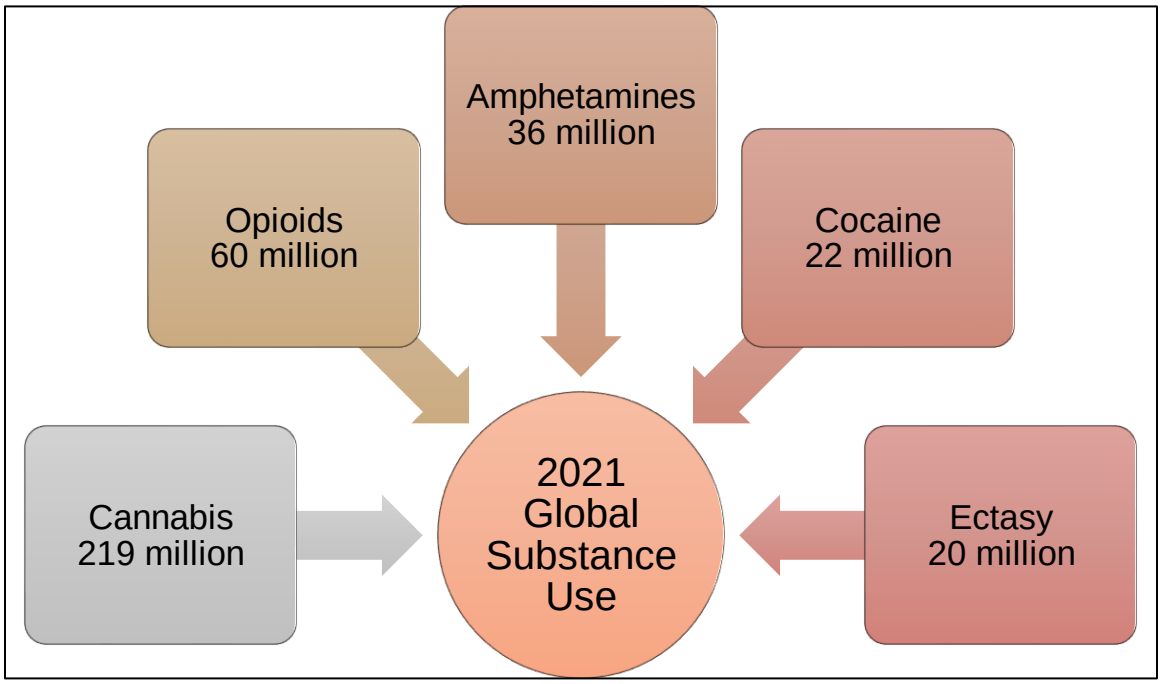
Episode 105 – Substance Use and Oral Health March 22, 2024

Overview

Substance use refers to the use of psychoactive substances, including prescription and unregulated drugs, alcohol, cannabis, nicotine, and inhalants. These substances affect mental processes, such as changes in mood, thoughts, feelings, or behaviour. [1]

According to recent statistics, excluding alcohol and nicotine, over 296 million people worldwide used substances in 2021, which is equivalent to one in every 17 people aged 15 to 64 years. This represents an increase of 23% over the previous decade. Current projections suggest the number of people who use substances will increase globally by 11% by 2030. Substance use affects individuals differently. While some may not experience any adverse effects, others may develop substance use disorder. The number of people worldwide with substance use disorders increased to 39.5 million in 2021, a 45% surge in the last ten years. [2]

Global estimates of substance use [2] [3]



Using substances such as alcohol, cannabis, tobacco (nicotine), inhalants, and opioids are associated with a range of oral health issues, including dry mouth, dental caries,[1] periodontal disease, and tooth loss. Substance use can also impact oral healthcare.

Alcohol

Alcohol is used by about 75% of people living in Canada. Alcohol is a leading preventable cause of death, disability, and social problems, including certain cancers (e.g., oral cancer), cardiovascular disease,[2] liver disease, unintentional injuries, and violence. [4]

Globally, males are more likely to drink alcohol, consume higher quantities of alcohol, and develop alcohol-related problems. Even though males tend to consume more alcohol, females experience more harm at lower levels of alcohol consumption. For example, the effects of alcohol use disorders progress more quickly for females, resulting in a higher likelihood of liver inflammation, cardiovascular disease, and selected types of cancer. [5]

Recent data show alcohol use causes nearly 7,000 cases of cancer deaths each year in Canada, with most cases being breast or colon cancer, followed by cancers of the rectum, oral cavity and throat, liver, esophagus, and larynx. Research shows no amount or kind of alcohol, including wine, beer, cider, or spirits, benefits health. [4] [6] [7]

Oral health effects

The oral cavity is exposed to alcohol immediately after ingestion, which can lead to negative impacts on the oral cavity, oral mucosa, and teeth. The severity of the effects on oral health depends on the type of drink, its contents, the alcohol concentration, and the frequency and amount consumed. Alcohol is linked to a range of adverse oral health effects, including oral cancer, salivary gland dysfunction, dental caries, periodontal disease, halitosis, dental trauma, tooth wear, and staining. [8]

Oral cancer[3]

Alcohol is among the most significant risk factors for oral cancer. Over 95% of individuals with oral squamous cell carcinoma (OSCC) have a history of alcohol use, tobacco use, or both. The combination of smoking and drinking can synergistically increase the development of OSCC. Heavy long-term alcohol and tobacco use is estimated to raise OSCC risk 100-fold in females and 38-fold in males. All types of alcohol beverages increase oral cancer risk, stressing the importance of oral health clinicians routinely screening for alcohol use and oral cancer.[4] [9]

[1] Refer to Episodes 86 and 87 for additional information on dental caries.
[2] Refer to Episodes 79, 80, and 81 for discussion on cardiovascular disease.
[3] Refer to Episodes 76, 77, and 78 for additional information on oral cancer.
[4] Refer to Episode 76 for signs and symptoms of oral cancer.

