

Teen *issues* **part two**

Trends in alcohol and substance use

The good news? Teenagers are drinking, smoking, and taking drugs less than they used to. The bad news? The latest fads are easier to conceal and readily available.

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This year's Monitoring the Future survey of drug use and attitudes about drugs among 8th, 10th, and 12th graders in hundreds of US schools reported that substance use is at the lowest levels in two decades. However, the survey also found that teens perceive less risk of harm from substance use and don't disapprove of people who use substances.

Alcohol and substance use is a concern for teenagers because the adolescent brain is still in the developmental stage. In this article, we provide an overview of substances that are widely used by teenagers, including alcohol, inhalants, tobacco, over-the-counter (OTC) medications, prescription drugs, caffeine, and synthetic cannabinoids.

Alcohol

Alcohol is the most widely used substance among America's youth, more than marijuana or tobacco. Drinking alcohol poses

enormous health and safety risks for young people. According to the National Institute on Alcohol Abuse and Alcoholism, about one-third of teenagers have had at least one drink by age 13. Individuals ages 12 to 20 drink 11% of all alcohol consumed. Although young people drink less often than adults, they drink more when they do drink, consuming more than 90% of their alcohol by binge drinking—defined as five or more drinks on one occasion within a short amount of time.

A recent, more alarming trend is that teens are "smoking" or "vaping" alcohol. When alcohol is inhaled as a vapor, feelings of euphoria and sedation are reached more quickly with increased intensity. The risk of alcohol poisoning and overdose is much greater because inhaling alcohol vapor circumvents the stomach and liver, so the body can't expel it. And vaping alcohol leaves no smell of alcohol on the

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breath. All that's needed to vape alcohol is a plastic water or soda bottle with a cap and a small amount of alcohol.

Another trend is mixing alcohol with caffeine. One of the popular name-brand beers that combines high alcohol content and caffeine has been blamed for several deaths of teens and college-age students, leading to it being banned in several states. Some of these alcohol-caffeine combination drinks have been remarketed with caffeine taken out of the ingredients, but the same above-average alcohol content (approximately 14% compared with the average alcohol content for beer of 5%).

Inhalants

During a 15-year period, teens in the US abused more than 3,400 different aerosol products by inhalation, or "huffing," including air fresheners, butane, propane, computer keyboard aerosol dusters, gasoline, paint, and propellants (for example, aerosol whipped cream dispensers). Air fresheners, butane, and propane had the highest fatality rate. The most common age of inhalant use is 14. One lure of inhalants is that the results can be felt almost immediately without having to wait for the high. Initially, most inhalants produce a pleasurable effect and slow down brain activity. Within minutes, users feel intoxicated, comparable to the effect of alcohol, including slurred speech and uncoordinated movements, loss of sensation, decreased inhibition, feeling drowsy, and unconsciousness.

Inhalants can cause nosebleeds, impaired coordination, and, in some cases, death—known as "sudden sniffing death." The high from huffing only lasts for a few minutes, causing the person to keep using the substance, which may lead to unconsciousness. Signs that a teen may be huffing include a rash around the nose or mouth, a decline in academic performance, weight loss, and a chemical smell on the breath.

A more recent trend is snorting cocoa powder, which can be purchased at any

Complications of heavy alcohol use

cheat

sheet

- Episode of amnesia (blackouts)
- Withdrawal seizures
- Peripheral neuropathy
- Alcoholic myopathy and cardiomyopathy
- Hepatitis
- Pancreatitis
- Cirrhosis
- Gastritis
- Leukopenia
- Thrombocytopenia

grocery store and is thought to produce a euphoric feeling. In 2017, a snortable chocolate powder mixed with ingredients commonly found in energy drinks was introduced by a major company in the US. The effects are feelings of an energy rush and an endorphin boost of euphoria that lasts about 30 minutes. The concern is two-fold. Physically, the nasal cavity can become inflamed and other ingredients used in the powder mix can potentially be harmful; for example, taurine and guarana have been known to cause increased BP and heart palpitations. Psychologically, the powder mixture influences endorphins that cause the energy rush. Repeated use of substances that affect endorphin release may cause imbalances and lower the ability of endorphins to have a positive effect on the body and mind. Over time, endorphin imbalances may make a person more susceptible to pain, decrease the ability to feel pleasure, and create mood imbalances. Research isn't complete regarding this powder mixture and the product hasn't been approved by the FDA.

