

Substance Abuse

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PRINCIPLES OF TOXICITY

The use and abuse of psychoactive substances are global and timeless. People used hallucinogenic plants to achieve altered states of consciousness in prehistoric times, and psychoactive substances have been used in all eras and cultures. As Osler remarked, “The desire to take medicine is, perhaps, the great feature which distinguishes man from other animals.” The human cost of substance abuse is high, and deaths secondary to the use of psychoactive substances are common. In the United States, illicit drug use results in thousands of deaths each year (Box 140.1).¹

A major barrier to appropriate recognition and treatment of substance abuse is the lack of a precise definition. The American Psychiatric Association defines it as a maladaptive pattern of drug use associated with some manifest harm to the user or others. Physicians have a difficult time recognizing such abuse, particularly in patients with chronic pain syndromes. Chronic pain may not manifest the typical overt sympathetic changes or physical findings of acute pain. Patients may seek treatment because of perceived failure of their outpatient regimen, an acute flare up, or because of abuse or addiction. Therefore, emergency clinicians constantly walk a tightrope between undertreating legitimate pain and inappropriately rewarding substance abusers with controlled medications.

EPIDEMIOLOGY

A variety of stereotypes come to mind in compiling the profile of a substance abuser. Adherence to a belief in these stereotypes is a dangerous trap for the clinician. Physicians are likely to discount the possibility of drug intoxication in the well-dressed professional or in those at the extremes of age, but drug use and abuse spans the spectrum of society.

A large 2013 survey of teenagers in grades 9 to 12 found misuse and abuse of prescription medications to be the third most prevalent drug abuse behavior among teens, trailing only use of marijuana and alcohol. Abuse of over-the-counter (OTC) cough medications is on par with or higher than the abuse of illegal drugs, such as ecstasy and cocaine.² Dextromethorphan abuse has become epidemic in the last decade. Increasing numbers of teens are ingesting dextromethorphan-containing OTC products, such as Coricidin HBP Cough & Cold tablets, known on the streets as triple Cs, red devils, red C, red box, or skittles.³ Other dextromethorphan compounds include cough medicines, such as Nyquil and Robitussin DM, which provide the sought-after high known as the “robo-buzz.” Adolescents may also abuse methylphenidate and related compounds used to treat obsessive-compulsive disorder and attention-deficit/hyperactivity disorder. Tablets can be abused orally, or they can be crushed and the powder injected or snorted. Despite its abuse potential, experts disagree about the extent to which methylphenidate is diverted from therapeutic use to abuse in preteens and adolescents.⁴

Numerous synthetic and naturally derived psychoactive substances (“legal highs”) are easily obtained from Internet websites, “head shops,” and local suppliers. One prevalent example is known

as *bath salts*. These products are available in small quantities, with packaging that usually includes the disclaimer “not for consumption” to avoid regulation.⁵ Bath salts contain synthetic cathinones, which are pharmacologically similar to methamphetamine and *N*-methyl-3,4-methylenedioxyamphetamine (MDMA) (ecstasy) and produce similar clinical effects.⁶ A variety of adverse effects have been reported from cathinone derivatives, including tachycardia, hypertension, agitation, hyponatremia, hallucinations, paranoia, and suicide.⁵⁻⁷ The legal status of these agents is in flux. The U.S. Department of Justice Drug Enforcement Administration has placed a number of the synthetic cathinones under Schedule I of the Controlled Substances Act; however, numerous other synthetic cathinones have been found in these products.⁵

Elders also abuse substances, and geriatric patients may suffer new-onset psychosis as a result of sympathomimetic abuse or drug withdrawal. Drug use also occurs in pregnant women, resulting in both maternal and fetal morbidity. Manifestations of abuse may be acute, as in abruptio placentae or premature birth, or insidious, producing growth restriction and birth defects. Drug problems are more prevalent among lower socioeconomic groups, which are disproportionately affected by drug-related problems, such as incarceration, unemployment, acquired immunodeficiency syndrome, hepatitis, and tuberculosis.

