

OTHER SUBSTANCE USE

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Epidemiological studies have shown that substance use is common among adolescents and age of first use is decreasing; a significant proportion of them subsequently develop a stereotypic pattern of use. It is well known that some psychoactive substances have particularly detrimental effects on mental health and cognitive functions, which increases the burden for child and adolescent mental health services. This chapter focuses mainly on the use of substances other than alcohol and cannabis: amphetamines, benzodiazepines, cocaine, codeine, opiates, “club” or “recreational” drugs (GHB, MDMA, Ketamine, and mephedrone), hallucinogens, and inhalants. The terms “substance” and “drug” are used interchangeably.

EPIDEMIOLOGY

The prevalence of substance use in adolescents varies widely in different epidemiological studies. The [Monitoring the Future \(MTF\)](#) study is an annual large-scale survey of nationally representative samples of secondary school students in the US that has been conducted since 1975. In 2010, 16.8% of the participants had ever used an illicit substance other than marijuana, 11.8% had used in the past year, and 5.7% in the past 30 days (Johnston et al, 2011). Use of inhalants (glue, nail polish remover, gasoline, solvents, butane and propellants) is most common among younger adolescents. Among the 2010 respondents, 7.8% of 8th graders reported having used inhalants by the end of 6th grade but use tends to decline as adolescents grow older. Another important finding was that the proportion of 12th graders in 2010 who reported using prescription (psychotropic) drugs (e.g., amphetamines, sedatives, tranquillizers, and narcotics other than heroin) without medical supervision was 15%, up slightly from 14.4% in 2009.

A similar trend of decreasing use of inhalants with increasing age was also reported among Australian students; while 11% of 12-year-olds had used inhalants in the last month, only 4% of 17-year-olds had used recently (White & Smith, 2009). The survey also found that around 5% of students aged 13 and above had used tranquillizers in the last month and around 2% of students aged 15 and above had used amphetamines in the last month. Another annual survey (Fuller, 2011) to monitor smoking, drinking and drug use among secondary school pupils age 11 to 15 in England found that 18% of students had ever used drugs, 12% had consumed a drug in the last year and 7% in the last month; while 3.8% had sniffed inhalants in the last year, less than 2% had used other drugs. A survey conducted in three vocational schools (age 15-21) in Thailand in 1999 showed that 29% of students reported ever having used methamphetamine. The prevalence of methamphetamine-positive urine test was 10% while opiate-positive urine test was low (0.2%) (Griensven et al, 2001).

In Hong Kong, a survey of upper primary (aged 9-11) and secondary school (12-18) students has been conducted every four years. The 2008/09 survey (Narcotics Division of Security Bureau of Hong Kong, 2011) showed that the proportion of lifetime and 30-day drug-taking among secondary students was 4.3% and 1.5% respectively; the proportion among upper primary school students was estimated to be 1.6% and 0.5% respectively. Among drug-taking secondary school students, 15.6% first used drugs at the age of 10 or below. In contrast to their American or European counterparts, more secondary school students in



Click on the pictures to view several teenagers talking about their progression from experimentation of cannabis to abusing multiple substances to addiction (4:10 and 5:13)



Hong Kong used Ketamine (49.4%) than cannabis (35.6%) and upper primary school students preferred cough medicines (37.5%) and paint thinners (30.7%).

NATURAL HISTORY OF SUBSTANCE ABUSE

A 19-year follow-up of a representative population cohort provides some insight about the natural history of drug use from adolescence to adulthood (Chen & Kandel, 1995). The major period of risk for initiation into the use of cigarettes, alcohol, and marijuana is mostly over by age 20. Most of the other drug use is both initiated and stopped before the late 20s. Both the prevalence of high frequency use and the quantities consumed during periods of heavy use of most of the substances (except cigarette smoking) decline in adulthood. The prevalence of prescribed psychotropics use does not show much change over time and usage rates are consistently higher for women than for men. For all drugs in general, however, initiation rates are higher for men while cessation rates are higher for women.

FACTORS INFLUENCING SUBSTANCE USE

Individual factors

Prenatal exposure to substances

- Evidence reveals an elevation of risk for alcohol, cannabis, and cocaine use during adolescence or early adulthood in people prenatally exposed to these substances (Baer et al, 2003; Day 2006; Delaney-Black et al, 2011)
- Risks are not only mediated through a propensity for conduct disorder or other developmental problems but also probably directly related to the influence on intrauterine neural development.

Mark

Mark was a skinny teenager brought in by his school social worker for his irritable mood and aggressive behaviors in the last year. Mark appeared indifferent; he attended only as a favor to the social worker who had been caring for him, even though he did not attend school often.

Mark had a rough childhood. His mother was a teenager when Mark and his elder brother were born. Mark's father left the family shortly after. The two boys stayed with their grandmother until she was killed in a traffic accident seven years later. Childcare arrangements then became disorganized. As an active, curious and impulsive boy, Mark had needed extra attention since he was a toddler. His mother frequently resorted to spanking despite being aware that it did not work with him. Mark was sad after the death of his grandmother; he felt he had no one to talk to when his elder brother became increasingly volatile. In the last few years, he witnessed his older brother snorting ketamine a few times. At home, Mark particularly disliked the men who stayed over with his mother. He was annoyed by the noises they made late at night. Mark was not happy at school either; lessons were boring and sitting in the classroom was a torture, homework was a grueling task every day. He was the class clown; otherwise recesses and physical education were the only fun time for him. Mark often got into trouble with teachers; he felt they unfairly

picked on him for trivial matters. In general, teachers commented that he was a clever but naughty, chatty and underachieving student. He was at the bottom in all school examinations except for the first year of elementary school. In fourth grade, he was considered to suffer from dyslexia. However, neither the special educational arrangements set up nor repeating a grade helped him to improve. Regarded by most as a failing student, Mark was not liked by his classmates; nevertheless, he had a few friends outside school.

