



KEYNOTES AND RESOURCES

Episode 104 – Overview of Substance Use

March 8, 2024

Substance use

Substance use refers to the use of psychoactive substances, including prescription and unregulated (illegal) drugs, cannabis,¹ nicotine, alcohol, and inhalants that are consumed, inhaled, injected, or otherwise absorbed into the body. These substances affect mental processes, such as changes in mood, perception, awareness, consciousness, thoughts, feelings, or behaviour. [1] [2] [3]

Individuals use substances for various reasons, including:

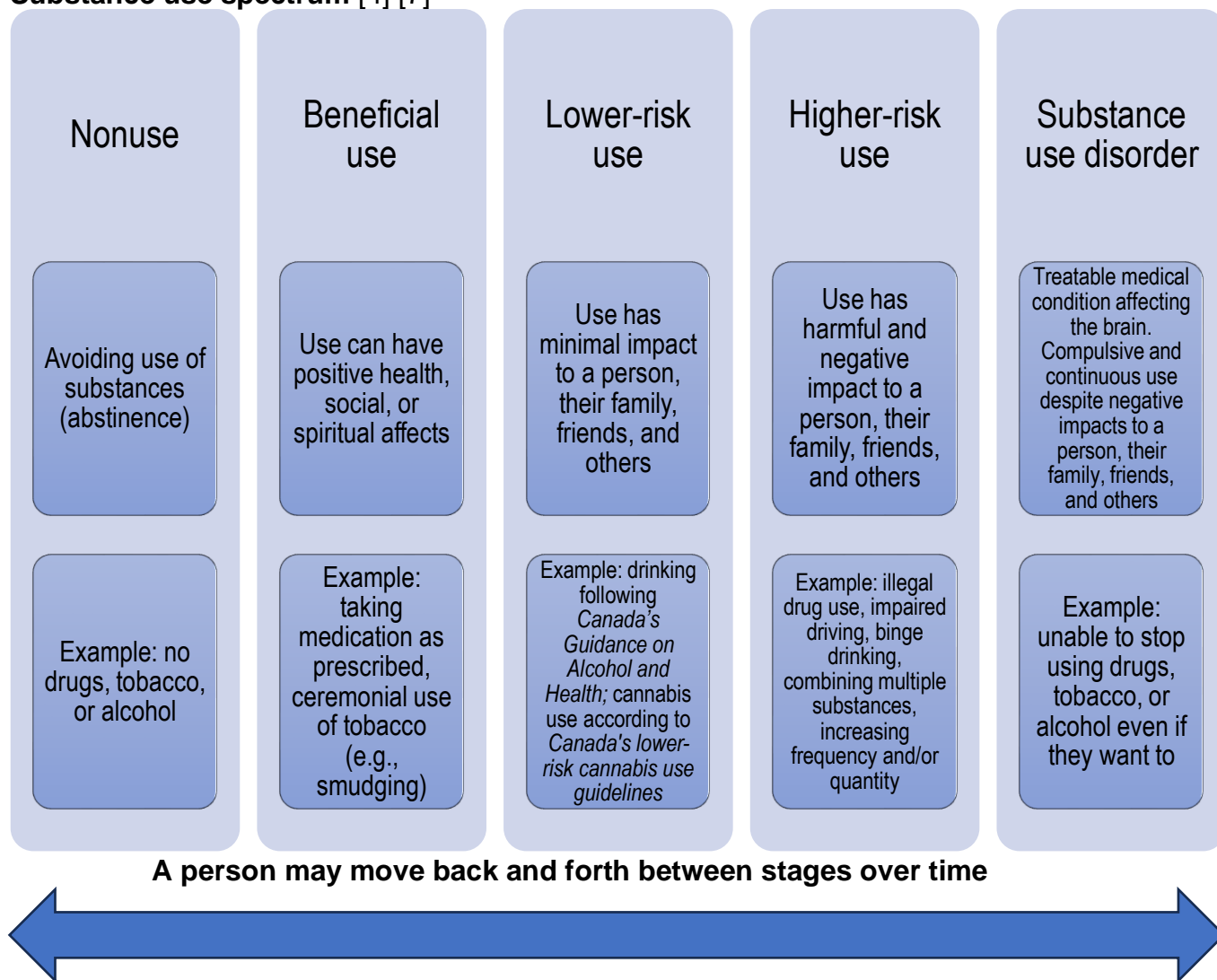
- Medical purposes
- Religious or ceremonial purposes
- Personal enjoyment
- Improve performance or thinking
- Cope with stress, trauma, or pain
- Curiosity, peer pressure, or experimentation [4] [5]

Substance use is different for everyone. For some people, there may not be any harms related to their substance use. However, some may experience negative impacts. Substance use can be understood as being on a spectrum with varying stages of benefits and harms. A person may move back and forth between stages over time. [6]

Substances have different effects on an individual depending on factors such as sex, weight, tolerance, underlying health conditions, substance(s) used, and age. Children and young adults are particularly vulnerable to the effects of different substances because of the impacts on their development. In some cases, there may be no beneficial or lower-risk use (i.e., there is a grave risk of harm at any level of use). The best way to avoid any harms from substance use is to avoid use. [7]

¹ Refer to Episode 58 for discussion on cannabis and oral health.