The mechanism of action between alcohol consumption and cancer is not yet fully understood. Possible explanations include:

- Genotoxic effect of acetaldehyde (i.e., metabolism of ethanol produces acetaldehyde, which causes damage to DNA of oral epithelial cells and oncogene expression of oral keratinocytes).
- Alcohol acting as a solvent for tobacco carcinogens.
- Production of reactive oxygen and nitrogen species (both help to maintain cell homeostasis; however, an imbalance has been linked to the pathogenesis of disease, such as cancer).
- Changes in folate metabolism. Folate is essential for DNA synthesis, repair, and methylation. Changes in folate metabolism may alter these processes and promote carcinogenesis.
- Alcohol causes a change in the rate of penetration of substances from the oral environment across the mucosa. This alteration of mucosal permeability may play a role in carcinogenesis. [8] [10] [11] [12] [13] [14]

Seidenberg et al. (2023) showed there is low accurate public awareness of cancer harms associated with alcohol use, including wine, beer, and liquor consumption. The "health halo" surrounding alcohol use related to reduced heart disease has led many to overgeneralize alcohol's health benefits to other diseases, including cancer. Research shows drinking a little alcohol neither decreases nor increases coronary artery disease risk. However, alcohol use is a risk factor for many types of cardiovascular disease, including hypertension, heart failure, atrial fibrillation, and hemorrhagic stroke. The fact alcohol is a carcinogen that can cause at least seven types of cancer, including oral cancer, is often overlooked. [15] [16] [4]

Gapstur et al. (2023) found alcohol reduction or cessation decreased the risk of developing oral cancer. The study found stopping alcohol consumption for 5-9 years was linked to a 34% relative risk reduction, and doing so for 10-19 years was linked to a 55% relative risk reduction. [17]

Oral mucosa

Alcohol dependence is associated with an increased prevalence of candidiasis and oral potentially malignant disorders, such as leukoplakia, erythroplakia, and submucous fibrosis.[5] [10]

Alcohol dependence can have other adverse impacts on the oral mucosa, either due to inadequate nutrition or alcohol's direct effect. Among the most commonly occurring effects are glossitis (inflammation of the tongue), gingivitis, and angular cheilitis. In the early stages of glossitis, the tongue is smooth and painful, sometimes with swollen fungiform papillae. As the condition progresses, the tongue becomes intensely red with a burning sensation, followed by filiform and fungiform papillae atrophy. Angular cheilitis causes painful cracks in the corners of the mouth. [11] [18]

[5] Refer to Episode 76 for additional information on oral potentially malignant disorders.

Salivary glands

Chronic alcohol use may harm salivary glands and interfere with saliva production. For example, it can lead to sialadenosis (sialosis), characterized by salivary gland enlargement, particularly the parotid glands, not caused by inflammation or cancer. The reason for this is alcohol can cause peripheral neuropathy, which can disrupt salivary gland secretion and metabolism. Alcohol also has a diuretic effect, which can cause dry mouth by reducing saliva flow. This reduction in saliva flow decreases the buffering capacity of saliva, which can lead to lower pH levels. As alcohol is acidic, it can further lower the pH levels of saliva, increasing the risk of developing dental caries. [8] [10] [11] [19] [20]

Dental caries

Alcohol dependence is associated with increased dental caries and tooth loss. An increase in dental caries may result from dry mouth, inadequate oral self-care,[6] decreased professional oral care, cariogenic diet, acidic nature and sugar content of alcohol beverages and mixers, and decreased salivary pH. [10] [21]

Periodontal disease

Alcohol dependence increases the risk of periodontal disease. Alcohol consumption may affect periodontal tissues through mechanisms such as:

- Poor oral self-care
- Lack of professional oral care
- Inadequate nutrition resulting in nutritional deficiencies
- Abnormalities in cytokine production leading to apoptosis and cell death, causing increased clinical attachment loss.
- Adverse effects on the host defense from complement deficiency (i.e., a deficiency in an important part of the immune system, known as the complement system) and defective functions of neutrophils. This can lead to decreased neutrophil adherence, motility, and phagocytic activity, increasing the risk of periodontal infections.
- Toxic effect on the liver, disrupting prothrombin production, vitamin K activity, and clotting mechanism, increasing risk of hemorrhage. Exaggerated gingival inflammation, bluish-red discolouration, and bleeding with slight provocation are common in individuals with alcohol dependence. [10] [11] [22]

Alcohol consumption is associated with the physiological and psychological factors favouring necrotizing periodontal disease (NPD). Individuals with alcohol dependence are likely to be malnourished and immunocompromised, predisposing them to developing NPDs. Inadequate oral hygiene and smoking are also predisposing factors for NPD. [23]

Halitosis

Halitosis can be caused by various factors.[7] However, research has shown a significant link between alcohol consumption and oral malodour. Those who drink frequently are more likely to experience halitosis. Chronic alcohol consumption leads to the oxidation

[6] Refer to Episode 80 for additional information on oral self-care.
[7] Refer to Episode 67 for more discussion on halitosis.

of alcohol in the mouth and liver. This process creates acetaldehyde and other odorous byproducts that produce a unique breath odour. Additionally, daily drinkers have higher levels of volatile sulphur compounds in their breath, compared to those who drink less frequently.

Other proposed mechanisms for increased oral malodour related to alcohol use include:
- Short-term effect of the smell of the alcohol itself
- Increased dry mouth
- Inadequate oral self-care
- Increased periodontal disease [8] [24] [25]

Dental trauma

Dental and maxillofacial trauma has been linked with alcohol consumption, for example, from assault, falls, and road traffic accidents related to intoxication. There is also a positive association between high alcohol consumption and the lifetime risk of dental trauma. Additionally, the prevalence of dental trauma is significantly higher in those who binge drink.[8] [8] [26]

Tooth wear[9]

Often, individuals who are alcohol dependent exhibit a significantly higher degree of erosive tooth wear, which is more pronounced on the palatal surfaces of maxillary anterior teeth. Continuous drinking patterns are more likely to cause tooth wear than episodic drinking. Decreased salivary flow reduces the buffering capacity in the mouth, thereby increasing the risk of enamel erosion. Research has shown drinks with an alcohol content greater than 9% can cause wear of composite restorations. [8]

The cause of increased erosive tooth wear with alcohol consumption may be related to:
- Increased vomiting from alcohol consumption.
- Gastroesophageal reflux induced by alcohol use
- Acidic nature of many alcohol drinks and mixers (e.g., wine and cider have a pH of ~3; colas and lime juice have a pH of ~2.5.[10] [8]

Bruxism is linked to certain kinds of substance use, including alcohol, nicotine, and caffeine. Severe bruxism can lead to attrition, chipped and fractured teeth, as well as jaw pain and fatigue, and headache. [27]

Tooth staining

There is limited evidence linking alcohol and tooth staining, with most studies being *in vitro*. Red wine is the main alcohol drink linked to tooth staining. Red wine also stains composite more than tea or coffee. [8]

[8] Binge drinking is recognized as a single episode of drinking heavily enough to increase the risk of negative consequences for the individual consuming alcohol and/or others. [86]
[9] Refer to Episode 82 for a detailed discussion on tooth wear.
[10] The critical pH of enamel and dentin is 5.5 and 6.5, respectively. These values represent the pH at which saliva is no longer saturated with calcium and phosphate, and the tooth substrate can dissolve. [85]

Oral healthcare implications

Alcohol consumption can affect oral healthcare. Individuals with alcohol dependence may find it challenging to attend appointments reliably and maintain good oral health. Higher levels of alcohol consumption can lead to liver damage, which can affect blood clotting. Additionally, excessive alcohol consumption can compromise the immune system, resulting in slower healing times. It is important to note many medications prescribed in oral healthcare can interact with alcohol. Therefore, it is crucial for prescribers to inquire about alcohol consumption before prescribing medication and provide advice on avoiding it to ensure the safe use of the medication. [8] [28]