During the final year of elementary school, Mark became attached to several older teenagers in his neighborhood. He skipped school to hang out with them, staying out late smoking and drinking; this became worse once he started secondary school. Confrontations and scrutiny from teachers resulted in defiance and pushed Mark further away from school. Mark was introduced to snorting ketamine two years ago. He did not like using ketamine but found it hard to refuse friends' offers. He also tried other illicit drugs; "ice" was Mark's favorite – it made him feeling super alert and focused. He noticed he needed larger amounts to get "high" and often needed sleeping pills to tide him over the insomnia and the vivid unpleasant dreams. Lately, his girlfriend complained about him being oversensitive and irritable.

Genetics

- Although most studies focus on alcohol, evidence from family, twin and adoption studies demonstrate the important role of genetics on substance use disorder (Rhee et al, 2003)
- Recent studies shed light on the role of gene polymorphism on individual difference in the response to substance use; a low repeat MAOA allele may exacerbate the deleterious effects of cocaine in the brain (Alia-Klein et al, 2011)

Developmental

- Adolescence is a period of experimentation and risk taking.
- Adolescents feel the need to identify with peers to avoid being rejected by the group.
- Stress from the change in roles and expectations at school or at home
- Using drugs to “escape” and relieve anxiety and unhappiness.

Family factors

- Ineffective, coercive or hostile parenting, abuse, neglect, and poor supervision increase the risk of both conduct disorder and substance misuse (Fergusson & Woodward, 2000; Armstrong & Costello, 2002).
- Parents who use drugs (Haggerty et al, 2007).

Social factors

- Access to substances (e.g., from peers or neighborhood)
- Availability
- Economic deprivation, homelessness
- Exclusion from school and truancy
- Delinquency.



Click on the picture to access Drugscope (UK), an independent center of expertise on drugs that seeks to inform policy development and reduce drug-related risk.

Amanda

Amanda was a quiet, sensitive and perfectionistic 15-year-old girl. Her family had moved frequently from country to country in the last decade as her father held different positions in a multinational corporation. They had moved to Hong Kong six months ago. The school counsellor suggested that Amanda should see a psychiatrist after she was found cutting herself in a school toilet.

Although this was the first time she had slashed herself, Amanda had struggled quietly with every family move. In the past, talking to her mother helped to relieve those feelings but in the last two years she did not want to bother her mother who always looked tired and preoccupied. Amanda worried about her mother who always stayed up late unless she had a few sleeping pills or a few drinks, wondering whether that was related to the frequent arguments with her father.

Leaving the country where she had stayed for three years and where she had made some good friends was very painful for Amanda. She hated listening to her father saying again and again that things would be alright. She was frustrated that he treated her as a small child. Despite

trying to study, Amanda could not help ruminating over the family moves, crying herself to sleep for weeks after the move. Waking up not refreshed, she could hardly focus in class. She seldom talked, her new classmates didn't look friendly and her old friends were often offline when she looked for them. Amanda felt nobody could understand her. School became increasingly burdensome; she did not have the energy to finish assignments let alone picking up her guitar, which she previously enjoyed. On weekends, she'd rather stay home munching. She felt unhappy and disappointed with her deteriorating school performance and feared that her predicament had no end. Amanda began stealing sleeping pills from her mother, which made her feel groggy but also relaxed. She soon realized that a few of those pills plus a few hours of privacy made her bedroom a haven, her mind free from all the troubles. She then began taking these pills even during the day. However, outside her bedroom, her situation did not improve, things actually got worse. On the morning in which she received the term results, Amanda felt absolutely defeated having failed two subjects. She locked herself in a toilet, wept and cut herself.

Table G.3.1 Characteristics of commonly misused substances

Substance	Physical form	Preferred mode of consumption	Detection time (Urine) ¹
Benzodiazepines	Tablet	Ingested or injected	3 days
Cocaine	Base (less water insoluble)	Smoked	24 – 96 hrs
	Salt (highly water soluble)	Snorted or injected	
Codeine	Liquid, capsule, tablet	Ingested	24 – 72 hrs
Morphine	Capsule, tablets, liquid	Ingested, injected	24 – 72 hrs
Dextromethorphan	Tablet, syrup	Ingested	(3-5 days)
GHB (γ -hydroxybutyrate)	Liquid or white powder	Ingested	5 – 12 hrs
Heroin	Powder	Smoked, inhaled, injected	24 – 72 hrs
Ketamine	Crystalline powder or liquid	Snorted, ingested, injected	24 – 72 hrs
MDMA (ecstasy)	Tablet	Ingested	24 – 72 hrs
Mephedrone	Powder or capsule	Snorted, ingested	24 – 96 hrs
Methamphetamine	Crystal ("ice"), powder	Inhaled from water pipe, smoked, injected	24 – 72 hrs
Volatile alkyl nitrites (popper)	Volatile liquid in ampules	Inhaled	24 – 48 hrs
Organic Solvent	Gases or clear liquid	Sniffed, inhaled	24 – 72 hrs
PCP (phencyclidine)	Powder, tablet, liquid	Ingested, smoked, injected	14 – 30 days
LSD (Lysergic acid diethylamide)	Tablet, capsule, liquid, licked off paper, injected	Ingested, inhaled, snorted, smoked	1.5 – 5 days
Zopiclone	Tablet	Ingested	24 – 72 hrs

¹ The duration of detection is variable and depends on the route, dosage, duration and pattern of administration, individual metabolism and laboratory essay cutoff.