Tobacco

Tobacco is the leading cause of preventable illness and death in the US. About 90% of adults who smoke tobacco say they started before age 18. Tobacco can be used in many forms, including:

- cigarettes or cigars
- chew, snuff, or dip
- water pipes

- ecigarettes or vaping (recently being referred to as “juuling”).

According to the CDC, ecigarettes are the most commonly used tobacco product among American middle- and high-school students. A 2016 CDC survey found that 11.4% of high schoolers were using ecigarettes. The nicotine in tobacco is known to cause harm to the developing teenager’s brain. Besides the potentially harmful chemical compounds found in ecigarettes, a concern is that they deliver nicotine in a highly concentrated way, which increases the possibility of an overdose.

Symptoms of nicotine overdose include:

- nausea and vomiting
- abdominal pain and cramping
- restlessness or agitation
- irregular breathing (either rapid breathing or difficulty breathing)
- convulsions
- confusion
- drooling
- burning sensation in the mouth
- weakness or fainting
- headache.

Some ecigarettes don’t look like tobacco products and using them often goes unnoticed by adults. For example, one popular brand looks like a USB flash drive, which can be easily concealed and allows teens to vape tobacco in classrooms, school bathrooms, or other places in a discreet way.

OTC medications

Cough and cold medications may be misused and overused by teenagers. “DXM,” “robo-tripping,” “dexing,” and “triple C” are just a few of the slang terms used by teens when talking about getting high on cough and cold remedies that are sold in a variety of forms, including syrup, pills, and capsules. These medications can be taken alone or mixed with soda (“robo-fizzing”). The “fizz” may be referred to as “orange crush” or “purple drank” in reference to the cough syrup color. Some of the pill forms of

dextromethorphan may be referred to as “red hots” or “red devils” because the gel-like tablets are red.

Many cough and cold remedies contain ingredients that are known to be psychoactive when taken in higher than recommended dosages. Dextromethorphan, the active ingredient in cough and cold medications, accounts for the high when more than the recommended dose is taken, causing euphoria and relaxation.

When taken in very high doses, dextromethorphan can cause hallucinations, paranoia, dissociative effects and feelings of being detached from reality, panic, anxiety, and aggression due to excessive dopamine release. High doses of dextromethorphan can also affect the central nervous system, including:

- increased BP
- elevated heart rate
- poor motor control and excitability
- slurred speech
- vision changes
- sweating
- stomach cramps and vomiting
- brain damage due to hypoxia
- seizures
- heart failure.

When taken in high doses, dextromethorphan can be fatal. Repeated use may lead to addiction. Additionally, cough and cold medications that contain both dextromethorphan and acetaminophen can cause liver damage when misused. Some cough and cold products also contain a decongestant, which can cause urinary retention, gastric upset, nervousness, fast or irregular heart rate, hallucinations, and shallow breathing when ingested in high doses.

In addition to cough and cold medications, the antidiarrheal loperamide is another OTC drug that’s been identified as having the potential for abuse by teenagers. When taken in high doses, loperamide initially causes a person to experience feelings of euphoria. Other unpleasant and potentially harmful effects are also experienced, such as irregular and



did you know?

Teenagers are using tampons inserted into the vagina or rectum to quickly absorb alcohol, with no hint of alcohol on the breath.

erratic heart rate, loss of consciousness, and kidney problems. These adverse reactions intensify when mixed with other drugs, but these drug interactions haven't been thoroughly studied at this time.