Mouth rinses[11] recommended or prescribed to clients in recovery from alcohol dependence should be nonalcohol in composition to avoid contributing to the recurrence of alcohol use. Furthermore, even small amounts of alcohol ingested by a client taking disulfiram for treatment of alcohol dependence can cause severe gastrointestinal distress and hypotension. [29]

Drug reactions with alcohol [8]

Drug	Reaction
Ibuprofen	Increased risk of gastrointestinal bleeding
Metronidazole	Disulfiram-like reaction such as flushing, nausea, vomiting and sweating*
Midazolam	Enhanced effect on the central nervous system. May increase drowsiness and sedation, and decrease motor skills
Opioids	Enhanced effect on the central nervous system. May increase drowsiness and sedation, and decrease motor skills

*Disulfiram may be prescribed to treat alcohol use disorder. It interferes with the alcohol metabolism pathway and causes an unpleasant, and sometimes severe, reaction when alcohol is consumed. [30]

Screening for alcohol use

Screening for alcohol use can be determined during a health history review. Brief counselling can be as simple as interpreting the screening result for the client so they are aware of what constitutes low-risk to high-risk drinking as per *Canada's Guidance on Alcohol and Health* (2023). [11]

Canada's Guidance on Alcohol and Health supports individuals in making informed health decisions by presenting a continuum of risk associated with drinking alcohol, allowing individuals to decide where they are comfortable on the continuum from no risk (abstinence) to high risk. [4]

Canada's guidance states:

- No more than 2 drinks on any day, less is better.
- Low risk is 1-2 standard drinks per week.
- Moderate risk is 3-6 standard drinks per week.
- High risk is 7 or more standard drinks per week.
- There is no known safe amount of alcohol when pregnant or trying to conceive. [6]

[11] Refer to Episode 103 for additional information on mouth rinses.

Standard drink [7]

Type	**Beer**	**Cooler, cider, ready-to-drink**	**Wine**	**Spirits** (whisky, vodka, gin, etc.)
Amount	341 ml (12 oz) 5% alcohol	341 ml (12 oz) 5% alcohol	142 ml (5 oz) 12% alcohol	43 ml (1.5 oz) 40% alcohol

Clients should be encouraged to consider the effects of their drinking habits and offered brief, tailored advice about the benefits of reducing their intake to their oral and general health.

Tips to reduce alcohol consumption include:
- Drinking slowly.
- Drinking lots of water.
- Having one nonalcohol drink for every drink of alcohol.
- Choosing alcohol-free or low-alcohol beverages.
- Eating before and while drinking.
- Having alcohol-free weeks or doing alcohol-free activities. [7]

Clients in the lower risk category should be informed of *Canada's Guidance on Alcohol and Health* and congratulated. Those at a moderate risk level should be informed of the guidance and given brief advice. Clients who consume alcohol at a higher risk should be informed of their risk, given brief advice, and encouraged to see their general medical practitioner or local alcohol support service for further counselling and support.

There is evidence that brief advice given in primary care can be effective in reducing alcohol consumption. A Cochrane review by Kaner et al. (2018) found moderate-quality evidence that brief interventions can reduce alcohol consumption in people with high-risk drinking habits compared to minimal or no intervention. Also, longer or more intensive counselling did not necessarily have additional benefits. Therefore, oral health practitioners do not need to spend extensive time providing advice for it to be effective. [8] [31]

A randomized controlled trial in dental practices found screening and brief intervention for clients with high-risk drinking resulted in significant reductions in both the quantity and frequency of alcohol consumed. Additionally, research has shown brief advice offered by oral health professionals was not only feasible but also welcomed by both clients and the oral health team. [8] [32] [33]

Nonalcohol beverages

Research has demonstrated delaying the introduction of alcohol to children can reduce the likelihood of binge drinking and alcohol-related issues later in life. However, there are concerns that nonalcohol beverages may encourage adolescents' earlier interest in alcohol. Nonalcohol beer, wine, and spirits, sometimes known as zero-alcohol or alcohol-free drinks, are drinks with alcohol levels below 0.5% by volume but look and taste like their alcohol counterparts.

Harrison et al. (2024) interviewed parents to understand their views of nonalcohol beverage provision to adolescents and adolescent use. The study revealed parents feel conflicted and concerned about nonalcohol beverages and adolescent consumption. The parents considered nonalcohol beverages to be 'adult beverages' that may help reduce adult drinking but were unnecessary for adolescents. Parents were concerned that adolescent nonalcohol beverage use could normalize alcohol consumption and be a precursor to alcohol initiation. Although some parents supported providing nonalcohol beverages as an acceptable form of harm reduction, parents' views reflected conflict and caution.

The authors advise a precautionary approach and recommend parents do not provide nonalcohol drinks to their adolescents. They concluded that efforts are needed to communicate the potential harms of nonalcohol beverages and to support parents when navigating purchase and provision decisions with adolescents. [34]

Cannabis

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. [35]

Although some people may perceive cannabis as a relatively safe drug, it carries multiple, well-documented risks to immediate and long-term health. Fatal and nonfatal injuries from motor vehicle accidents, cannabis use disorder, and other mental health problems are the most common cannabis-related harms negatively impacting public health. Estimates suggest between 10-30% of cannabis users may develop a cannabis use disorder. Additionally, cannabis use can also adversely affect oral health. [36]

Oral health effects[12]

Cannabis use, especially cannabis smoking, has been associated with poor oral health. Cannabis is usually smoked longer and has a higher combustion temperature compared to tobacco, which can impact oral health. However, identifying the oral effects of cannabis alone is complicated by the concurrent use of cannabis with tobacco, alcohol, and other drugs; inadequate oral self-care; and infrequent oral healthcare visits associated with cannabis use. [37] [38]

Cannabis use is also associated with:

- Xerostomia, which can contribute to several oral health conditions (e.g., caries, periodontal disease).
- Increased cariogenic food consumption as THC is an appetite stimulant.
- Increased dental caries, especially on cleansable smooth surfaces.
- Higher DMFT (decayed, missing, and filled teeth) scores.
- Periodontal disease (e.g., due to xerostomic effect, inadequate home care, heat from cannabis combustion). Periodontal disease appears to follow a dose-dependent relation.
- Alveolar bone loss.
- Erythematous gingivitis, gingival hyperplasia.

[12] Refer to Episode 58 for more information on cannabis and oral health.