Click on the pictures to view "Facts about Drug Addiction" a clip that explains how drugs work (2:00)

SCREENING

There are several well validated screening tools to evaluate whether a youth may or may not have a drug problem; the results help to determine whether further assessment is needed:

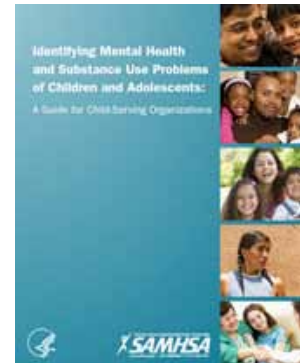
- *CRAFFT* (see Appendix G.3.1) is a 6-item self-report tool that screens for use of both alcohol and drugs in adolescents. In one study, a cut-off score of 2 or more “yes” answers has a sensitivity of 92.3% and specificity of 82.1% (Knight et al, 1999). It appears to be a valid means of screening adolescents for substance-related disorders in adolescent clinics and in multi-ethnic adolescent populations (Knight et al, 2002; Subramaniam et al, 2010).
- *The Drug Abuse Screening Test for Adolescents (DAST-A)* is a 27-item self-report instrument that directly queries adolescents about adverse consequences experienced as a result of drug use. DAST-A scores greater than 6 yielded sensitivity, specificity, and positive predictive power of 79%, 85%, and 82%, respectively (Martino et al, 2000). DAST-A has good reliability and validity for screening psychiatrically ill adolescent inpatients for substance abuse problems.
- *The Assessment of Substance Misuse in Adolescence (ASMA)* is an 8-item questionnaire for adolescents not known to treatment services. Two cut-off scores have been suggested: a rating of “at risk” (score greater than 8) detected weekly or daily drug use with 85% sensitivity and 95% specificity; a rating of “problem drug use” (score greater than 12) detected daily drug use with 36% sensitivity and 99% specificity (Willner, 2000).

CLINICAL ASSESSMENT

Good assessment is a key aspect of the management of substance use disorders. Apart from information collection, it offers an opportunity to engage, educate and motivate the young person for change, even in the first encounter. Gaining an understanding of how patients conduct their lives, their aspirations and unmet needs, together with the pattern and impact of drug use are important in formulating the management plan.

General issues

- Be vigilant; look for signs of drug use
- Develop good rapport by maintaining an empathic and non-judgmental attitude to encourage disclosure of the drug misuse problems
- The goals and process of assessment must be made clear to the young people and their parents
- Be familiar with the local laws governing confidentiality about substance abuse and explain them to patient and parents
- Parents’ involvement should be encouraged
- Because of the relatively short history and the developmental context (e.g., living with family) substance use disorders may manifest in different ways in adolescents than in adults



Click on the picture to access the monograph “Identifying Mental Health and Substance Use Problems of Children and Adolescents: A Guide for Child-Serving Organizations”



Click on the picture to access the US National Institute of Drug Abuse (NIDA), one of the best sites for substance misuse: it is reliable and contains many useful resources. NIDA supports and conducts research across a range of disciplines.

Table G.3.2 Effects of commonly misused substances

Substance	Pharmacology	Acute effect	Withdrawal syndrome
Benzodiazepines	GABA _A receptor agonist; increase postsynaptic Cl ⁻ influx	Sedation, relaxation, euphoria, impaired concentration, disorientation, drowsiness, confusion, incoordination, tremor, amnesia	Insomnia, anxiety, tremor, tachycardia, hypertension, diaphoresis. Transient visual, tactile, or auditory hallucinations or illusions; headache. Seizures.
Cocaine	Presynaptic dopamine, norepinephrine, serotonin reuptake blockade; release (mild) Na channel blockade.	Euphoria, enhanced concentration, sense of power and alertness, talkativeness, reduced appetite, anxiety, restlessness, panic attacks, irritability, paranoia, delusions, hallucinations.	Fatigue, difficulty concentrating, craving, anhedonia, vivid unpleasant dreams, myalgia, psychomotor retardation-agitation, hyperphagia-anorexia, insomnia or hypersomnia.
Codeine	Opioid analogue, mu-opioid receptor agonist.	Cough suppressant, analgesia, euphoria, drowsiness, depression, constricted pupils.	Irritability, agitation, insomnia, lethargy, depressed mood, suicidal ideation, lacrimation, diarrhea.
Morphine	mu-opioid receptor agonist.	Euphoria, sense of well-being, drowsiness, respiratory depression, constricted pupils, analgesia, decreased awareness.	Irritability, agitation, anxiety, insomnia, tremor, chills, runny nose, dilated pupils, pilo-erection, bone pain, abdominal pain, loss of appetite, vomiting, diarrhea.
Dextromethorphan	Opioid analogue, NMDA receptor antagonist increasing the synthesis and release of serotonin, as well as inhibiting the reuptake of serotonin	Euphoria, dissociation and dream-like experiences, hallucinations, drowsiness, dizziness, slurred speech, vomiting, diarrhea, pruritus.	Insomnia, nausea, hyperhidrosis, depression, difficulties with thinking and memory.
GHB (gamma-hydroxybutyrate)	Activates GABA _B receptor, and a distinct GHB receptor.	Euphoria, disinhibition, drowsiness, slurred speech, loss of motor control, enhanced empathy and sexual intimacy.	Insomnia, anxiety, agitation, delirium, hallucinations, muscular cramps, autonomic instability.
Heroin	mu-opioid receptor agonist	Euphoria, lethargy, sense of well-being, drowsiness, constricted pupils, hypoaffective state.	Insomnia, anxiety, agitation, tremor, chills, runny nose, dilated pupils, increased heart rate and blood pressure, bone pain, cramps, abdominal pain, loss of appetite, vomiting, diarrhea.
Ketamine	NMDA receptor antagonism, enhancing glutamate release.	Analgesia, numbness, amnesia, dissociation, disorientation, hallucinations.	Fatigue, insomnia, irritability, depression.

