

PUBLIC HEALTH

Youth substance use and abuse: challenges and strategies for identification and intervention

Jeremy is 17 and has lived on the street for 3 years. He visits the emergency department for the fifth time in the past month reporting chest pain: "My heart's jumping out of my chest. Think I'm having a heart attack or something." He further reports symptoms of anxiety and panic attacks. He admits to using cannabis daily, and cocaine and ecstasy several times a week. The emergency physician takes a few minutes to ask Jeremy about his health concerns. Jeremy says he wants "to know that I'm not crazy." The physician wonders why Jeremy has not visited the substance abuse treatment agency he has been referred to and subsequently allays his fear that he will be "locked up" if he goes for treatment. With Jeremy's permission, the physician leaves a message for a worker at the street youth centre where Jeremy often hangs out. The following week, the worker accompanies Jeremy for an assessment at the treatment agency and to an appointment to see a psychiatrist. With support from the youth centre, Jeremy applies to stay at a group home to stabilize his living situation while he seeks treatment.

The above case illustrates the complexities involved in the assessment of and intervention for young people with substance abuse disorders, as well as the importance of understanding their perspectives on their difficulties and motivations for changing their substance use behaviour.

Drug and alcohol use is common among young people. Health Canada's Youth Smoking Survey 2004–2005¹ of Canadian youth in grades 5–9 indicated that the mean age for first use of alcohol was just over 11 years. The survey indicated that, among grade 7–9 stu-

dents (ages 12–14), 12.6 years was the mean age for first use of cannabis, and that 12.5% of these students reported ever using a substance other than alcohol, tobacco or cannabis. Substance use and abuse are associated with short- and long-term health and psychosocial risks. Therefore, it is imperative for workers in health care and other professions involved with youth (e.g., education, child protection, legal) to understand the prevalence of youth substance use and abuse, the associated morbidities and, most importantly, effective strategies for identification and intervention.

Prevalence of substance use and abuse

Table 1 lists common street drugs and their effects. A number of surveys collect information about the prevalence and trends of alcohol and drug use. The Centre for Addiction and Mental Health has conducted the Ontario Student Drug Use Survey² biannually for 3 decades, using an anonymous self-reporting method. The 2007 survey data indicated that 64.7% of youth in grades 7–12 reported lifetime use of alcohol, 29.9% cannabis, 4.3% cocaine and less than 4% other drugs, including heroin, ketamine and crystal methamphetamine.² Other provinces have carried out surveys that revealed similar prevalence and trends, with few regional variations. The Ontario Student Drug Use Survey reported that rates of drug use (with the exception of inhalant use) increased with age during adolescence and were similar among boys and girls. Recent trends for most drugs have shown declining or steady rates of use.

The survey also revealed that 26.3% of students in grades 7–12 reported binge drinking (5 or more drinks at

one time) in the 4 weeks before the survey.² In addition, 19% of the students surveyed reported hazardous drinking based on the AUDIT (Alcohol Use Disorders Identification Test)³ (Box 1) and 15% of the students responded positively to 2 or more items on the 6-item CRAFFT scale⁴ (Box 2), which is commonly used to identify the need for further assessment or intervention. Only 1.5% of the students reported obtaining treatment services in the year before the survey.

A relatively small proportion (1%–2%) of youth reported the non-medical use (also referred to as misuse) of stimulant medication, including methylphenidate (Ritalin). However, recent data suggested that the misuse of prescription opiate medication in the year before the survey was as high as 24% among grade 9 students.²

Such surveys do not capture substance use and abuse by street youth, youth not attending school, those in correctional facilities or Native Canadian youth residing on reserves, all of whom have higher reported rates of substance use than youth in the general population.⁵ In particular, street youth have significantly higher rates of use of methamphetamine, ecstasy (methylenedioxymethamphetamine), cocaine and ketamine than youth in the general population. They are also more likely to be involved with injection drug use, which magnifies the potential for adverse health outcomes.⁶

Comparative international data are difficult to find, as there is much variation in survey methods. In general, tobacco and alcohol are the most frequently used substances by young people, with cannabis use accounting for 90% or more of the illicit drug use in North America, Australia and Europe.⁷ The United Nations Office on Drugs and Crime Global Youth Network reports that the prevalence of lifetime use of cannabis among 15- and 16-year-old students in 1999 was 4.5%–5% in Asia, 1%–35% in various regions of Europe, 40.9% in the United States,

42.8% in Australia and 42.7% in Ontario, Canada.⁷

Risk factors

A number of risk factors have been associated with substance abuse among young people (Box 3). According to a 2007 report on youth substance use in Canada, up to 50% of youth who seek substance abuse treatment have been found to have a concurrent mental health disorder, such as depression or anxiety.⁵ Many risk factors occur simultaneously, thus there are subsets of

youth for whom the likelihood of substance abuse is very high.