Mixing several different OTC medications is often referred to by teenagers as a game called "skittling." Teenagers gather various OTC medications, obtained from their family medicine cabinet, the drug store, or grocery store. These medications are brought to a meeting with friends, taken out of the packaging, and put into a bowl to be mixed. The bowl is repeatedly passed around to each person until all the pills are distributed and ingested. This "game" has a high potential of harmful effects and may result in a fatal overdose.

Prescription drugs

Prescription drug misuse by Americans ages 14 and older has become a public health problem due to addiction, overdose, and death. Prescription drugs are misused by taking someone else's medication, taking a medication in a way other than prescribed, taking a medication to get high, or mixing a prescription medication with other drugs. The drugs mostly misused are opioids, depressants, and stimulants.

Teens may get prescription drugs from family or friends, sometimes without the person's knowledge. Reasons for prescription drug misuse among teens include getting high, stopping pain, or believing the drug will help them perform better in school. Boys and girls tend to misuse some types of prescription drugs for different reasons. For example, boys are more likely to misuse stimulants to get high, whereas girls tend to use them to stay alert or lose weight.

Caffeine

Caffeine use by teenagers is on the rise, including energy drinks, caffeine powder, and gel strips containing caffeine (one strip contains about the same amount of caffeine as a cup of coffee). Teens and pre-teens are using five to six strips at once to

Signs of dextromethorphan overdose

cheat

sheet

- Loss of coordination
- High BP
- Fast heart rate
- Decreased respiration (slow, shallow, or stops)
- Atrioventricular block
- Stroke
- Seizures

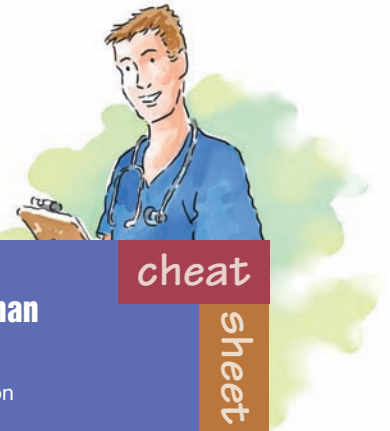
get a "buzz"; the misuse of these gel strips makes caffeine intoxication more probable. Caffeine intoxication is characterized by:

- restlessness and nervousness
- excitement and agitation
- rambling speech and exhaustibility
- flushed face and diuresis
- gastrointestinal disturbance
- muscle twitching
- tachycardia, heart palpitations, and cardiac arrhythmia
- overdose: grand mal seizures, respiratory failure, and possibly death.

The average cup of coffee has about 100 mg of caffeine, whereas some of the more popular coffee-type drinks can have a caffeine content of 50 to 400 mg or more, depending on the size, brew strength, and brand. Energy drinks can contain up to 262 mg of caffeine. The Dietary Guidelines for Americans state that a 400 mg daily intake of caffeine for adults is thought to be safe with little harm to health. The American Academy of Pediatrics takes the position that stimulant-containing energy drinks have no place in the diets of children or adolescents.

Synthetic cannabinoids

The National Institute on Drug Abuse identifies synthetic cannabinoids as drugs of concern. They have a high potential for abuse by teenagers due to availability, legality, and attractive packaging. Synthetic cannabinoids, commonly



referred to as “K2” or “spice,” are human-made, mind-altering chemicals that have the same effect as marijuana. Synthetic cannabinoids can be sprayed on dried, shredded plant material that’s typically smoked, but may also be vaped. Because these products are labeled “not fit for human consumption,” the FDA and other US drug enforcement agencies have no oversight.

Synthetic cannabinoids can cause serious mental and physical health problems, including rapid heart rate, vomiting, violent behavior and agitation, psychotic episodes, paranoia, and suicidal behavior. Symptoms of synthetic cannabinoid overdose are similar to opioid overdose: unconsciousness, respiratory depression,

cinnamon in less than a minute. After trying this, many teenagers have ended up in the hospital with throat burns and lung damage.

Nursing considerations

As nurses, we need to take into account the biology of substance misuse and addiction. Because addiction tends to run in families, adding a few questions regarding family history to a teenager’s health assessment may help identify a substance use problem.