GABA: gamma-aminobutyric acid; 5-HT: 5-hydroxytryptamine (serotonin); MDMA: 3,4-methylenedioxy-N-methylamphetamine; NMDA: N-Methyl-D-aspartic acid.

Table G.3.2 (continuation)

Substance	Pharmacology	Acute effect	Withdrawal syndrome
MDMA (ecstasy)	Post-synaptic serotonin receptors agonist.	Empathy-enhancing, heightened confidence & sense of well-being, mild depersonalization and derealization, jaw clenching, thirst, dry mouth, restlessness, impaired balance, poor concentration, reduced appetite, dizziness, bruxism, diaphoresis.	Depression, anxiety, impaired concentration.
Mephedrone	Stimulate the release and then inhibit the reuptake of monoamine neurotransmitters.	Euphoria, increased concentration, talkativeness, urge to move, empathy, jaw clenching, reduced appetite, insomnia, headache, nausea, palpitations, increased sex drive, excessive sweating and cold blue finger/toes.	Tiredness, insomnia, nasal congestion, impaired concentration, irritability, blackouts, depression, anxiety, unusual sweat odor, increased appetite and craving.
Methamphetamine	Low dose: dopamine and norepinephrine reuptake blockade. High dose: increases dopamine, norepinephrine and serotonin release.	Euphoria, enhanced wakefulness, anxiety, reduced appetite, increased physical activity, excitement, anger, hallucination and paranoid delusion, impaired judgment.	Fatigue, insomnia or hypersomnia, vivid unpleasant dreams, mood lability, anxiety, depression, irritability, violence, paranoid psychosis, suicidality, motor stereotypies.
Volatile alkyl nitrites (popper)	Potent vasodilator and relaxation of smooth muscles.	Heat sensation and excitement	Craving, tachycardia, diaphoresis.
Organic solvents	Unknown.	Excitation, disinhibition, drowsiness, light-headedness, agitation, anesthesia and poorly coordinated movements.	Headaches, nosebleeds, dry cough, anxiety attacks, poor appetite, tension, nausea and vomiting, chest pains, dizziness, depression, insomnia.
PCP (Phencyclidine)	NMDA receptor antagonist, enhancing glutamate release.	Agitation, euphoria, nystagmus, ataxia, slurred speech, confusion, delirium, psychosis.	Vocalizations, bruxism, diarrhea, oculomotor hyperactivity, tremor, pilo-erection, somnolence, seizures.
LSD (lysergic acid diethylamide)	5-HT _{2A} agonist.	Heightened sense, vivid hallucinations, synesthesia, derealization, panic reactions, autonomic hyperactivity (pupil dilation, pilo-erection, diaphoresis, tachycardia, hyper-reflexia, tremor), impaired coordination.	Not documented
Zopiclone	α 1,2,3 and 5 of GABA _A receptors agonist	Reduces sleep latency, increases the slow-wave sleep.	Similar to benzodiazepines.

GABA: gamma-aminobutyric acid; 5-HT: 5-hydroxytryptamine (serotonin); MDMA: 3,4-methylenedioxy-N-methylamphetamine; NMDA: N-Methyl-D-aspartic acid.

- Clarify the young person's understanding of symptoms
- Care for the general health needs and drug related problems, whether or not the patient is ready to stop using drugs

History

The following information needs to be obtained (see also Chapter A.5):

- Substances used (current and past), for each type:
 - Age at first use
 - Frequency
 - Duration
 - Minimum, maximum and usual quantity consumed
 - Route of administration
 - Substances taken in combination
- Binging, memory loss and overdose episodes
- Accidents and injuries related to substance use
- Previous attempts to stop using
- Withdrawal symptoms
- Presence of psychotic symptoms and their association with drug consumption
- Symptoms of psychological or physical dependence
- Immediate risk factors:
 - Overdoses, deliberate self-harm and attempted suicide
 - Injecting behavior
 - Multiple substance use
- Co-existing psychiatric problems (e.g., depression, conduct disorder, psychosis, ADHD)
- Substance use in risky contexts
 - Substance use in the presence of family members
 - Sexual exploitation or risky sexual behavior
 - Criminal behavior
- Physical problems
 - Infections (e.g., hepatitis B/C, HIV, venereal disease)
 - Urological problems related to ketamine use.

It is necessary to also obtain information about patients' understanding of their substance use by enquiring about:

- Level of knowledge of substances and associated risks
- Where, how and with whom they take substances
- Who else among their friends and family uses drugs
- Whether, according to the patient, substances are being used to control mood, thoughts or behavior
- Their understanding about how substance use affects their lives
- Hopes and fears in relation to substance use and being drug free; previous experiences of being drug and alcohol free
- Family's views on substance abuse
- Available supports if changing substance use behavior



Click on the picture to access Street Drugs, a website with information specifically for students, parents, teachers, and health professionals. The site also has research reports, frequently asked questions and materials such as posters and interactive media.

Becky

Becky was 16 when first admitted to the psychiatric unit of a general hospital after being brought by the police. According to the admission notes, she was “hysterical” and attempted to jump from the roof of a building after a fight with her boyfriend. Becky was quiet and settled after the second day of her admission remaining cooperative during the ten days of her hospital stay. Assessment revealed that Becky had quit school a year earlier and done nothing since then. She had a poor relationship with her family and they got used to her being absent for days at a time. For a week before the admission, Becky was upset about her boyfriend dating one of her close friends. She confronted them a few times but they never admitted it. She felt depressed, angry and betrayed but denied intending to kill herself. She described herself as unusually “out of control” when she threatened to jump from the roof. Physical examination and laboratory investigations, including urine toxicology screening, did not reveal abnormal findings; pregnancy test was negative. Becky was mostly quiet in the ward. Her mood improved gradually. No abnormal behaviors were

observed throughout her admission. Becky was diagnosed with adjustment disorder.