Research in the area of adolescent neurodevelopment suggests that adolescents' brains may be more vulnerable to the effects of substances. This research also shows that adolescents may be at risk of developing patterns of behaviour that result in substance abuse (continued use regardless of physical or psychosocial problems, or dependence) and substance dependence (physiologic dependence demonstrated by withdrawal symptoms or the development of tolerance to alcohol or drugs).⁸

Harms associated with substance use and abuse

There is an array of health-related harms associated with substance use and abuse. Many high-risk behaviours result from drug and alcohol use. These include having unplanned, unwanted and unprotected sexual activity; driving while intoxicated; being a passenger in a car while the driver is intoxicated; failing to wear a seat belt; and self-injurious behaviour such as cutting and suicide attempts. For example, 8%–10% of teens who partici-

Table 1: Street drugs and their effects

Drug	Also known as	Method(s) of ingestion	Clinical effects	Duration of effect	Acute complications
Cannabis	Grass, weed, pot, herb, dope, hash (hashish)	Smoked, oral	Distortion of senses, conjunctivitis, appetite stimulation	1-3 h	Psychotic symptoms (auditory and visual hallucinations, paranoid delusions, confusion and amnesia)
Ecstasy (methylenedioxy-methamphetamine)	E, X, XTC, Adam	Oral, snorted	Stimulant effects, euphoria, bruxism	1-6 h (dependent on dose)	Hyponatremia, hyperthermia, seizures, rhabdomyolysis May have been contaminated with other substances such as ephedrine, dextromethorphan, ketamine, caffeine, cocaine, methamphetamine
Crystal methamphetamine	Speed, crystal, ice, jib, meth	Oral, snorted, smoked, injected (intramuscular)	Stimulant effects, flushing, excitation	6-8 h if injected or taken orally 10-12 h if smoked	Chest pain, hypertension, tachyarrhythmias, hyperthermia
Cocaine	Coke, blow, snow, crack	Snorted, injected (intravenous), smoked (crack)	Stimulant effects	5-60 min if snorted 5-10 min if smoked	Chest pain, hypertension, tachyarrhythmias, intracranial bleed or stroke Concomitant use of ethyl alcohol may induce liver production of cocaethylene, which increases the risk of sudden death
Ketamine	K, kat, special K	Snorted, oral, injected (intramuscular and intravenous)	Dissociative anesthetic, euphoria (floating feeling)	Up to 1 h (dependent on dose)	Respiratory depression, dissociation
Gamma-hydroxybutyrate (GHB)	G, liquid E, liquid X	Oral, snorted	Euphoria, central nervous system depression	10 min to 4 h	Respiratory depression, coma, seizures Effects potentiated by ethyl alcohol
Heroin and other opiates (e.g., oxycontin)	Horse, smack, junk, H, speedball (injected with cocaine)	Smoked, injected (subcutaneous, intramuscular and intravenous), snorted, oral (pills)	Central nervous system depression	3-5 h	Respiratory depression, nausea and vomiting

Note: Polysubstance use may complicate symptoms and signs. Adolescents frequently combine alcohol with the drugs in this table. Information obtained from the National Institute of Drug Abuse (www.drugabuse.gov/drugpages.html) and from the Centre for Addiction and Mental Health (www.camh.net/About_Addiction_Mental_Health/Drug_and_Addiction_Information/index.html).

pated in a 2003 Council of Ministers of Education study reported that using drugs or alcohol was the reason they had sexual intercourse for the first time.⁹ Unprotected sexual activity is associated with a higher incidence of sexually transmitted infections and can lead to unintended pregnancy.

Substance use can cause acute medical complications (Table 1). Polysubstance use frequently complicates the presentation and management of these patients in emergency departments. The reported frequency of medical complications from substance use is likely underestimated, since some young people are reluctant to seek medical help because of concern about parental notification or legal involvement.

Youth with substance abuse problems are at increased risk of being involved with the legal system. They are also at risk of their education being interrupted or negatively affected.^{10,11} The complex interaction of physical, mental, legal, educational and social issues

among youth with substance abuse problems creates the potential for poor short- and long-term outcomes.