- Leukoedema (bilateral, diffuse, translucent greyish thickening, particularly of the buccal mucosa). However, it is not clear whether associated irritants such as orally inhaled smoke rather than cannabis itself may be contributing causes.
- Leukoplakia, erythroplakia, keratosis, stomatitis, uvulitis.
- Candidiasis. The immunosuppressive effect of THC via CB2 receptors located on immune cells may potentially allow opportunistic infections, such as candida, to proliferate. The combination of poor denture hygiene, inadequate nutritional intake, and cannabis use can increase candida growth. Certain types of candida can use constituents of cannabis (e.g., hydrocarbons) to produce energy for reproduction.
- Nicotinic-like tooth staining. [37] [39]

Oral cancer

Similar to tobacco, cannabis contains carcinogens, and long-term smoking of cannabis is associated with similar pathologies as tobacco use. Cannabis may be considered a potential risk factor for oral cancer. However, its role is unclear since several studies have shown an association while others have not. Additionally, individuals who smoke cannabis may also smoke tobacco, making it hard to determine the risk of oral cancer from cannabis smoking alone. [37] [39]

Human papilloma virus[13]

Research has shown daily cannabis use is associated with human papilloma virus (HPV) oral infection and with the development of HPV-positive head and neck squamous cell carcinoma (HNSCC). Increased cannabis use, together with high rates of early exposure to oral sex and lagging HPV vaccination rates, may potentially contribute to the increase in HPV-positive HNSCC. [40]

Oral healthcare considerations

When reviewing medical histories, it is important to determine client cannabis use, similar to inquiring about tobacco and alcohol use, including amount, frequency, type, administration route, last exposure, purpose (i.e., medical and/or recreational), and if for medical purposes, reason for medical use. It may be helpful to understand whether the use is medicinal, as this may suggest relevant comorbidities. Verifying cannabis use in a judgement-free fashion provides an opportunity to discuss other health consequences and strategies to protect oral health. [41] [38]

Several strategies can be incorporated to reduce the impact on oral health, such as:
- Educating clients on the risks and effects of cannabis use.
- Offering smoking or vaping cessation services.
- Providing education on xerostomia relief (e.g., drinking water throughout the day, limiting alcohol beverages, using sugarless gum and mints to stimulate saliva flow).[14]
- Improving homecare to decrease periodontal disease and caries risk.
- Increasing recare appointments based on risk level.
- Applying in-office topical fluoride (e.g., fluoride varnish) to reduce caries risk.

[13] Refer to Episode 7 and 53 for additional information on HPV, oral cancer, and HPV vaccination.
[14] Refer to Episode 55 for more xerostomia management strategies.

- Performing regular oral cancer screening to assess for tissue changes and referring as required (e.g., refer if a lesion does not heal within two weeks).
- Educating clients on how to perform monthly oral cancer self-examinations and reduce risk factors (e.g., smoking cessation, limiting alcohol use, etc.).
- Recommending low sugar foods and beverages, especially snacking foods.
- Referring clients who use cannabis or are contemplating cannabis use to Canada's *Lower-Risk Cannabis Use Guidelines.* [36] [38]

Canada's Lower-Risk Cannabis Use Guidelines

The main objective of Canada's *Lower-Risk Cannabis Use Guidelines* (LRCUG) is to provide science-based recommendations to enable people to reduce their health risks associated with cannabis use, similar to the intent of guidelines for low-risk drinking. The LRCUG lists ten recommendations targeted at people who use cannabis or are considering using cannabis. Note these recommendations are mainly for nonmedical cannabis use. The ten recommendations include:

- The most effective way to avoid the risks of cannabis use is to abstain from use.
- Delaying cannabis use, at least until after adolescence, will reduce the likelihood or severity of adverse health outcomes.
- Use products with low THC content and high CBD: THC ratios.
- Synthetic cannabis products, such as K2 and Spice, should be avoided.
- Avoid smoking cannabis and choose safer inhalation methods, including vaporizers, e-cigarette devices, and edibles.
- If cannabis is smoked, avoid harmful practices such as inhaling deeply or breath-holding.
- Avoid frequent or intensive use, and limit consumption to occasional use, such as only one day a week or on weekends, or less.
- Do not drive or operate other machinery for at least six hours after using cannabis. Combining alcohol and cannabis increases impairment and should be avoided.
- People with a personal or family history of psychosis or substance use disorders, as well as pregnant people, should not use cannabis at all.
- Avoid combining any of the risk factors related to cannabis use. Multiple high-risk behaviours will amplify the likelihood or severity of adverse outcomes. [36]

Oral healthcare implications

Recognizing signs and symptoms of cannabis intoxication is essential because it may preclude clients from giving valid informed consent and safe delivery of oral health services. Services should be postponed until safety can be guaranteed, and the capacity for informed consent is restored. [42]

Signs and symptoms of cannabis intoxication may include:

- Euphoria
- Hyperactivity
- Tachycardia
- Paranoia
- Delusions
- Hallucinations [38]

Verification of client cannabis use before an oral health appointment is vital for various reasons, including:

- Necessity to modify the treatment plan or reschedule the visit to avoid any substance-associated behavioural problems, drug interactions, or other safety issues if a client has self-medicated with cannabis before an appointment.
- Increased anxiety, paranoia, and hyperactivity from cannabis use may heighten the stress experience of an oral health visit.
- Increased heart rate and other cardiorespiratory effects of cannabis make the use of epinephrine in local anesthetics potentially life-threatening.
- Orthostatic hypotension from large doses of cannabis increases the risk of fainting and falling upon standing.
- Cannabis use can increase the drowsiness caused by some drugs, including benzodiazepines, barbiturates, narcotics, and some antidepressants.
- Greater risk of bleeding when cannabis is consumed with other drugs that increase bleeding risk (e.g., acetylsalicylic acid [ASA] and other nonsteroidal anti-inflammatory drugs [NSAIDs], antiplatelet drugs, and anticoagulants).
- Blood glucose levels may be altered by cannabis use. Thus, caution is necessary with clients who take other drugs that affect glycemia, especially diabetes medications.[15] [38] [42]

Additionally, Ripperger et al. (2023) reported cannabis users required more intravenous anesthetic agents for general anesthesia than nonusers during outpatient oral surgery procedures. [43]

Tobacco (nicotine)[16]

Tobacco use is a significant cause of preventable premature death and disease globally. It is estimated more than eight million people die each year due to tobacco-related illnesses. Tobacco use is a leading risk factor for cardiovascular and respiratory diseases, as well as over 20 different types or subtypes of cancer, including oral cancer. [44]

Nicotine is the major psychoactive ingredient in tobacco products. It is naturally present in tobacco plants, so any product containing tobacco also contains nicotine. Nicotine can have both a stimulant and a tranquilizing effect. It can increase energy and concentration and decrease appetite. It also increases heart rate, blood pressure, and the amount of oxygen the heart uses. Nicotine activates the pleasure center in the brain and creates a temporary feeling of well-being and relaxation. As nicotine enters the body, it causes a surge of endorphins. Nicotine also increases dopamine, a neurotransmitter part of the brain's reward system, and creates feelings of pleasure and reward. The release of dopamine reinforces tobacco use behaviour.