She was expected to attend a clinic for follow up two weeks later but turned up one month later. In that visit, Becky disclosed that she had been hearing voices talking to her for many weeks until several days after her hospital admission. She concealed that because she believed she would be kept in hospital longer. She stressed again that she had not taken any illicit drugs but had been taking slimming pills for several weeks before the incident. When she stopped taking those the voices also stopped. Becky appeared calm and friendly in the following two clinic visits but the service subsequently lost contact with her. She reappeared in the clinic five months later disclosing she had been smoking “ice” with her friends for nearly a year. Throughout this period, she heard voices talking to her from time to time. She was uncertain whether her hallucinatory experiences were related to her drug use because sometimes those voices were exceptionally long lasting; she was 3-months-pregnant.

- Expectations of treatments and motivation – according to the stages-of-change model (Prochaska & DiClemente, 1992).

A good understanding of the psychosocial impact of substance use is also necessary for diagnosis and to plan treatment, this would include a thorough grasp of young people’s lives:

- How they conduct their lives
- In what activities they engage
- Who has an influence on them
- How they perceive their lives
- What aspirations they have
- What are their unmet needs
- What are the consequences of their substance abuse for them
- What are their goals and aspirations.

DIAGNOSIS

Abuse

To establish a diagnosis of substance abuse in DSM-IV (American Psychiatric Association, 1994), there should be a pattern of recurrent use resulting in failure to fulfil major role obligations at home, work or school; legal problems; social or interpersonal problems; and physically hazardous situations within a 12-month period. The parallel category in ICD-10 (World Health Organization, 1992) is termed as “harmful use” and emphasizes actual damage caused to mental or physical health, but not to adverse social consequences for the substance user.

Dependence

Making a diagnosis of substance dependence according to DSM-IV requires meeting within a 12-month period three of seven criteria: tolerance, withdrawal symptoms, compulsive nature of use, failure to quit, amount of time spent seeking

drugs, giving up on other more appropriate activities, and use despite adverse consequences. Similar criteria are required according to ICD-10. For further discussion of the validity of the distinction between abuse and dependence see section on DSM-5 below.

Despite diagnostic criteria in both classification systems having been used for many years, there are still problems when applying them to adolescents. The criteria for tolerance, withdrawal and medical complications may not be applicable to adolescents because of the relatively short history of substance use.

Proposed changes for DSM-5

In the proposed changes for DSM-5, the overall section is to be labelled “addiction and related disorders,” which would include gambling – a non-substance or behavioural addiction. A new category of “substance use disorder” is proposed, which would combine the two current diagnoses of “substance abuse” and “dependence” (on the basis that this historical distinction is not supported by empirical evidence), with severity rated according to the number of symptoms. The criterion “legal difficulties” is to be eliminated while “drug craving” is to be added. Tolerance and withdrawal symptoms are not to be counted towards the diagnosis when patients are involved in an appropriate medical treatment program for a problem such as pain, anxiety or depression unless they have other symptoms of aberrant behavior demonstrating compulsive drug seeking (O’Brien, 2011). The makers of DSM-5 hope this would clear misconceptions and avoid patients with other psychiatric disorders having their successful treatment discontinued to address their “dependence” (Heilig, 2011).

Whether the proposed changes for DSM-5 are clinically useful in separating patients with patterns of substance use that would respond to brief psychological interventions from those needing more substantial treatment requires further exploration (Poznyak et al, 2011). Criticisms include that with no other alternative than acute intoxication, individuals who use psychoactive substances infrequently without major indications of dependence are unlikely to have their substance-related problems diagnosed in emergency rooms, hospital wards and out-patient clinics, thus unlikely to receive early intervention – proven effective with non-dependent substance users (Babor, 2011). Furthermore, by collapsing the diagnosis of abuse and dependence into a single disorder, it is possible to make a diagnosis of substance use disorder with as few as two psychosocial criteria and the subjective judgment of the clinician (Meyer, 2011). Despite some positive changes, the proposed DSM-5 criteria for substance use disorders do not go very far in improving their diagnosis in youth; targeted developmental adjustments, including clearer operational symptom definitions, are needed to ensure that DSM-5 validly identifies substance use disorders across all developmental periods (Winters et al, 2011).

Drug testing in adolescents

Current practice parameters (Bukstein et al, 2005) state that toxicology “should be a routine part of the formal evaluation and ongoing assessment of substance use both during and after treatment”. Self-reports by drug using adolescents are often unreliable, especially in the community, school and legal settings. Denial, social desirability responses, concern over legal or other perceived consequences are likely to result in an under-reporting of drug use in this age



Click on the picture to access Erowid, a useful website with information about everything to do with drugs

group. Drug testing could provide objective information to the treating clinician for screening, diagnosis and to monitor adherence to treatment and outcome.

