions

Needle Exchange Programs

- As of 2016, Ontario had 36 Public Health Units and approximately 180 satellite sites which offered NEPs.[108] The Ontario Harm Reduction Distribution Program distributed 2,560,000 cookers to NEPs across Ontario in 2012 and 412,000 in 2007, representing a fivefold increase.[108] In 2012, the Ontario Harm Reduction Distribution Program also ordered 19,109,750 filters, 1,038,000 units of ascorbic acid, and 4,838,100 sterile water ampoules for Ontario-based NEPs.[109]
- The vast majority (93.0%) of a sample of Ontario-based IDUs reported previously using their local NEP and 35.0% reported using it at least once/week in the past 6 months (2007). 69.0% of those who collected injection drug supplies during their visit did so for both themselves and others while 13.2% reported lending/selling/giving their used needle to someone else (past 6 months; 2007; Ontario Harm Reduction Distribution Program Evaluation).[17]
- Almost all (90.0%) of a sub-sample of (n=775) IDUs (age 15+) in Ontario sites reported previously using an NEP; 58.0% reported usually returning used needles/syringes to an NEP (2005-08 I-Track).[18]
- In 2002, nearly half (46.8%) of a sub-sample of (n=141) Toronto-based opioid users reported using an NEP in the past 6 months according to Toronto-specific data from the convenience-sampled, pan-Canadian OPICAN study.[68]
- A quarter (25%) of Toronto-based homeless adults said they could not access clean needles or SCUKs when they needed them in the past year; 59% said that they would use an NEP to help them reduce, control, or make their drug use safer if it were free and easily accessible (n=368, 2006-07).[11]
- About half (46%) of a sub-sample of (n=33) Toronto-based homeless youth who injected drugs in past month reported that the most frequent source of their needles was from an on-site NEP, but 21% reported never using an NEP (Drugs, Homelessness and Health survey, 2008-09).[14]

Safer Injection Facilities

- Ontario does not have any safer injection facilities (SIFs) as of 2016. The only such facilities in North America are located in Vancouver, British Columbia. Toronto city council has approved 3 SIFs for the city but still requires federal approval.[110] Ottawa's Board of Health supports

SIFs in Ottawa but approval is still needed from other stakeholders.[111] Hamilton, London and Thunder Bay are currently conducting research to assess the feasibility of SIFs in their cities.[112,113]

- More than half (56%) of the Ontario public strongly agreed that SIFs should be implemented to reduce neighborhood problems in 2009, which was an increase from 31% in 2003; 48% thought that SIFs should be implemented to increase contact of people who use drugs with health and social workers, 48% thought that the SIFs should be implemented to reduce overdose deaths or infectious disease among people who use drugs and 31% thought they should be implemented to encourage safer drug injection, according to surveys representative of Ontario adults (aged 18+) in 2003 (n=1,229) and 2009 (n=1,035).[114] In 2009, public support for supervised smoking facilities was lower than for supervised injecting facilities (20% vs. 28%).[115]
- Three in four (75%) people who inject and smoke drugs in Toronto (n=361) and Ottawa (n=215) reported they would use an SIF, according to an I-Track sub-sample (2006).[116]
- Over three quarters (75.2%) of a sample of (n=270) Ottawa-based drug users (aged 16+) were willing to use an SIF and 50.7% reported they would use one daily if it opened right away, based on the 2013 Participatory Research in Ottawa: Understanding Drugs (PROUD) prospective cohort study.[117]

Treatment

- A lifetime history of intravenous drug use was reported by 16.5% (17,554 admissions) of people admitted to publicly-funded substance abuse treatment in Ontario in 2012-13, with 10.0% reporting doing so in the past year. Males accounted for the majority (64.8%) of the 12,020 Ontario-based episodes related to treatment for IDU in 2012-13, based on information from DATIS compiled in the National Treatment Indicators Report.[72,118,119]

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