Nicotine is also a highly addictive drug. The body quickly absorbs nicotine into the bloodstream and reaches the brain rapidly (e.g., within 10 seconds after smoking). Nicotine levels peak quickly after entering the body, so the feelings of reward are short-

[15] Refer to Episodes 91, 93, and 94 for additional information on diabetes, including diabetes medications.
[16] Refer to Episode 101 for discussion on tobacco use and cessation.

lived, creating a cycle of continued use to keep feeling the pleasurable sensations. Menthol added to tobacco products increases the addictive effects of nicotine, and some e-cigarettes and newer tobacco products deliver even more nicotine than traditional cigarettes.

Nicotine is also a highly toxic poison that causes vomiting and nausea, headaches, stomach pains, and, in severe cases, convulsions, paralysis, and death when ingested in large doses. [45] [46] [47] [48] [49] [50]

All forms of tobacco are harmful, and there is no safe level of exposure to tobacco. Types of tobacco products include:

- Cigarettes and cigars
- Waterpipe (hookah) tobacco
- Pipe and roll-your-own tobacco
- Bidis ad kreteks
- Smokeless tobacco (e.g., chewing tobacco, snuff, dissolvable tobacco, betel quid with tobacco)
- Heated tobacco products [51]

Products that do not contain tobacco but contain nicotine include:

- E-cigarettes (note some may not contain nicotine)[17]
- Nicotine pouches

<u>Oral health effects</u>

Tobacco smoking can lead to a variety of adverse oral effects, including gingival recession, impaired healing following periodontal therapy, oral cancer, oral leukoplakia, nicotine stomatitis[18] (smokers palate), smoker's melanosis,[19] periodontal disease, tooth staining, halitosis, tooth loss, and implant failure.

Smokeless tobacco use is associated with increased risks of oral cancer, oral leukoplakia, gingival keratosis, tooth staining, halitosis; dental erosion, attrition, and abrasion; gingival recession, alveolar bone damage, periodontal disease, coronal or root surface dental caries due to sugars added to the product, and tooth loss. Sugar and irritants in smokeless tobacco products can cause dental caries, dental abrasion, and attrition. [52] [53] [54]

<u>Tobacco cessation and oral cancer</u>

Quitting tobacco is one of the best ways to avoid developing oral cancer and can also reduce the size of precancerous oral lesions. The risk of oral cancer starts to decrease

[17] Refer to Episode 19 for additional information on e-cigarettes, vaping, and oral health implications.
[18] Nicotine stomatitis is inflammation of the minor salivary glands present in the hard palate from chronic smoking. It is usually symptomless and presents as multiple red discrete papules in the hard palate surrounded by grayish white areas. Smoking cessation usually resolves the condition within 2-4 weeks.
[19] Smoker's melanosis is increased tissue pigmentation, or darkening, due to irritation from tobacco smoke. Typically, this pigmentation occurs on the gingiva of anterior teeth. The amount of pigmentation increases with greater tobacco use. Tissues usually return to normal colour in 6-36 months after quitting smoking.

within the first five years of quitting. If someone has quit smoking for 20 or more years, their risk of oral cancer is close to that of someone who has never smoked. Smoking cessation can still benefit someone diagnosed with oral cancer by improving their recovery and decreasing their risk of developing a new oral cancer. Continuing to smoke after a cancer diagnosis can lower the chances of survival and increase the risk for other cancers caused by smoking (e.g., lung cancer). [55] [56]

Oral health implications

- Oral health professionals play a vital role in identifying and addressing oral pathologies related to tobacco use and providing necessary smoking cessation advice. Brief educational interventions, either alone or in combination with pharmacotherapy, offer valuable approaches to support smoking cessation.
- Oral health professionals can help tobacco users quit by identifying clients who use any form of tobacco, documenting tobacco use history, advising cessation, offering brief advice, and providing information about cessation treatment, including tobacco cessation resources, referral to support programs and medical providers for pharmacotherapy.
- It is increasingly important for oral health professionals to be aware and knowledgeable of the various tobacco and tobacco-free products and their possible implications on oral and general health to be able to advise clients accordingly. [57] [52]

Inhalants

Inhalants are a category of chemical vapours or gases that induce a psychoactive effect and can produce intoxication when breathed in. Many inhalants are widely available as commercial products, such as glue, nail polish remover, lighter fluid, spray paints, hair sprays, whipped cream canisters, and cleaning fluids. [58]

Many young people inhale the vapours from these sources in search of quick intoxication without being aware that using inhalants, even once, can have serious health consequences. [59]

Preventing inhalant use is challenging because these products are in many homes and workplaces. Some manufacturers taint their products to make them less appealing to use as inhalants, but this has not prevented use. Stores may refuse to sell certain products to minors or people who are intoxicated, but there are no laws that enforce this in Ontario. [58]

Street names for inhalants include glue, gas, sniff (solvents); whippets (nitrous oxide); poppers, snappers, room odourizers, and aromas. Some are sold under “brand” names such as Rush, Bolt, Jungle Juice (nitrites). [58]

Inhalant categories

Four general categories of inhalants are aerosols, gases, volatile solvents, and nitrites, based on the forms in which they are often found in household, industrial, and medical products.

- Aerosols are sprays that contain propellants and solvents, such as spray paints, deodorant and hair sprays, cooking sprays, and fabric protector sprays. Aerosols are sometimes sprayed into a bag or balloon, and then the gas is inhaled.

- Gases include medical anesthetics and gases used in household or commercial products. Medical anesthetics include chloroform, halothane, ether, and nitrous oxide. Nitrous oxide or other anesthetic gases are contained in a gas tank. Nitrous oxide is the most used of these gases and can be found in whipped cream dispensers and products that boost octane levels in racing cars. Because nitrous oxide is pressurized and can be very cold, it is often inhaled from a balloon. Other commercial products containing gases include butane lighters, propane tanks, and refrigerants.

- Volatile solvents are liquids that vaporize at room temperature. These are the most commonly used types of inhalants. They are in many inexpensive, easily available products, including paint thinners, cleaning fluids, degreasers, gasoline, glues, correction fluids, and felt-tip markers. Solvents are either inhaled directly from the container ("sniffed"), a soaked rag held to the face ("huffed"), or a bag ("bagged").