In clinic settings, drug testing is practical and cost-effective using point-of-care immunoassay test kits on urine samples to detect the presence of substances of abuse. To confirm a positive result, gas chromatography and mass spectroscopy may be required in some circumstances (e.g., if legal penalties apply). The main limitation is that the period during which most substances can be detected range from 1-3 days and care must be taken to prevent tinkering with the sample (sample should be provided under direct supervision by same-sex staff; pH or specific weight of the sample helps to check whether there is dilution; measuring the temperature is also helpful to prevent tampering). Point-of-care immunoassay tests on saliva can also be performed; however, they are more expensive and detection period is shorter (6-12 hours). Hair testing detects drug use in the last 3 months (except for the previous 7 days). Samples are difficult to adulterate but perming, bleaching and straightening treatments may alter drug levels in hair samples; the test is expensive and cannot be done on-site. Sweat testing prospectively investigates substance use over 1-3 weeks. The patch collects traces of the substances and their metabolites left from evaporated sweat; it is also expensive although a little less than hair testing. Drug testing of blood samples is useful in avoiding tampering but is invasive and costly.

It is important to consider several factors before conducting a drug screen:

- Adolescents are expected to enter into a confidential relationship with the therapist if they are shown to be competent to give consent. Hence, it is a good practice to explain the needs and implications (both of positive or negative results) of the drug screen and obtain informed consent from the adolescent
- It is not advisable to request for a drug screen solely because of parental suspicion
- The therapist is encouraged to discuss with the adolescent the limits of



Click on the picture to view a high school student talking about his battle with drugs (10:05)



Sniffing solvents

confidentiality, who will be informed of the results of the drug screen and what the process will be.

It is important to bear in mind that substances such as amphetamines, cocaine, and opiates are not likely to be detectable in the urine after 1-4 days (see Table G.3.1). The availability of these laboratory tests does not obviate the need for careful screening via interview and self-report, but they are an important tool in the assessment and monitoring of substance use. Moreover, use of drug screens increases the reliability of the adolescent's self-reported substance use, which can have therapeutic value in itself. One approach to requesting a drug screen is to tell the adolescent that it is likely to be positive if they have used cannabis in the past month. If the adolescent endorses substance use, the clinician may not wish to obtain a drug screen. Another common clinical and research practice is to consider a refused drug screen as equivalent to a positive screen. (Goldstein, 2009)

TREATMENT

After a comprehensive assessment, the young person and their parents should be involved in planning the treatment. Treatment goals will largely depend on the motivation and circumstances of each individual. It is useful to view the substance abuse as a symptom of a complex dysfunction in the young person, the family, school and social environment requiring an overall management plan, which should also address issues such as attachment, educational needs, physical and psychological health, lifestyle, peer relationships and psychological stress in a coordinated manner.

The level of care required will be determined by the intensity and complexity of the presenting problems and the needs of the patient. The management plan should be realistic, acceptable to the patient and the family, and feasible within the available resources. Adolescents whose frequency of drug use is low and drug-related problems mild, are best managed by their family physician. For those who abuse drugs frequently and have moderate to severe drug-related psychiatric comorbidities, they are best managed by a child and adolescent mental health team. Referral to a specialized addiction team is appropriate if the complex needs of the youngster cannot be met by the lower level of care.

Some interventions directly address the substance use and include: psycho-education, enhancement of motivation, harm reduction interventions and relapse prevention. Others target different aspects such as social skills, family relationships, mood, impulse control, mental and physical health.

Brief interventions

These are opportunistically offered in settings such as family clinic, social care settings and emergency departments to people with limited contact with drug services who use drugs but do not have a full blown drug use disorder. Information and advice about reducing the risks of drug misuse (e.g., exposure to blood-borne viruses) are to be provided to all of them during routine contacts or opportunistically. Sessions aimed at enhancing the motivation to change drug-use behavior can thus be arranged. During the session, therapists need to explore ambivalence about drug use and possible treatment. Increased rates of abstinence from heroin, cocaine, and amphetamine have been demonstrated with this minimal intervention (Bernstein et al, 2005; Baker et al, 2005).



Click on the picture to access information about club drugs provided by NIDA (US)

Self-help groups

Narcotic Anonymous and Cocaine Anonymous are the best examples. They are based on the 12-step principles, which emphasize abstinence as the goal of treatment (see also Chapter G.1). While definite evidence of effectiveness is still lacking, weekly or more frequent 12-step participation seems to be associated with lower drug and alcohol consumption (Fiorentine, 1999). Possible mediating effects of social support and religious service attendance in maintaining long-term recovery among adolescents have also been postulated (Chi et al, 2009).

Motivational interviewing

Motivational interviewing is a technique that helps patients explore and resolve their ambivalence about drug taking. This is achieved through reflective listening, development of discrepancy, sidestepping resistance by responding with empathy and understanding, and supporting self-efficacy in order to commit and reach a decision to change (Miller & Rollnick, 1991).

The therapist is encouraged to adopt a non-judgmental stance and steer the patient to express concern and identify problems related to the substance abuse. Through empathetic listening and reflection of the patient's response in a modified form, the patient is encouraged to express the discrepancy between his personal ideal goals and the actual behaviors (e.g., desire to be a top hair-stylist but to continue drinking alcohol despite hand tremor). This helps to increase the motivation to change.

To reduce the resistance to change, the therapist should avoid confrontation and argument with patients (e.g., whether methamphetamine use enhances one's working performance or not). Instead the therapist should be able to understand the patient's frame of reference, filter and amplify the patient's encouraging thoughts, elicit statements from the patient that encourage change, match the stage of change of the patient, and express acceptance and affirmation of the patient's freedom of choice and self-direction (Rollnick & Miller, 1995).

Drug users who received motivational interviewing were more likely to reduce their drug use, comply more with treatment requirements, stay longer in treatment, have fewer post-treatment psychiatric problems, become abstinent more often and have fewer relapses (Baker et al, 2001; Daley et al, 1998; Macgowan & Engle, 2010; Saunders et al, 1995).