Substance use spectrum [4] [7]



Negative effects of substance use

Higher-risk substance use can impact many areas of a person's life, and over time, the harms associated with this use may outweigh any perceived positive effects.

Harms associated with higher-risk substance use* [4]

Aspect of life	Potential impact(s) of higher-risk substance use
Mental health	Trigger mood, anxiety, or depression disorder and increase risk of developing a serious mental health condition (e.g., psychosis, schizophrenia).
School	Affect ability to study, concentrate, and complete assignments leading to poor performance in school.
Employment	Job loss and workplace injuries from inability to focus.
Relationships	Create an environment of secrecy, conflict, emotional chaos, and fear, which can seriously impact relationships.
Finances	Decrease ability to pay bills and purchase necessities due to expenses associated with use.

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Aspect of life	Potential impact(s) of higher-risk substance use
Mood	May feel good while unseeing substances, but feel worse when the effects wear off.
Sex	Forget to practice safe sex. Unprotected sex could lead to a sexually transmitted infection and/or an unwanted pregnancy.
Legal problems	Illegal sale or possession of drugs can affect a person's future. A criminal record will result if charged and convicted, which may present problems with potential employers or when travelling out of the country.
Health and safety	Heavy use of some substances can damage the brain and other organs (e.g., liver, kidneys, lungs). Sharing drug paraphernalia (e.g., needles, pipes) increases risk of transmitting blood-borne infections (e.g., hepatitis C, HIV). Driving impaired significantly increases risk of motor vehicle accidents and injuries to self and others.

* Nonexhaustive list

Prescription drug use

Taking medication not as prescribed (e.g., taking more to induce euphoria or taking someone else's prescribed medication²) can have detrimental consequences. The most common types of prescription drugs used improperly include:

- Opioids (prescribed to treat certain types of pain)
- Benzodiazepines (prescribed to treat anxiety and sleep disorders)
- Stimulants (prescribed to treat attention deficit-hyperactivity disorder [ADHD])

Improper use of these drugs can cause severe health effects (e.g., substance use disorder, overdose, death). These risks increase when medications are used:

- At higher doses than prescribed
- In a different way or for different purposes than prescribed
- With alcohol or other prescription, over-the-counter, or nonregulated drugs [4]

Statistics

- Alcohol is the most used substance in Canada, used by about three-quarters of the population. [8]
- Cannabis is one of the most widely used substances in Canada. In 2022, 27% of people ≥16 years of age reported having used cannabis in the past 12 months. [9]
- A 2023 study found one in twenty Canadians (~300,000 people) who had consumed cannabis in the previous year scored high enough on the Severity of Dependence Scale to be considered at risk for cannabis use disorder and other harms. [10]

² Expired and unused prescription drugs are often left in medicine cabinets and cupboards, which can lead to improper use. Safe disposal of unused and expired drugs ensures they do not end up in the wrong hands. To ensure safe disposal, unused and expired medications (including prescription, OTC, natural health products) should be returned to a local pharmacy. Do not flush medications down the sink or toilet. [48] Also, safe disposal of unused antibiotics is vital to help prevent antimicrobial resistance. Refer to Episode 100 for discussion on antimicrobial resistance.

Substance use cost the Canadian economy \$49.1 billion in 2020, an increase of more than \$11 billion since 2007. The four main costs were:

- \$22.4 billion in lost productivity costs from work lost due to premature death, long-term disability, and short-term disability (e.g., absenteeism, impaired job performance [i.e., presenteeism]).
- \$13.4 billion in healthcare costs from in-patient hospitalizations, day surgeries, emergency department visits, paramedic services, specialized treatment for substance use disorders, physician time, and prescription drugs.
- \$10.0 billion in criminal justice costs from policing, courts, and correctional services (e.g., enforcement of drug and impaired driving laws and the proportion of violent and nonviolent crimes that would not have occurred without substance use).
- \$3.3 billion in other direct costs from research and prevention, fire damage, motor vehicle damage, social assistance for substance use-attributable disability, and workplace costs not included in lost productivity (e.g., employee assistance programs, drug testing programs, administrative costs associated with workers' compensation). [11]

In 2020, over 62% of the total costs of substance use were due to alcohol and tobacco. The four substances associated with the largest costs were:

- Alcohol, accounting for \$19.7 billion,
- Tobacco, accounting for \$11.2 billion,
- Opioids, accounting for \$7.1 billion, and
- Cocaine, accounting for \$4.2 billion. [11]

Deaths attributable to substance use:

- There were nearly 74,000 deaths due to substance use in 2020 (more than 200 lives lost each day). Alcohol and tobacco accounted for over 85% of deaths alone.
- In 2020, tobacco use was responsible for nearly two in three lives lost (46,366). While alcohol and opioid use led to fewer deaths (17,098 and 6,491, respectively), total lost productivity costs attributable to these substances were within the range of tobacco since many people dying from alcohol and opioid use are younger, resulting in more lost years of productive life. Opioid use led to the most lost years of productive life of any substance for the first time in 2020. [11]

Youth and substance use

Substance use often begins during adolescence, placing youth at risk for fatal overdose and substance use disorders. Understanding the motivations reported by adolescents for using alcohol, cannabis, and other drugs could guide strategies to prevent or reduce substance use and its related consequences among adolescents.