- Nitrites often are considered a special class of inhalants. Unlike most other inhalants, which act directly on the central nervous system, nitrites primarily dilate blood vessels and relax the muscles. While other inhalants are used to alter mood, nitrites are used primarily as sexual enhancers. Nitrites include cyclohexyl nitrite, amyl nitrite, and butyl nitrite. Amyl nitrite is used in certain diagnostic procedures and was prescribed in the past to treat some individuals for heart pain. Nitrites are clear yellow liquids that are inhaled directly from the bottle or a cloth. [58] [60]

Inhalant use

Most people who use solvents and aerosols are between 10-16 years old. Many try inhalants only once or twice or use them only on occasion. Some people use inhalants heavily and may continue using them into adulthood. Chronic solvent users are usually in their twenties. Due to easy access, healthcare workers may actively use nitrous oxide. [49]

Inhalant effect

Inhaled chemicals are absorbed rapidly into the bloodstream through the lungs and quickly travel to the brain and other organs. Within seconds of inhalation, the user experiences intoxication along with other effects similar to those produced by alcohol, such as slurred speech, uncoordinated movements, euphoria, and dizziness. In addition, users may experience lightheadedness, hallucinations, and delusions.

Because intoxication lasts only a few minutes, users frequently seek to prolong intoxication by inhaling repeatedly over several hours. With successive inhalations, users can suffer loss of consciousness and even death. Heavy use of inhalants can cause drowsiness for several hours and a lingering headache. [61]

Inhaled nitrites dilate blood vessels, increase heart rate, and produce a sensation of heat and excitement that can last for several minutes. Other effects can include flushing, dizziness, and headache. [62]

Most inhalants are highly flammable; recklessness with lit cigarettes and flames while using inhalants has caused tragic accidents. [58]

The chemicals in solvents or aerosol sprays can induce irregular and rapid heartbeat and lead to fatal heart failure within minutes of a prolonged sniffing session. This syndrome, known as sudden sniffing death, can result from a single session of inhalant use by an otherwise healthy young person. Sudden sniffing death is often associated with the use of butane, propane, and chemicals in aerosols.

Inhalant use can also cause death through:
- Asphyxiation from repeated inhalations that lead to high concentrations of inhaled fumes, which displace available oxygen in the lungs.
- Suffocation when inhaling fumes from a plastic bag placed over the head.
- Convulsions or seizures from abnormal electrical discharges in the brain.
- Coma from the brain shutting down all but the most vital functions.
- Choking from aspirating vomit after inhalant use.
- Fatal injury from accidents, including motor vehicle accidents. [63]

Recognizing inhalant use

Early identification and intervention are the best ways to stop inhalant use before it causes serious health consequences. Parents, educators, and healthcare providers, including oral health practitioners, should be alert to the following signs:
- Chemical odours on breath or clothing
- Paint or other stains on the face, hands, or clothes
- Hidden empty spray paint or solvent containers and chemical-soaked rags or clothing
- Intoxicated or disoriented appearance
- Slurred speech
- Nausea or loss of appetite
- Inattentiveness, lack of coordination, irritability, and depression [64]

Long-term effects of inhalant use may include:
- Sores on the mouth and nose
- Excessive thirst
- Nose bleeds
- Bloodshot eyes
- Pale skin
- Weight loss
- Trouble concentrating, remembering, and thinking clearly
- Tiredness, depression, irritability, hostility, paranoia [58]

Opioids
Opioids are used primarily to treat pain. They can be prescribed medications or produced and obtained illegally.

Types of opioids include:
- Codeine
- Fentanyl
- Morphine
- Oxycodone
- Hydromorphone
- Heroin [65]

Opioids may be prescribed for various reasons, such as:
- Acute moderate to severe pain
- Chronic pain
- Moderate to severe diarrhea
- Moderate to severe cough [65]

Short-term side effects of using opioids may include:
- Drowsiness
- Constipation
- Impotence in males
- Nausea and vomiting
- Euphoria
- Difficulty breathing, which can lead to or worsen sleep apnea
- Headaches, dizziness and confusion, which can lead to falls and fractures [65]

Longer-term side effects of using opioids may include:
- Increased tolerance
- Substance use disorder or dependence
- Liver damage
- Infertility in females
- Worsening pain (known as opioid-induced hyperalgesia)
- Life-threatening withdrawal symptoms in babies born to people taking opioids

There are serious risks with using opioids even when prescribed to treat pain or a specific condition, including:
- Physical dependence
- Substance use disorder
- Overdose [65]

Heroin
Heroin is an opioid most frequently used for its euphoric effects. It is made from morphine and is highly addictive. Heroin can be sniffed, smoked, or injected and acts through activation of the brain's opiate receptors to stimulate pleasure feelings by releasing a high level of dopamine.

Long-term heroin use can cause:
- Difficulty controlling impulsive behaviour
- Apathy
- Unstable mood
- Depression, suicidal thoughts
- Learning and memory problems
- Substance use disorder
- Mortality from overdose, accidents, or infections

Heroin dependence is associated with adverse effects on various body systems, including the cardiovascular, respiratory, central nervous, gastrointestinal, and genitourinary systems. Sharing drug equipment can lead to skin sores and infectious diseases (e.g., HIV, hepatitis B and C). [66] [67]

Oral health effects

Oral conditions associated with heroin use include:
- Dental caries (cervical and smooth surface caries)
- Chronic periodontitis
- Necrotizing gingivitis/periodontitis
- Oral candidiasis and other oral infections including angular cheilitis
- Sialadenitis (salivary gland infection)
- Sialadenosis (sialosis)
- Tooth surface loss (attrition)
- Altered taste
- Burning mouth
- Mucosal atrophy
- Oral epithelial dysplasia and possibly oral cancer [66]

Risk factors for oral diseases
- Personal neglect
- Low general and oral health awareness
- Dental anxiety and fear
- Hindered access to oral health services (e.g., due to lack of insurance, phobia, lifestyle, poor memory)
- Hyposalivation
- Altered taste response and craving for sweets
- Inadequate diet and malnutrition
- Impaired immune response
- Altered oral microbiome [66]

Opioid overdose

Anyone using prescribed or unregulated opioids can have an overdose. However, several factors can increase the risk of overdose, including:
- Taking prescription opioids more often or at higher doses than recommended

- Taking opioids with alcohol or sedatives (e.g., sleeping pills, muscle relaxants, benzodiazepines)
- Injecting drugs
- Switching to a stronger drug
- Taking higher doses
- Using drugs of unknown purity or strength
- Other health conditions (e.g., liver or kidney disease, respiratory conditions) [68]

Signs of opioid overdose

Signs and symptoms of an overdose include:

- Difficulty walking, talking, or staying awake
- Cyanosis (blue or grey lips or nails)
- Constricted pupils
- Cold and clammy skin
- Dizziness and confusion
- Extreme drowsiness
- Choking, gurgling, or snoring sounds
- Slow, weak, or no breathing
- Inability to wake up [68]

Overdose treatment

Naloxone is a fast-acting drug used to temporarily reverse the effects of opioid overdoses. Naloxone can restore breathing within 2 to 5 minutes. Naloxone is an opioid antagonist (i.e., it attaches to opioid receptors, and reverses and blocks the effects of opioids). Naloxone can quickly restore normal breathing to a person if their breathing has slowed or stopped because of an opioid overdose. Naloxone has no effect on someone who does not have opioids in their system, and it is not a treatment for opioid use disorder. Examples of opioids include heroin, fentanyl, oxycodone (OxyContin®), hydrocodone (Vicodin®), hydromorphone, codeine, and morphine.