Relapse prevention

Relapse prevention combines behavioral skills training, cognitive training and lifestyle change (Marlatt & Gordon, 1985). The goal is to teach drug users to identify, anticipate and cope with the high risk situations that may lead to relapse. Patients are encouraged to set achievable behavioral goals to enhance their self-efficacy. Myths about the perceived effects of drugs on the patient should be clarified. Reframing the meaning of events leading to lapses helps to minimize the sense of failure, encourage the establishment of a lapse management plan and reduce the chances of relapse. In addition, patients are encouraged to increase their engagement in rewarding or stress-reducing activities in their daily routine to enhance the self-efficacy.

Review on 24 interventions focusing on substance use showed that relapse prevention has comparable effectiveness to other active treatments (Carroll, 1996), may reduce the intensity of relapse episodes if relapse occurs and has significantly better outcomes even for more impaired substance abusers (Carroll et al, 1991; Carroll et al, 1995). A recent extensive review found that self-help interventions based on a relapse prevention approach showed a significant overall effect in increasing long-term abstinence in smokers (Agboola et al, 2010). Another meta-analysis of 53 controlled trials of CBT primarily based on the a relapse prevention approach showed that 58% of individuals who received CBT had better outcomes than those in comparison conditions (Magill & Ray, 2009).

Contingency management

Contingency management is a type of reinforcement program to motivate drug users to abstain by rewarding them with cash or vouchers for shopping or privileges such as take-home methadone (see also Chapters G.1 and G.2). Abstinence is usually assessed through urine drug testing. The amount of the reward (e.g., the monetary value of the vouchers) usually increases with the increasing duration of continuous abstinence (e.g., number of consecutive drug-free urine tests). It has been found that contingency management is useful for non-responsive patients (Gossop, 2003).

Family-based interventions

Family-based interventions have shown some success in decreasing substance use, reducing the risk for further substance involvement, better retention in treatment and bolstering protective factors in multiple domains of the adolescent's life.

Multi-dimensional family therapy aims to change adolescents' drug abusing lifestyle into a developmentally normative way of life, to improve functioning, to increase parents' commitment and improve their parenting skills and communication with the adolescent (Liddle, 2002). Multi-dimensional family therapy seeks to reduce risk factors and promote protective factors in the individual, family, peer and school domains, reduce the substance use and delinquency (Liddle et al, 2004; Rowe et al, 2003; Rowe 2010). A study found that multi-dimensional family therapy produced superior treatment outcomes in youth with more severe drug use and greater psychiatric co-morbidity when compared with individually focused cognitive-behavioral therapy (Henderson et al, 2010).

Pharmacological treatment

Pharmacotherapy for young people who regularly misuse substances can be used to reduce immediate harm from substance misuse, stabilize the young people and enable them to move to abstinence (Department of Health UK, 2007).

Pharmacological treatment is useful in:

- Treatment of drug withdrawal
 - During the process of detoxification
 - To eliminate or reduce the severity of withdrawal symptoms when the physically dependent user stops taking drugs



Click on the picture to view a clip that can be recommended for parent education on teen drug use (3:39)

- Substitute treatment (also called maintenance or replacement therapy)
 - The prescription of a substance with similar pharmacological action to the drug of dependence, but with a lower degree of risk
 - To reduce the exposure to risk behaviors and stabilize health and social functioning before addressing the physical adaptation dimension of dependence
- Relapse prevention
 - To prevent relapse after detoxification.

Benzodiazepines dependence

Detoxification of patients who suffer from benzodiazepine dependence, rare in the young, should be carefully planned and closely monitored for presence of withdrawal symptoms like insomnia, restlessness, muscle spasm and seizures. Monitoring mental state and suicidal risk is also necessary. Inpatient detoxification is best considered for those whose compliance was poor in the past or who are at risk of developing severe withdrawal symptoms such as convulsions. A long acting benzodiazepine (e.g., diazepam) in a gradually reducing dose regimen is widely used in the detoxification process. Prescription of benzodiazepines as maintenance treatment is not recommended.

Stimulant dependence

Symptoms like craving, insomnia or hypersomnia, lethargy, agitation and depression, are reported when a regular user stops taking stimulants. However, no medication is effective for the treatment of amphetamine withdrawal (Shoptaw et al, 2009). The presence of depressed mood, irritability, violent and suicidal ideation during the withdrawal period requires close monitoring. Psychotic episodes related to stimulant use are usually short-lived and subside spontaneously after cessation of use. Substitute treatment (e.g., bupropion, dexamphetamine, methylphenidate, modafinil, mazindol, methamphetamine and selegiline) is not recommended (Castells et al, 2010; Department of Health UK, 2007).

Opiate dependence

Opiate withdrawal can be very uncomfortable but is rarely life-threatening. Patients usually complain of musculoskeletal pain, insomnia, nausea or vomiting, gooseflesh, chills, sweating, running nose, yawning and watery eyes. Withdrawal symptoms can be relieved by:

- Gradually reducing the dose of methadone
- Buprenorphine
- Clonidine and lofexidine
- Symptomatic treatment
- Acupuncture.

When the patient is not ready for complete abstinence from opiates, methadone maintenance treatment can be suggested as substitution therapy (though this is not accepted or legal in some countries). Methadone maintenance helps to relieve withdrawal symptoms, eliminate craving and block the euphoric effects of illicit opioids. Methadone maintenance also helps to reduce the transmission of infections associated with intravenous injection such as hepatitis and HIV because it helps to reduce injecting, sharing needles and risky sexual behavior (e.g., multiple partners or exchange of sex for drugs or money) among



Click on the picture to access a website about amphetamines created by Turning Point Alcohol and Drug Centre in Melbourne (Australia). It offers self-help information and treatment options for methamphetamine users and useful information for families and health professionals.

heroin dependent individuals (Gossop et al, 2002; Gowing et al, 2011; Sorensen & Copeland, 2000). It is the treatment of choice for pregnant adolescents who abuse heroin.