Connolly et al. (2024) examined self-reported motivations for using substances among adolescents being assessed for substance use disorder treatment in the United States from 2014 to 2022.

Cannabis was most often reported (84%), followed by alcohol (49%). Nonprescription drug use was indicated by 21%, with methamphetamine (8%), cough syrup (7%), and hallucinogens (6%) most commonly reported. Using prescription medication improperly

was reported by 19%, with prescription pain medication most often reported (13%), followed by prescription sedatives or tranquilizers (11%) and prescription stimulants (9%).

Top reasons for substance use were seeking relief from stress, anxiety, and depression. Fifty percent reported using substances to have fun or experiment. The majority of adolescents reported using substances with friends (81%) or using alone (50%).

Reducing stress and promoting mental health among adolescents may lessen motivations for substance use. Educating adolescents on harm reduction practices, including the risks of using drugs alone and ensuring they can recognize and respond to overdose (e.g., administering naloxone), could prevent fatal overdoses. [12]

Emergency department visits

Alcohol was involved in more medical emergencies that sent young people to hospital emergency departments (EDs) than cannabis or opioids, according to a study involving 4,634 youth in three Canadian communities. King et al. (2020) examined substance-related visits to the ED from 2016 to 2019 among youth (12 to 24 years) and the context of their visits. The study focused on three psychoactive drugs (alcohol, cannabis, opioids). The injuries included drug toxicity, falls, vehicle accidents, violence, and self-harm, including suicide attempts.

Other key findings of the study included:

- 28% of the visits were by youth under minimum legal drinking age in their region.
- More than one psychoactive substance had been used in nearly 40% of participants.
- A large proportion of youth arriving in EDs had previously visited for a substance-related emergency.
- Cannabis-related ED admissions were more common among males.
- Among youth admitted to the ED for alcohol-, cannabis- or opioid-related emergencies, the most common were unintentional injuries (45%) followed by intentional injuries (14%).
- Time of presentation to the ED differed by substance, with alcohol-related cases arriving mainly at night and cannabis- and opioid-related cases arriving during the day. [13]

Cancer survivors

Jones et al. (2024) found the prevalence of active substance use disorder was 3.83% among lifetime adult cancer survivors. The prevalence of substance use disorder was highest in survivors of head and neck cancer (including mouth, tongue, lip, throat, and pharyngeal cancers), esophageal and gastric cancer, cervical cancer, and melanoma. Alcohol use disorder was the most common substance use disorder overall and in survivors of head and neck cancer. The overall prevalence of active substance use disorder was similar among those diagnosed with cancer in the past 12 months to that of lifetime cancer survivors (3.81%). Active substance use disorder was higher in head and neck and cervical cancer survivors. The findings of this study highlight subpopulations of adult cancer survivors who may benefit from the integration of cancer and substance use disorder care. [14]

Drug use from the unregulated supply

Substances from the unregulated (illegal) drug supply in Canada are increasingly unpredictable in type, potency, and quality, which increases the risk of accidental drug poisoning and other drug-related harms to people who use drugs from this supply. To determine substance use trends and whether expected substance use matched actual drug contents, data were collected from harm reduction sites in seven regions across Canada that participated in the Community Urinalysis and Self-Report Project between 2019 and 2021.

Participating harm reduction sites included British Columbia (multiple sites), Edmonton (Alberta), Manitoba (multiple sites), Thunder Bay (Ontario), Montreal and Laval (Quebec), and Halifax (Nova Scotia).

Key findings of the study included:

- Stimulants were the most reported and detected substances in all sites. Cocaine/crack and methamphetamine/amphetamine accounted for most of the stimulant use. Most use of these stimulants was expected by participants (i.e., reported used when detected via urinalysis).
- Fentanyl was detected most often in British Columbia and Thunder Bay, where participants also usually expected its use. In other regions where fentanyl was detected least often (e.g., Manitoba, Nova Scotia), use was almost always unexpected (i.e., not reported used when detected).
- Benzodiazepine use was unexpected among at least one in three participants across sites, which was consistent with other information showing an increase in benzodiazepines in the unregulated drug supply since the COVID-19 pandemic began.