Naloxone wears off in 20 to 90 minutes. Thus, naloxone may need to be used again, depending on the amount or type of opioid taken or how the opioids were taken (e.g., oral, injection). It is also vital for the person to receive further medical attention after naloxone administration. [69] [70]

Naloxone is safe for all ages and does not create dependence. In Canada, two types of take-home kits are available:

- Naloxone nasal spray is sprayed directly into the nose, where it is absorbed. It starts to take effect in 2 to 3 minutes.
- Naloxone injectable is injected into any muscle in the body, such as the arm or thigh. It starts to take effect in 2 to 3 minutes. [69]

Take-home kits are available at most pharmacies or local health authorities; no prescription is needed.[20] Kits expire and should be replaced after 18 to 24 months [71]

[20] Free take-home naloxone kits: https://www.ontario.ca/page/where-get-free-naloxone-kit

Naloxone in oral healthcare[21]
The Royal College of Dental Surgeons of Ontario (RCDSO) states:

- Dental offices performing sedation should have naloxone and ensure all staff are trained to use it.
- Dental offices that administer opioids while performing deep sedation or general anesthesia must have parenteral naloxone.
- All other dental facilities performing sedation may carry inhalational naloxone. [72]

Opioid use disorder treatment
Opioid use disorder treatment may include:

- Counselling and support
- Detoxification (managing withdrawal)
- Opioid agonist therapy [65]

Opioid agonist therapy involves taking a prescribed opioid medication such as methadone and buprenorphine. Opioid agonist therapy reduces cravings for opioids and prevents severe withdrawal symptoms. During opioid agonist therapy, long-acting opioid medications are administered under the supervision of a healthcare provider. These drugs act more slowly in the body for a longer period to help:

- Reduce or stop opioid use
- Limit opioid-related harms (including death from overdose)
- Improve mood and functioning
- Reduce hospitalizations and emergency department visits [73]

Opioid agonist therapy options
There are various options available, including methadone, buprenorphine, slow-release oral morphine, and injectable opioid agonist therapy.

Methadone
Methadone is a liquid that is taken daily, often mixed with a sugared fruit-flavoured drink. A healthcare provider supervises the daily doses in a medical setting like a treatment centre, hospital, doctor's office, or pharmacy. The person might transition to take-home doses once on a stable dose for long enough. Some people choose to stay on methadone for years, as it is an effective treatment option. In some cases, it may be possible to eventually stop using methadone. The dose should be lowered very slowly over time to ease withdrawal.

Buprenorphine
Buprenorphine comes in various forms, such as daily sublingual tablets or film and monthly injections.

Daily sublingual tablet or film

- Suboxone® and its generic forms are a combination of buprenorphine and naloxone. The tablet is placed sublingually (film can also be placed on the inside of either

[21] CDHO webpage 'Should I have a naloxone kit in my practice?' provides additional information on naloxone. https://cdho.org/cdho-resources/naloxonekit/

cheek for buccal administration) until completely dissolved, and individuals should not swallow or consume food or drink until the tablet or film is completely dissolved.
- Most people can transition to take-home doses once they have a stable dose with no problems with the medication. It can take a few days to find the correct dosage. Take-home doses allow greater flexibility and independence.

Monthly injection
- Sublocade® (Buprenorphine Extended-Release) is injected by a healthcare provider at a hospital, clinic, or other medical setting about every four weeks.

The duration of buprenorphine therapy can vary. Some individuals may choose to remain on this medication for several years, as it is an effective treatment option. Generally, people are most successful in discontinuing the medication once achieving a period of stability. After this period, their dose is gradually decreased over time. [73]

Slow-release oral morphine

Slow-release oral morphine (Kadian®) is a daily capsule usually taken at a pharmacy under the supervision of pharmacy staff. It is a therapy option if the person has not benefited from buprenorphine or methadone or has had side effects from those options. [73]

Injectable opioid agonist therapy

Injectable opioid agonist therapy (iOAT) medication options include:
- Diamorphine / Diacetylmorphine (Diaphin®- pharmaceutical heroin, Heroin-Assisted Treatment or "HAT")
- Hydromorphone (Dilaudid®)

Injectable opioid agonist therapy is an option if the person has not benefited from buprenorphine, methadone, or slow-release oral morphine or had side effects from those options. Once the person is stable, they may be switched to methadone, buprenorphine, or slow-release oral morphine to reduce dose frequency and the risk from ongoing injections. [73]

Oral effects of medications used to treat opioid use disorder [74]

Medication	Oral effects
Methadone	• Administered orally and usually has a high sugar content. Sugar-free option may be available • Concomitant use of methadone with antidepressants can lead to xerostomia • Can increase sugar cravings similar to other opioids • Bruxism
Buprenorphine	• Administered sublingually or buccally. Increased risk of caries, enamel erosion, etc. due to its low pH and xerostomic effect

Sublingual buprenorphine

Sublingual buprenorphine use has been associated with a significant decline in oral health following initiation of treatment. [75]

In January 2022, the US Food and Drug Administration (FDA) alerted health professionals of the potential risk of dental adverse events with long-term use of sublingual or buccal formulations of buprenorphine (usually combined with naloxone). Adverse events reported included dental caries (including rampant caries), dental abscesses, dental erosion, loss of restorations, and tooth loss. Multiple cases were reported in individuals with no prior history of dental problems. The most common treatment for adverse events was tooth extraction. [76] [77]

Sublingual buprenorphine/naloxone is acidic, with a pH of 2.5 to 3.5 when dissolved in the mouth. Individuals hold the tablet under the tongue for 5 to 10 minutes to maximize absorption. Thus, prolonged oral exposure to the acidic drug can cause damage. [77] [78]

However, the benefits of these medicines outweigh the risks. Buprenorphine medications are an essential tool to treat opioid use disorder. When combined with counselling and other behavioural therapies, this comprehensive approach is often one of the most effective ways of treating opioid use disorder. It can help sustain recovery and prevent or reduce opioid overdose.