The drugs of misuse or abuse most commonly involved in deaths are cocaine, opioids, antidepressants, benzodiazepines, stimulants, and club drugs.⁸

Among prescription drugs, abuse of psychoactive drugs, especially anti-anxiety and insomnia medications, is rising. Additionally, there has been a dramatic increase in opioid prescriptions for non-cancer related pain. The increase in opioid prescriptions has resulted in an increase in misuse, abuse, diversion, overdose, and deaths. From 1999 to 2013, the death rate from opioid analgesics has nearly quadrupled. Many of these deaths involve another prescription medication, frequently a benzodiazepine.⁹ Those individuals with chronic pain conditions who initiate opioid therapy with long-acting agents are at a higher risk of unintentional overdose as compared to those given shorter-acting agents. There has been a multifaceted approach to opioid abuse deterrence in the United States. In July 2012, the FDA approved a Risk Evaluation and Mitigation Strategy (REMS) for extended release and long-acting opioids. One element of REMS is the availability of voluntary training programs to licensed prescribers in the United States. There have also been changes to the labeling of extended release or long-acting products with an increase in information related to risk and precautions. Additional efforts to curtail opioid abuse and misuse include development of abuse-deterrent formulations of opioid analgesics, adoption of prescription drug monitoring programs, increased education for patients and health care providers, and cracking down on pill mills and doctor shopping.

PHARMACOLOGY

Knowledge of drug pharmacology, interactions, and expected clinical effects assists in the diagnosis and care of substance abuse victims. A careful medication history for all legal and illegal drugs,

BOX 140.1

Complications of Illicit Drug Use

INFECTIOUS

Hepatitis
 Pneumonia
 Skin abscess
 Brain abscess or spinal epidural abscess
 Endocarditis
 Human immunodeficiency virus (HIV) infection
 Osteomyelitis
 Botulism
 Gangrene

CARDIOVASCULAR

Cardiomyopathy
 Aortic dissection
 Myocardial infarction
 Dysrhythmias
 Pseudoaneurysms
 Arteritis
 Hypertension

NEUROLOGIC

Stroke
 Drug-induced Parkinsonism
 Dystonia
 Vasculitis
 Intracerebral hemorrhage
 Cerebral atrophy
 Radiculopathy
 Leukoencephalopathy

PULMONARY

Chronic lung disease
 Pulmonary hypertension
 Pulmonary edema
 Eosinophilic pneumonia
 Pneumonitis
 Barotrauma (pneumomediastinum)
 Pulmonary fibrosis
 Emphysema

PSYCHOSOCIAL

Unemployment
 Inadequately treated depression
 Conduct disorders
 Hallucinations
 Suicide
 Homicide

MISCELLANEOUS

Dental caries and periodontal disease
 Rhabdomyolysis
 Thrombophlebitis
 Tattooing
 Placental abruption
 Congenital malformations

including ethanol, may pinpoint the source of an adverse reaction. For example, a variety of agents can increase the effects of cocaine. The co-ingestion of ethanol and cocaine results in an active metabolite, cocaethylene, which can enhance and magnify cocaine's effects. Serotonin syndrome, manifested by muscle rigidity, hyperthermia, diarrhea, and seizures, may result when sympathomimetic drugs are taken concurrently with other serotonergic drugs, such as selective serotonin reuptake inhibitors. Amphetamines elevate serotonin either directly, by reversible inhibition of monoamine oxidase, or by inhibiting presynaptic catecholamine reuptake. Monoamine oxidase inhibitors can provoke hypertensive crisis in patients taking sympathomimetics. Interactions between medications commonly prescribed for patients with human immunodeficiency virus (HIV) infection and recreational drugs may be associated with serious clinical consequences because protease inhibitors and non-nucleoside reverse transcriptase inhibitors (NNRTIs) can inhibit or induce the cytochrome P₄₅₀ system, which could result in either drug accumulation or toxicity or withdrawal reactions.¹⁰ For example, patients maintained with methadone who are subsequently treated with NNRTIs are at risk for development of methadone withdrawal by NNRTI-mediated enzyme induction.¹⁰