Overall, the study found expected and actual substance use varied by type of substance and region. This information is critical given the rapidly evolving drug supply. The findings emphasize the need for a range of harm reduction tools and supportive policies and programs to improve drug predictability and reduce harms. [15]

COVID-19 pandemic and substance use

During the pandemic, various factors impacted substance use, such as using substances to cope, changes in social supports and networks (e.g., changes to drug supply and access), and decreased availability and accessibility of services, such as harm reduction services. [16]

Alcohol consumption and sales increased during the pandemic and were associated with increased rates of new COVID-19 infections two weeks later. Alcohol consumption is a risk factor for COVID-19 transmission due to some high-risk environments in which it is consumed (e.g., private functions, social gatherings, bars, restaurants) and its role in reducing social distancing. [17] [18]

The use of regulated and unregulated substances increased during the pandemic, as well as increased toxicity of the unregulated drug supply, which increased some related harms associated with many types of substance use. [11]

For example, over 1,600 apparent opioid toxicity deaths occurred between April and June 2020, the highest count in any quarter since national surveillance began in 2016, and a 54% increase compared with the same time frame in 2019 (1,059 deaths). [19]

A 2021 report by the Canadian Institute for Health Information (CIHI) examined harm caused by substance use during the pandemic, analyzing emergency department (ED) visits and inpatient hospitalizations between March and September 2020, compared with the same period in 2019.

Key findings of the report included:

- More Canadians received substance-related hospital care during the COVID-19 pandemic than in the previous year.
- ED visits and hospitalizations substantially increased for opioids, stimulants, and cannabis from March to September 2020 compared with the same period in 2019.
- The number of hospitalizations for alcohol-related harms also increased, though ED visits decreased.
- Males and those from low-income neighbourhoods showed the highest increase in hospital stays for substance-related harm.
- Deaths from substance-related harm also increased in both EDs and inpatient settings.

Temporary closures of harm reduction programs, substance-related therapies, and other services meant fewer mental health³ and substance use disorder resources were available, which likely led to increased substance-related harms during the pandemic. [19]

Current or prior substance use was also associated with an increased risk of unscheduled return visits to the ED in individuals with COVID-19. Unscheduled return ED visits reflected clinical deterioration. [20]

The COVID-19 pandemic also resulted in increased mental health challenges and substance-related harms for many Canadians. Since the pandemic began, alcohol and cannabis use increased among people with mental health symptoms. For example:

- One in two who use cannabis reported increased use, and two out of five who use cannabis reported increased use and problematic use.
- One in three who use alcohol reported increased use, and one in five reported problematic use. [21]

Substance use language

Individuals who use substances experience considerable stigma and discrimination in various contexts of daily life. For instance, substance use stigma is noticeable within the healthcare system, where it contributes to poorer quality of care, adverse health outcomes, and significant social and health inequities. Within the healthcare system, substance use stigma may occur in interactions between individuals who use substances and direct care providers.

³ Refer to Episode 88 for additional information on mental health.

Changing the language around substance use can reduce stigma. Stigma is any attitude, belief, or behaviour that discriminates against people. Stigma is a barrier to wellness and good health for those who use substances. Substance use disorders are more highly stigmatized than other health conditions as society generally considers drug use to be a choice and repeated use to be a result of poor self-control. People often do not seek help, not wanting to be labelled “an addict,” even though substance use disorder is a health condition.

It is essential to recognize that substance use is a medical condition shaped by complex health and social factors and to use:

- Person-first, nonstigmatizing language to encourage people to seek help. Person-first language acknowledges someone as a person before describing their health conditions. A person is not defined by their health condition.
- Language that reflects that treatment, safer substance use, and recovery are possible.
- Neutral, medically, and contextually accurate terminology when describing substance use, recognizing that language evolves within the healthcare community as societal values and knowledge of substance use-related issues change over time. Nuances can be challenging to understand and navigate, but every effort should be made to be specific and use appropriate words when having conversations about substance use. [22] [23] [24]

Avoid conflating ‘substance use’ with ‘substance use disorder’. Inappropriate use and overuse of substance use disorder⁴ undermine the meaning of this term and the seriousness of this medical condition.

It is important not to let the fear of using the ‘wrong’ terms prevent crucial conversations. It is essential to recognize the importance of communicating about substance use in compassionate, safe, and non-stigmatizing ways and take it as an opportunity to learn and increase understanding. [23] [24] [25]

⁴ Note some people with substance use disorders do not identify with or endorse the term “disorder” for various reasons. In healthcare contexts, it is appropriate to use accepted medical terminology (e.g., substance use disorder), though healthcare professionals should allow people to use the words they feel best describe their experience. [24]

Terms related to substance use* [22] [24] [25]

Terms to avoid	Alternate terms	Rationale
Drug users Drug abusers	People who use substances People who actively use drugs People with a substance disorder (context dependent)	Not everyone who uses substances has a substance use disorder so use of this language depends on the context.
Addicts	People living with a substance use disorder People with living experience of a substance use disorder	These terms characterize and label people according to an illness or action, which may be experienced as dehumanizing. Using person-first, non-stigmatizing language encourages people to seek help. Person-first acknowledges someone as a person before describing their health conditions.
Alcoholics	People with alcohol use disorder	
Former drug addicts Ex-addicts	People with lived experience of substance use [disorder] People who have used substances People who formerly used substances People who have a history of substance use	
Recovering addicts	People in recovery [from a substance use disorder]	Being in recovery from a substance use disorder can, but does not have to mean, abstinence from substances.
Substance abuse Substance misuse Substance habit	Substance use Substance use disorder (in some contexts)	'Misuse' and 'abuse' and 'habit' are highly stigmatizing as the terms express judgement, and suggests deliberate misconduct or moral failing. Not everyone who uses substances has a substance use disorder, so the use of these terms is appropriate only when it is medically accurate.
Recreational substance use (in some contexts)	Medical/nonmedical substance use Occasional/regular/daily substance use	'Recreational' implies substance use is something people choose to do for fun. Recreational substance use' to denote use of substances can be stigmatizing to people with substance use disorders. This term downplays the seriousness of substance use disorders as a medical condition and does not reflect that many people self-medicate with substances to manage physical and/or emotional pain. Recreational substance use can be used to describe nonproblematic contexts of substance use (e.g., having a few drinks with friends in social gatherings, occasional use of cannabis among adults, etc.), though it is better described by terms such as 'occasional' or 'nonmedical', depending on the intended meaning.