Strategies to help maintain and improve oral health during transmucosal buprenorphine therapy include:

- Counselling clients to gently rinse their mouth with water and then swallow after the medication has completely dissolved.
- Waiting at least one hour before brushing their teeth after medication use to allow the mouth to gradually return to oral homeostasis and avoid any mechanical damage that may occur due to brushing.
- Visiting an oral health provider as soon as possible after starting transmucosal buprenorphine therapy for a baseline oral health evaluation, dental caries risk assessment and preventive plan, and for regular oral health recare appointments while taking the medication to address any additional oral health needs to improve overall health. [76]

Stimulants

Stimulants, including methamphetamine, cocaine, and other amphetamine-type substances, are among the most common psychoactive substances used globally.

Acute stimulant intoxication or overdose can present with symptoms such as:

- Mania
- Psychosis
- Paranoia
- Severe delirium
- Elevated blood pressure
- Chest pain
- Agitation
- Sweating
- Skin-picking

- Abnormal movement (e.g., ataxia, choreoathetosis)[22]

These symptoms are primarily managed with supportive therapy since there are no medications currently approved for treating stimulant intoxication or overdose. Supportive care may include providing hydration and food or a safe place to rest. [79]

Treatment

There are currently no medications approved for treating stimulant withdrawal. Treatment primarily consists of supportive care, such as providing adequate nutrition, supporting sleep hygiene, mental health assessment, and identifying the individual's goals and supports to achieve them. [79]

Currently, psychosocial treatment is the standard of care for stimulant use disorder because the evidence on pharmacotherapy for stimulant use disorder treatment is limited and inconclusive. In particular, contingency management, community reinforcement, CBT, the Matrix Model, and self-help groups based on the 12-step program are recommended. However, guidance is lacking on which interventions should be first considered. Research has shown that even reducing the frequency of stimulant use appears to help in the recovery from stimulant use disorder. [79] [80]

Methamphetamine

Methamphetamine is a synthetic stimulant made from chemical ingredients. It also produces compulsive effects and dependence. It comes in powder, crystals, or tablets and can be smoked, snorted, injected, or swallowed. Any methamphetamine used in Canada is produced illegally. Pharmaceutical methamphetamine is **not** authorized in Canada. [81]

Oral health effects

Oral effects of methamphetamine use may include dry mouth, caries progression, periodontal disease, tooth loss, permanent bad taste in the mouth, clenching, bruxism, increased cravings for sweets, osteonecrosis of the mandible, and reduced oral self-care. [74] [81]

Dry mouth leads to the loss of saliva's protective function, resulting in high caries and periodontal disease rates. This condition, often referred to as 'meth mouth,' is common in individuals who inject the drug rather than using it intranasally or through smoking. [74]

Cocaine (crack)

Cocaine and crack are highly addictive stimulants. Cocaine is made from the leaves of the South American coca bush. The leaves are processed into a fine, white powder,

[22] Ataxia describes poor muscle control that causes clumsy movements. It can affect walking, balance, hand coordination, speech, swallowing, and eye movements. Choreoathetosis is a combination of chorea and athetosis. Chorea causes fast, unpredictable muscle contractions, such as fidgeting or arm and leg movements that mainly affect the face, limbs, or trunk of the body. Athetosis causes slow writhing movements, typically of the hands and feet.

which can be sniffed into the nose (snorted) or dissolved in water and injected into a vein. Crack is the form of cocaine that can be smoked. [82]

Oral health effects

Oral effects of cocaine and crack use may include gingival or mucosal erosion, chemical burns (from cocaine application on the gingiva), recession and bony dehiscence, periodontitis, bruxism, TMJ pain, dry mouth, palatal perforation, cervical abrasions, and enamel erosion. Cervical abrasions are from aggressive brushing activity. Enamel erosion occurs from reduced pH when cocaine is dissolved in saliva. [83]

Oral health barriers

Maintaining good oral health is often challenging among people with substance use disorders. Certain drugs can alter cognitive function, alter routine behaviours, and increase the likelihood of neglecting self-care. Some drugs are also associated with increased dietary sugar consumption, contributing to dental caries. Lifestyle factors (e.g., consistent substance use to curb withdrawal symptoms) can make it difficult to prioritize oral self-care practices like toothbrushing. Furthermore, many individuals who frequently use substances may have co-occurring mental health disorders (e.g., clinical depression, panic disorder, generalized anxiety disorder) that can make it even more difficult to engage in oral self-care. [28]

People who receive treatment to manage opioid dependence and withdrawal may be at a greater risk of poor oral health. Methadone therapy can induce dry mouth, immunosuppression, and increased sugar cravings. Methadone is also prescribed for daily use and is administered in a high sugar, concentrated syrup solution. Using sugar-free opioid agonist preparations is recommended to reduce the frequency of sugar consumption. Thus, methadone use combined with other risk factors that are common among people with substance dependence can exacerbate oral health problems. [28]

Oral healthcare barriers

A potential barrier to oral healthcare is the expectation or experience of stigmatization by health professionals. Many health professionals are often reluctant to provide care to people with substance use disorders, especially when they do not regularly work with this population. Some people with substance use disorders and mental health conditions may fear dentists, be unable to prioritize oral health appointments due to lifestyle and socioeconomic factors, and may opt to self-medicate for dental pain instead of accessing dental treatment. These factors can contribute to delayed care seeking, higher rates of untreated dental caries and other oral diseases, and potentially increase emergency department visits for dental reasons among people with substance use disorders. [28] [84]

Take home messages

- Providing care to clients with substance use disorders is becoming increasingly common in the daily clinical practice of oral health practitioners.
- Recognizing the signs and symptoms of substance use and understanding the potential effects of substance use on oral and overall health is essential.

- Substance use can cause oral disease and influence treatment. Therefore, it is vital that clinicians review client history for all types of substance use and risk factors, including the route of administration, duration of use, and the amount consumed, and are aware of how to advise on substance use reduction.
- Oral cancer screening must be an integral part of a clinician's routine.
- It is important to obtain substance use history from all clients and use this to guide appropriate preventative advice, which may include brief counselling, preventive advice for oral disease, and referral to appropriate health providers to provide holistic care.
- Managing oral health complications caused by substance use disorder can be challenging. Oral health practitioners need to collaborate with the client's medical team to ensure safe and effective delivery of oral care. This collaboration is essential to ensure the health and well-being of the client.

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Cannabis, ODHA factsheet
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Methamphetamine "Meth" Mouth, ODHA factsheet
https://odha.on.ca/wp-content/uploads/2016/08/Meth-Mouth.14.1-copyright.pdf

Methadone, ODHA factsheet
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Naloxone: Save a Life (fact sheet)
https://www.canada.ca/en/health-canada/services/publications/healthy-living/naloxone-save-a-life-fact-sheet.html

Opioid Overdoses: What To Do (fact sheet)
https://www.canada.ca/en/health-canada/services/publications/healthy-living/opioid-overdoses-what-to-do-fact-sheet.html

Recognize and temporarily reverse an opioid overdose, Ministry of Health website includes information on free take home naloxone kits.
https://www.ontario.ca/page/get-naloxone-kits-free

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