We also need to be aware of environmental or psychosocial risk factors:

- peer influence
- family history of substance abuse
- co-occurring mental health issues

A first-line intervention for any teen who has a substance misuse history or suspected misuse includes maintaining safety, sleep promotion, and teaching good nutritional health.



the inability to speak or move, elevated heart rate, stroke, and seizures. These chemicals are highly addictive and, like any other drug with addictive qualities, a person may experience withdrawal symptoms, including headaches, anxiety, irritability, and depression.

More trends

Household spices may not be just for cooking and baking anymore. Nutmeg is being misused as evidenced by popular online videos depicting teenagers drinking or snorting it. Nutmeg contains myristicin, which causes hallucinations and euphoria when taken in large doses. Another popular online trend is the “cinnamon challenge,” in which teenagers try to swallow a teaspoon of

- history of trauma (physical, sexual or emotional) at any age
- direct or vicarious trauma from accidents or natural disasters
- exposure to or being a victim of acts of violence.

A first-line intervention for any teen who has a substance misuse history or suspected misuse includes maintaining safety, sleep promotion, and teaching good nutritional health. Cognitive behavioral interventions are also effective, along with motivational interviewing. Both of these strategies work by exploring thinking patterns and changing behavior.

Referrals can be made to:

- family therapy
- individual therapy or counseling
- school counselor



consider this

You're a nurse in a school-based health clinic. The following students were sent to your office by their teachers during the morning start of the school day.

- Michael is lethargic, sleepy, slurring his words, and has pinpoint pupils. There's no smell of alcohol on his breath. He states that he took some medicine this morning for shoulder pain he has from wrestling with his brother. He states that he took the medication from his grandmother's medicine cabinet. His BP is 90/60 mm Hg and his pulse is 60 beats/minute.
- Joyce is unable to sit still in class. She's complaining of chest tightness and says that she feels anxious. Her pupils are dilated, and she has beads of sweat above her upper lip.

There's no smell of alcohol on her breath. She denies taking anything. Her BP is 150/92 mm Hg and her pulse is 96 beats/minute.

- Marc became argumentative and agitated in class, insisting that the teacher and students were staring at him and talking about him. He's anxious, loud, and appears paranoid. There's no smell of alcohol on his breath. He denies taking anything. His BP is 160/96 mm Hg and his pulse is 104 beats/minute.

You need to call 911 and have each of these students transported to the ED for further evaluation. Michael has most likely taken an opioid, Joyce has taken some kind of stimulant, and Marc has most likely taken some kind of psychoactive drug such as a synthetic cannabinoid.

- pediatrician or primary care provider
- school health teacher or sports coach.

Resources to share with your patients and their families include the Substance Abuse and Mental Health Services Administration (SAMHSA) help line (1-800-662-HELP) and Partnership for Drug Free Kids (drugfree.org).

Prevention strategies

There are multiple ways in which we can provide needed education to teens concerning the problems related to alcohol and substance misuse. According to the SAMHSA, substance use disorders (along with mental health disorders) are likely to surpass all physical diseases as a major cause of disability worldwide by 2020. It's imperative that we address the problem of teenage misuse of alcohol and other substances before it becomes a lifelong issue.

One way is to provide education in school. As part of health classes within school-based curricula, teens can learn the science of addiction, how to develop healthy coping skills, stress management strategies, and activities to increase self-confidence.

During regularly scheduled healthcare visits, substance use education should be routinely provided to teenagers regardless of whether a problem is identified.

Journey to adulthood

Experimenting and risk-taking behaviors are part of adolescent life and play a role in development. We can help our teen patients by encouraging them to build healthy habits, such as positive coping skills, good judgment, and resilience. As healthcare professionals, we need to promote and provide open discussion and education about the negative effects of alcohol and substance use, and how these behaviors affect overall health. Preventive education can assist teenagers to make informed decisions during their journey to adulthood. ■

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