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Terms to avoid	Alternate terms	Rationale
Relapse, lapse Slip On/off the wagon Used again Setback	Recurrence of substance use Recurrence of substance use disorder [symptoms]	Terms such as 'lapse' and 'relapse' may be stigmatizing as they can imply failure or choice, and are disempowering. These terms are inconsistent with the chronic, and possibly recurring, nature of substance use disorders. Also, improvements in managing substance use (disorder) are often not linear. They also create a dichotomy of 'abstinence' (good) and 'using substance' (bad), which does not account for types of recovery that are not abstinence-based and can create unrealistic expectations related to recovery and management of substance use disorders.
Black market Illicit drug market Illicit drugs/opioids Street drugs	Illegal supply drug market Unregulated market/substances Illegally obtained drugs/opioids Diverted prescription drugs/opioids Illegally produced drugs/opioids	'Illicit' has a moral connotation that can be stigmatizing. 'Illegal' is more plain-language and does not carry the same judgement. 'Black' is often used to convey that something is illegal or 'bad' (e.g., black market, blacklist, black sheep, blackmail, etc.), which has clear racist underpinnings. 'Diverted prescription opioids' can refer to prescription opioids not taken as directed by a healthcare professional, including those bought and sold on the unregulated market.
Clean drug test	Negative drug test Drug free	'Dirty' and 'clean' are commonly used to refer to people who use drugs. However, these phrases are stigmatizing and imply a value judgement.
Dirty drug test Failed drug test	Positive drug test	
Addiction (in some contexts)	(Mild/moderate/severe) substance use disorder Dependence	Substance use disorders can be diagnosed according to severity (low, moderate, or severe). The term 'addiction' has historically been used to describe severe substance use disorders. Many substances can become addictive. However, addiction itself is not, and has never been, an independent diagnosable condition. The term 'disorder' is more medically accurate and helps to signify substance use disorders as a medical condition. Its use is only appropriate when the individual meets the conditions required for diagnosis of a substance use disorder specified in DSM-5-TR.
Replacement therapy Substitution therapy Liquid handcuffs Medication assisted therapy	Opioid agonist treatment Opioid agonist therapy Opioid maintenance therapy	'Replacement' or 'substitution' may imply that opioid agonist treatments (e.g., methadone or buprenorphine) are comparable to street drugs and implies a simple lateral change from one substance to another. This minimizes the merits of this treatment/therapy approach and its role in medically comprehensive treatment plans. Some health professionals prefer the term 'therapy' over 'treatment' when referring to this type of care, since it is often a long-term commitment. Treatment often implies a time-limited cure compared to therapy.
Booze	Alcohol	There are hundreds of street names and slang words to describe various substances. These terms can change rapidly over time.
Ice	Methamphetamine	

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Terms to avoid	Alternate terms	Rationale
Dope	Heroin	<p>Use the proper/formal name of the substance to reduce harmful stereotypes and racial undertones often associated with slang words.</p> <p>It is best for substance use education efforts (e.g., through client interactions, in publications, etc.) to emphasize substances' formal names. These efforts can also acknowledge related slang terms for educational purposes without endorsing these terms or using them as default descriptors.</p> <p>It is recognized that the term 'marijuana' has racist origins. The term cannabis is less historically troubled and stigmatizing.</p>
Molly	Ecstasy, MDMA	
Dope Marijuana Weed	Cannabis	

* Nonexhaustive list

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Physiologic effects of substance use

Substances have direct physiologic effects, including intoxication, tolerance, withdrawal, and substance-induced mental health disorders. [26]

Intoxication

Intoxication is a reversible condition from the recent use of a specific substance, including mental and behavioural changes. Although symptoms vary by substance, there are some common manifestations, such as altered perception; mood changes; impaired judgment, attention, and memory; altered heartbeat and vision; and speech and coordination difficulties. As increasing amounts of the drug are used, intoxication can lead to overdose, significant morbidity, and death. [26] [27] [28]

Tolerance

Tolerance results from regular use of a drug where the individual needs to progressively increase the drug dose to produce the same desired effect or the effect of a given dose decreases over time. Tolerance is one of the two prime indications of physical dependence on a drug; the other is substance withdrawal.