Identification and treatment

Many health care practitioners do not routinely screen adolescents for substance use and associated risk factors. A number of screening tools are available, from the general assessment tools such as the HEADSS assessment (a mnemonic that forms the basis for a psychosocial assessment)¹² and GAPS (Guidelines for Adolescent Prevention Services),¹³ to more specific tools for alcohol and substance abuse such as AUDIT³ (Box 1) and CRAFFT⁴ (Box 2), both of which have been validated for use with adolescents. A score of 2 or higher on the CRAFFT scale identifies a problem with substance use (sensitivity 76%, specificity 94% as compared with a structured psychiatric diagnostic interview).⁴

Urine drug testing is used in many adult substance abuse treatment pro-

grams. In the United States, random urine screening has been recommended for adolescents, particularly those involved in high school extracurricular activities. However, there is no evidence in the literature that random drug testing of adolescents has any therapeutic benefit.¹⁴ Further research is needed to determine whether there is any role for drug testing as a component of developmentally focused interventions for adolescents.

The evidence for effective treatment approaches for adolescents with substance abuse problems is limited and rigorous research in this area is lacking. Historically, treatments have used an abstinence-based approach (i.e., the expected outcome of treatment is no use of alcohol or drugs). Evidence from the literature demonstrates that programs for adolescents using a pure abstinence-based approach (the “just say no” approach) are ineffective in reducing substance use and abuse.¹⁵

There is growing recognition that harm-reduction strategies may be ef-

Box 1: AUDIT (Alcohol Use Disorders Identification Test) screening tool

Question	Score for answer				
	0	1	2	3	4
1. How often do you have a drink containing alcohol?	Never	Monthly or less	2-4 times a month	2-3 times a week	≥ 4 times a week
2. How many drinks containing alcohol do you have on a typical day when you are drinking?	1-2	3-4	5-6	7-9	≥ 10
3. How often do you have 6 or more drinks on one occasion?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
4. How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
5. How often during the last year have you failed to do what was normally expected of you because of drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
7. How often during the last year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
8. How often during the last year have you been unable to remember what happened the night before because of your drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
9. Have you or someone else been injured because of your drinking?	No		Yes, but not in the last year		Yes, during the last year
10. Has a relative, friend, doctor or other health care worker been concerned about your drinking or suggested you cut down?	No		Yes, but not in the last year		Yes, during the last year

A score of 8 or more on the AUDIT suggests harmful or hazardous drinking over the past year.

Box 2: CRAFFT Screening Tool

- C Have you ever ridden in a Car driven by someone (including yourself) who was “high” or had been using alcohol or drugs?
- R Do you ever use alcohol or drugs to Relax, feel better about yourself, or fit in?
- A Do you ever use alcohol or drugs while you are by yourself, Alone?
- F Do you ever Forget things you did while using alcohol or drugs?
- F Do your family members or Friends ever tell you that you should cut down on your drinking or drug use?
- T Have you ever gotten into Trouble while you were using alcohol or drugs?

Two or more “yes” answers indicate a potential substance use problem and the need for further assessment.

fective.^{16,17} Such strategies accept that adolescents may choose to use alcohol or drugs, and acknowledge that alcohol and drug abuse have potential health and psychosocial risks. Unlike abstinence-based approaches, which focus on eliminating the behaviour, harm-reduction strategies aim to reduce related risks by modifying the behaviour (which may include eliminating use). Interventions incorporating harm-reduction strategies have been successfully implemented and evaluated.¹⁷⁻¹⁹ Motivational interviewing techniques incorporate the need to address issues, such as ambivalence or resistance to treatment and change. Some studies have suggested this type of intervention leads to a reduction in harm associated with drug use and is a promising area for further study.^{15,18,19}

To date, there are no compelling data to support a role for pharmacologic agents in the treatment of substance abuse problems in adolescents, although this is an emerging area of research focus. The exception is the treatment of concurrent mood disorders (e.g., depression), for which treatment has been found to reduce substance use.²⁰

Box 3: Markers of risk for substance abuse among youth

- Street-involved (lives on the street or life is focused on the street)
- Concurrent mental health disorder
- Gay, lesbian, bisexual or transgendered
- Family history of substance abuse
- Family dysfunction

Despite our understanding about the prevalence and associated risks of adolescent substance use and abuse, there remain numerous challenges. There is still much to be discovered about effective prevention and youth-specific intervention strategies. It is important that the chosen approach be aligned with the developmental needs of the adolescent and, when appropriate, able to provide family support and treatment.²¹ In addition to reduction of substance use and abuse, health outcomes need to be examined in a broad context, including social functioning, legal involvement (or lack thereof), educational achievement, and physical and mental health.

Health care practitioners can play a key role in the identification of at-risk youth and of those who already have substance abuse problems. Practitioners should advocate on behalf of individuals to ensure that they have access to treatment services and at the community level to ensure that appropriate resources are directed toward effective interventions.

Karen Leslie MD

Division of Adolescent Medicine and Department of Paediatrics Hospital for Sick Children Toronto, Ont.

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