Despite abundant evidence about its usefulness in reducing the harm of opioid dependence, there is controversy about methadone maintenance in many countries. This is because methadone maintenance is regarded as a legally available opioid. In addition, it is also not uncommon to find that some patients receiving methadone maintenance also use heroin.

Buprenorphine is a partial opioid agonist-antagonist at least as effective as methadone as a substitution agent in reducing illicit opioid use and retaining patients in treatment (Johnson et al, 2000). When compared with methadone, buprenorphine is safe – lower risk of overdose – and is well tolerated. Fewer withdrawal symptoms are also reported during detoxification. A combination of buprenorphine and naloxone (Suboxone®) has replaced the previous buprenorphine preparation (Subutex®) to prevent the drug from being used intravenously. Suboxone® comes as sublingual tablet and film. Both of them are to be taken once daily. Suboxone® film, in contrast to sublingual tablet, has a better taste and takes shorter time to dissolve.

Naltrexone is an oral long-acting opioid antagonist which blocks or reduces the effects of opioids including euphoria. Naltrexone is well tolerated at the usual dose, only becoming aversive by precipitating withdrawal symptoms in persons using opioids. It may play a role in preventing relapse to opioid use after withdrawal (Marsch et al, 2005), although it is used more often in the management of alcoholism. Opiate-containing medications (e.g., cough syrup, pain killers) should be avoided when a patient is on naltrexone. Because of the risk of hepatotoxicity, baseline tests and regular monitoring of liver function is recommended.

Inhalant abuse

There is no specific medication available for detoxification from inhalants. During acute intoxication, the patient should be assessed and treated symptomatically. Hydration and cardiorespiratory status should be monitored closely. A calm and supportive environment is necessary. Antiarrhythmic drugs or beta-blockers are sometime necessary to stabilize the myocardium; sympathomimetics or bronchodilators should be avoided. Comorbid psychiatric conditions should be treated accordingly (Williams et al, 2007; Baydala 2010).

PREVENTION

Substance use in adolescents is the result of the interplay between risk and protective factors in the individual, family, peer group, school and local social community. The objectives of prevention are to reduce or delay the initiation of drug use, to delay progression from experimentation to problematic use and to minimize complications.

Universal prevention

Universal prevention activities can be general-population-based and school-based. The content is mainly focused on information transfer, information about the latest drug scene, the possible complication and ways to handle this are conveyed to the general public through the media and talks to increase the public's awareness



Click on the picture to access the Australian National Inhalants information Service that provides information about inhalant abuse.



Click on the picture to watch a clip from the fictional movie "Samson and Delilah" depicting petrol sniffing in aboriginal Australians and its effects. Samson and Delilah's world is small—an isolated community in the Central Australian desert. When tragedy strikes they turn their backs on home and embark on a journey of survival. Lost, unwanted and alone they discover that life isn't always fair, but love never judges (14:56)

of drug issues. Training on personal and social skills, advice on curriculum design to improve knowledge of drug-related issues and parenting skills can be provided through school-based activities. It has been shown that school-based programs aimed at improving social skills are effective in reducing drug use (Faggiano et al, 2005), but not so successful in reducing tobacco smoking and alcohol abuse (Thomas & Perera, 2006).

The European Drug Addiction Prevention trial is one of the large scale school-based programs which involved 170 schools (7079 pupils 12–14 years of age) in seven European countries. The program consisted of a 12-hour curriculum based on a comprehensive social influence approach with special emphasis on correcting the students' beliefs about drugs and drug use. It has been shown that there were persistent positive effects over 18 months for alcohol and cannabis use (Faggiano et al, 2010).

Targeted prevention

Targeted prevention focuses attention on those who are at higher risk of drug use. Vulnerable youth and their families are identified either by school teachers or by case workers for further skill-based training, e.g., impulse control and coping skills training for the youth and parenting skills training for the parents. For example, Project Towards No Drug Abuse (Project TND) is funded by the National Institute on Drug Abuse for adolescents aged 14 to 19 years attending both regular and alternative schools. Project TND aims to prevent tobacco, alcohol, and other drug use and to help students make healthy, informed choices. It is taught through twelve 40 to 50-minute lessons and focuses on the following areas:

1. Motivational factors:
 - Address students' attitudes, beliefs, expectations, and desires regarding drug use
 - Address student's cognitive misperceptions and myths around drug use.
2. Skills (social, self-control and coping skills):
 - Aim to provide students with healthier coping, communication and self-control skills so that they do not resort to substance use.
3. Decision-making:
 - How to make decisions
 - Make a commitment to not use drugs and to continue the conversations from Project TND with their peers.

Sussman and colleagues (2004) have shown that TND reduces substance use among adolescents both at short and long-term (1 year) follow-up. In addition, they also showed that TND was effective among regular high school youth and high-risk youth who attend alternative high schools. However, stigma and selection criteria for the “high risk” group may affect outcome.



Click on the picture to view a clip about whether parents should talk about their drug use with children (4:15)

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Appendix G.3.1

CRAFFT

C	Have you ever ridden in a CAR driven by someone (including yourself) who was “high” or had been using alcohol or drug?
R	Do you ever use alcohol or drug to RELAX , feel better about yourself or to fit in?
A	Do you ever use alcohol or drug while you are by yourself, ALONE ?
F	Do you ever FORGET things you did while using alcohol or drugs?
F	Do your family 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?

Source: Knight JR, Sherritt L, Shrier LA et al (2002). Validity of the CRAFFT substance abuse screening test among adolescent clinic patients. *Archives of Pediatrics and Adolescent Medicine*, 156:607-614.