People can develop immense tolerance to drugs (e.g., opioids, alcohol). People who do not use drugs or have taken a break from using the drug may experience lower drug tolerance. This can put them at a greater risk of overdose because they might use more of the drug than their body can handle. [4] [26] [27] [29]

Withdrawal

Withdrawal refers to symptoms that develop when an individual stops taking a substance or takes significantly less than usual. Withdrawal causes various unpleasant symptoms that differ depending on the substance involved. In some cases, and depending on the substance, withdrawal symptoms can be extremely debilitating and make it very difficult to stop or lower the dose.

Some prescription medications, particularly opioids, sedatives, and stimulants, can result in withdrawal symptoms even when taken as prescribed and for relatively brief periods (less than one week for opioids). Withdrawal from some drugs (e.g., alcohol or barbiturates) can be serious and even life-threatening. [4] [27]

Withdrawal symptoms can include:

- Nervousness, irritability, agitation
- Chills, sweating
- Diarrhea, nausea, stomach pain
- Insomnia
- Body aches, widespread or increased pain

The severity and length of withdrawal depend on the substance used, the dose, and how long the substance was used. [4]

Substance-induced mental health disorders

Substance-induced mental health disorders refer to depressive, anxiety, psychotic, or manic symptoms that occur from substance use. The disorder may occur during active use, intoxication, or withdrawal.

For a mental health disorder to be considered substance-induced, the substance involved must be capable of causing the disorder. These include substances from the ten classes of drugs that typically cause substance-related disorders (e.g., alcohol, cannabis, opioids, etc.)⁵ and other drugs. Examples of other drugs include anticholinergics and corticosteroids, which can cause temporary symptoms of psychosis.

In addition, the mental health disorder should:

- Appear within one month of substance intoxication or withdrawal
- Cause significant distress or impair functioning,
- Not have been present before the use of the substance,
- Not occur solely during acute delirium caused by the substance, and
- Not last for a substantial period of time.⁶ [26] [27] [30]

Substance use disorder

Substance use disorder is a cluster of physiological, behavioural, and cognitive symptoms associated with the continued use of alcohol and/or drugs despite substance-related problems, distress, and/or impairment, including impaired control, risky use, health problems, disability, and failure to meet significant responsibilities at work, home, or school. [31] [32]

Not all people who use substances will develop a substance use disorder. A substance use disorder is a medical condition diagnosed when a person's substance use leads to health issues or problems at home, school, or work. This disorder can be mild, moderate, or severe. [22]

Substance use disorder encompasses varying degrees of excessive use of a psychoactive substance (e.g., alcohol, nicotine, opioids, cannabis, hallucinogens, etc.). Various mental health conditions, such as depression, may co-occur along with substance use disorder. [33]

Substance-related disorders involve drugs that directly activate the brain's reward system. Activation of the reward system typically causes feelings of pleasure. The specific characteristics of the pleasurable feelings evoked vary widely depending on the drug. These drugs are divided into ten classes with different, although not entirely distinct, pharmacologic mechanisms. [34]

⁵ See page 14 for the ten classes of drugs.

⁶ Note certain neurocognitive disorders caused by alcohol, inhalants, or sedative-hypnotics, and perceptual disorders caused by hallucinogens may be long-lasting. [26] [27]

The ten classes of drugs include:

- Alcohol
- Caffeine
- Cannabis and synthetic cannabinoids
- Hallucinogens (e.g., LSD, phencyclidine [PCP], psilocybin [magic mushrooms], 3,4-methylenedioxymethamphetamine [MDMA])
- Inhalants (volatile hydrocarbons [e.g., paint thinner, certain glues])
- Opioids (e.g., fentanyl, morphine, oxycodone)
- Sedatives, hypnotics, and anxiolytics (e.g., lorazepam, secobarbital)
- Stimulants (e.g., amphetamines, cocaine)
- Tobacco (nicotine)
- Other (e.g., anabolic steroids) [34]

Etiology of substance use disorders

Progression to a substance use disorder is complex and only partially understood. The process depends on interactions between the drug, the person using the substance, and the setting.

Substance

Drugs in the ten classes vary in how likely they are to cause a substance use disorder. This likelihood is termed addiction liability. Addiction liability depends on a combination of factors, including:

- Route of administration
- How strongly the drug stimulates the brain's reward pathway
- How quickly the drug works
- Ability to induce tolerance and/or withdrawal symptoms [26] [27]

Person using the substance

Factors that may predispose to a substance use disorder include psychologic characteristics, circumstances and other medical conditions, and polygenic factors.

Psychologic characteristics are not a strong factor, although individuals with low levels of self-control (impulsivity) or high levels of risk-taking and novelty-seeking behaviours may have an increased risk of developing a substance use disorder. There is little scientific evidence to support the concept of an addictive personality, as described by some behavioural scientists.

Circumstances and other medical conditions may increase the risk of developing a substance use disorder. For example:

- Individuals who are sad, emotionally distressed, or socially alienated may find these feelings are temporarily relieved by a drug, which can lead to increased use and sometimes a substance use disorder.
- Individuals with other, unrelated mental health conditions (e.g., anxiety, depression) are at increased risk of developing a substance use disorder.

- Individuals with chronic pain often take opioid drugs for relief and may subsequently develop a substance use disorder. However, for some people, nonopioid drugs and other treatments do not adequately relieve pain.

Polygenic factors. Substance use disorders are heritable and influenced by complex interactions among multiple genetic, epigenetic,⁷ and environmental factors. Research has identified specific genetic factors that vary by the specific substance, as well as shared genetic markers underlying substance use disorders, regardless of the substance used, that increase the risk of substance use disorders. [26] [27] [35]

Setting

Cultural and social factors are very important in initiating and maintaining or returning to substance use. Observing family members (e.g., parents, older siblings) and peers using substances increases the risk that people will begin using substances. Peers are a powerful influence among adolescents. People who are trying to stop using a substance find it much more difficult if they are around others who use that substance.

Healthcare practitioners, including physicians and dentists, may inadvertently contribute to the harmful use of psychoactive drugs by overzealously prescribing them to relieve stress and pain, respectively. Many social factors, including mass media, contribute to the expectation that drugs should be used to alleviate all distress. [26] [27] [36]

Adolescents

Substance use among adolescents ranges from experimentation to severe substance use disorders. The acute and long-term consequences range from minimal to minor to life-threatening, depending on the substance, the circumstances, and the frequency of use. However, even occasional use can put adolescents at increased risk of significant harm, including overdose, motor vehicle accidents, violent behaviours, and consequences of sexual contact (e.g., pregnancy, sexually transmitted infection).

Substance use also interferes with adolescent brain development in a dose-dependent manner. Regular use of alcohol, cannabis, nicotine, or other drugs during adolescence is associated with higher rates of mental health conditions, underachievement in school, poorer functioning in adulthood, and higher rates of substance use disorder.

Substances used most by adolescents are alcohol, nicotine (in tobacco or vaping products), and cannabis. [37] [38]

Signs of substance use

Signs of problematic substance use may include:

- Confusion, trouble concentrating, remembering, making decisions, or staying alert
- Continuing to use drugs, even when health, family, or work is being harmed
- Missing work or school or a decrease in performance

⁷ Epigenetics is the study of how behaviours and environment can cause changes affecting the way genes work. Unlike genetic changes, epigenetic changes do not change DNA sequence, but can change how the body reads a DNA sequence. Epigenetic changes affect gene expression to turn genes 'on' and 'off.' [49]

- Episodes of violence
- Hostility when confronted about substance use
- Lack of control over substance use, being unable to stop or reduce use
- Using substances first thing in the morning or while at school or work
- Spending more money on drugs or alcohol
- Making excuses to use substances
- Turning to substances to deal with problems
- Need for daily or regular substance use to function
- Neglecting to eat
- Neglecting physical appearance and oral hygiene
- Decreased general and oral health⁸
- No longer taking part in activities, loss of interest in activities once enjoyed
- Secretive behaviour to hide substance use
- Using substances even when alone
- Unstable finances
- Strained or tense relationships
- Lower self-esteem [39] [40] [41] [42]

Diagnosis of substance use disorder

Healthcare professionals diagnose substance use disorders using criteria from the *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition, text revision (DSM-5-TR). Each specific substance (except caffeine, which cannot be diagnosed as a substance use disorder) is addressed as a separate use disorder (e.g., alcohol use disorder, stimulant use disorder, cannabis use disorder, etc.). However, nearly all substances are diagnosed based on the same overarching criteria.

DSM5-TR gives eleven criteria divided into the following four categories: impaired control over use, social impairment, risky use, and pharmacologic symptoms. An individual who meets at least two of the criteria over 12 months is considered to have a substance use disorder.

Impaired control over use

- Takes higher amounts of the substance or for longer than planned.
- Wants to stop or cut down on the use of the substance.
- Spends substantial time obtaining, using, or recovering from the effects of the substance.
- Intense desire (craving) to use the substance.

Social impairment

- Unable to fulfill obligations at work, school, or home.
- Continues using the substance despite it causing social or interpersonal problems.
- Gives up or reduces important social, occupational, or recreational activity due to substance use.

⁸ Refer to Episode 105 for discussion on substance use and oral health.

Risky use

- Uses the substance in hazardous situations (e.g., driving or at work).
- Continues to use the substance despite harmful effects on physical or mental health.

Pharmacologic symptoms

- Develops a tolerance to the substance and needs increasing amounts to feel the same effect.
- Experiences withdrawal symptoms after stopping taking the substance.

The severity of the substance use disorder is determined by the number of symptoms:

- Mild: 2 to 3 criteria
- Moderate: 4 to 5 criteria
- Severe: ≥ 6 criteria

Note some drugs, particularly opioids, sedatives/hypnotics, and stimulants, can result in tolerance and/or withdrawal symptoms even when taken as prescribed for medical reasons and relatively brief periods (less than one week for opioids). Withdrawal symptoms that develop following appropriate medical use do not count as criteria to diagnose a substance use disorder. [26] [27] [43] [44]

Treatment and recovery

Effective treatments for substance use disorders are available. Treatment begins with first recognizing the problem. The recovery process can be delayed when a person lacks awareness of problematic substance use. Denial is a common challenge. However, people with a substance use disorder have far less denial if they are treated with empathy and respect rather than being confronted or told what to do.

The path to recovery from substance use disorder looks different for everyone, and what is effective for some may not be effective for others. For example, some people may choose to work toward:

- Complete abstinence.
- Reducing or managing their consumption.
- Reducing the potential harms from substance use through a harm reduction approach.
- Addressing the underlying emotional concerns that may be contributing to substance use and finding alternative coping strategies that do not involve substances.

All people can benefit from treatment, regardless of whether the disorder is mild, moderate, or severe. If the individual also has depression or another mental health condition, it should also be treated.

Types of available support for substance use disorder may include self-help materials, self-help groups, counselling, medications, inpatient or day treatment, withdrawal management, and other supports and services.

Self-help

Some people can make changes using self-help materials (e.g., self-help books and websites). Others access self-help groups. Self-help groups support people who are working to change their substance use. Many people participate in a self-help group at the same time they are in formal treatment. Types of available groups include Alcoholics Anonymous (AA), Narcotics Anonymous, Cocaine Anonymous, etc.

Counselling

Counselling comes in various forms, including individual, group, couples, and family therapy. Counselling generally aims to increase awareness of how substance use affects their lives, what puts them at risk of substance use, and how to reduce substance use.

Medications

Treatment using medications should be paired with counselling or, if available, a structured treatment program. Medications that can be used to treat substance use disorders include:

- Nicotine patch, gum, or inhaler, or taking bupropion (Zyban) for tobacco cessation.⁹
- Methadone or buprenorphine for opioid use disorder, including heroin use.
- Naltrexone (Revia) can reduce cravings to drink in people with alcohol use disorder. Naltrexone can also be used to block the effects of opioids.
- Disulfiram (Antabuse), which causes people to feel sick and nauseous if they drink alcohol, can be used to treat alcohol use disorder.¹⁰

Inpatient treatment

Inpatient treatment is more intensive, where a person stays in a treatment facility 24 hours a day. These programs can last from 21 days to several months and usually offer group, individual, and family counselling and case management support. These facilities are either public or privately funded, and wait times for treatment vary.

Day treatment

Day treatment typically offers the same programming as inpatient treatment, but individuals return home at the end of the day instead of staying overnight.

Withdrawal management

People sometimes need short-term help dealing with substance use withdrawal. Withdrawal management includes helping them manage symptoms, prepare for long-term treatment, and learn about substance use and treatment options.

Other supports and services

Many treatment programs offer a variety of other supports and services to support long-term wellness, including information and counselling about:

- Grief, trauma, stress, or anger management
- Finding a job or going back to school

⁹ Refer to Episode 101 for more information on smoking cessation.

¹⁰ Medications to treat other types of substance use disorders are limited.

- Healthy eating
- Accessing safe, affordable housing
- Getting social assistance or disability benefits
- Managing money and budgeting [5] [7] [45] [46]

Harm reduction

Some treatment programs have adopted a harm reduction approach to help people who may not be ready, willing, or able to give up substances. Examples of harm reduction strategies include:

- Helping individuals learn safer ways to use substances.
- Helping individuals learn how to recognize signs of an overdose.
- Providing overdose prevention sites (also referred to as supervised injection services or safe consumption sites). These facilities are health services that provide a hygienic environment for people to consume substances under the supervision of medical professionals.
- Providing clean needles and other injection equipment for injection drug use to reduce transmission of infections (e.g., HIV or hepatitis C through needle sharing).
- Helping to ensure basic needs are met (e.g., food, shelter, medical care).
- Substituting a safer drug for the one a person is using (e.g., substituting methadone for heroin in opioid agonist therapy). [45] [47]

Take home messages

- Not all people who use substances will develop a substance use disorder. Many people use substances without causing significant harm to themselves or others. However, in some cases, any level of substance use can cause serious harm. The best way to avoid any harms from substance use is to avoid use.
- Substance use disorder is a medical condition that can affect anyone. No one chooses to develop a substance use disorder.
- It is crucial to understand the stigma associated with substance use and its impact on the well-being of people and their families affected by this health issue. Using language that more accurately reflects the nature of this health condition can encourage people to seek help.
- Effective treatments for substance use disorders are available. There are numerous treatment options available depending on the person's needs. The first step is recognition of the problem.

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Client resources

Get help with substance use – This webpage provides resources and information for individuals who need help with substance use, including overdose prevention resources and tobacco cessation services.

<https://www.canada.ca/en/health-canada/services/substance-use/get-help-with-substance-use.html>

Find mental health and addiction services in your community

<https://www.ontario.ca/page/mental-health-services>

How to talk to a family member or friend about their drug or alcohol use

<https://www.canada.ca/en/health-canada/services/substance-use/talking-about-drugs/help-friend.html>

Understanding the use of opioids and other medications in later life
<https://kmb.camh.ca/eenet/sites/default/files/2021/OlderAdultsEN/8%20-%20Opioids%20and%20Benzodiazepines%202-pager%20EN%20V3.pdf>

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