Household products and medications also have abuse potential. For example, dextromethorphan in common cough medications is converted into a substance (dextrorphan) similar to ketamine and phencyclidine (PCP) that causes dissociative effects by antagonizing the *N*-methyl-D-aspartate (NMDA) receptor. Recreational users describe mild hallucinations and an "out-of-body" state.¹¹ Some common chemicals in the home and workplace have an intoxicating effect that may be unexpected. Solvents, paint, lacquers, glues, aerosols, refrigerants, and other propellants (Fig. 140.1) are readily accessible for abuse among children and



Fig. 140.1. Freon abuser. (Copyright Stephen A. Colucciello.)

teens. Inhaled hydrocarbons, such as toluene, are rapidly absorbed and easily pass through the lipophilic blood-brain barrier to give an inexpensive high.

Illicit drug laboratories have poor quality control, and many drugs are combined or "cut" with other substances to increase profits. Up to 50% of street samples lack the alleged drug. Some additives, such as local anesthetics or sugars, may be innocuous, but others, such as strychnine, may be lethal. Levamisole, a widely available anthelmintic agent, is now a common cocaine adulterant and can result in life-threatening agranulocytosis, leukoencephalopathy, and cutaneous vasculitides.¹² Other drugs, such as PCP, are misleadingly sold as a different drug, such as lysergic acid

diethylamide (LSD). Many doses of purported ecstasy (MDMA) actually contained amphetamine drug mixtures or even simple caffeine.¹³ Drug combinations and unanticipated additives or substitutions may produce a clinical picture discordant with what the patient claims to have taken.

“Look-alike” drugs may also have toxic effects. Teens in particular may take look-alike or “knock-off” drugs that look like a desired product, such as Ritalin or Coricidin, in the hope of getting high, when in reality they may suffer unanticipated effects from an unrelated medication sold by an unscrupulous dealer.

CLINICAL FEATURES

History

Patients often present claiming a “drug reaction,” but a drug history should be obtained from all patients presenting with altered mental status, acute anxiety or other psychiatric problems, and acute cardiopulmonary or neurologic symptoms. This information should include use of legal and illegal substances, prescription and OTC medications, vitamins, herbals, tonics, and potions. The clinician should distinguish recreational or regular use from suicidal intent.

Parents should be asked what is available in the house, or what they believe their son or daughter took, and when. There are numerous resources available, such as www.drugabuse.gov/drugs-abuse/commonly-abused-drugs-charts, which is sponsored by the National Institute on Drug Abuse, to help decipher street jargon for various agents.¹⁴ Poison centers also are good sources for the names given to various drugs of abuse. However, there is no guarantee that the purported ingestant is pure or unadulterated; therefore, a careful examination may provide the most reliable clues about the exposure. Prehospital personnel, family members, and friends may be able to offer additional information. Patients who are brought from the scene of a club, “rave,” or circuit party with altered mental status may be under the influence of a club drug, such as MDMA (ecstasy), gamma-hydroxybutyrate (GHB), flunitrazepam (Rohypnol), or ketamine. Other club drugs, contain gamma-butyrolactone (GBL) or 1,4-butanediol (BD) and are sold on the Internet as precursor molecules to GHB.¹⁵ “Grazing parties” are a social phenomenon in which teens attending these events bring several random pills from their home medicine cabinet, which are then placed in a large bowl or container. Willing participants at the party will then try various unidentified pills and compare clinical effects.

Injection drug abusers often have infectious complications, such as septic pulmonary emboli, skin or brain abscesses, endocarditis, and HIV or hepatitis-related disease.

Physical Examination

In addition to determination of vital signs, patients should be undressed and completely examined, with particular attention paid to the skin, pupils, and mental status, and evaluated for signs of trauma. Needle or track marks may be found in unusual areas, such as the supraclavicular space. Medicinal patches (eg, fentanyl) may be located under skin folds, or in the genital or rectal areas.

Physical examination includes evaluation for specific toxic syndromes. The presence of diaphoresis, mydriasis, tachycardia, hypertension, abnormal mental status, and urinary retention suggests sympathomimetic toxicity. In comparison, the anticholinergic (antimuscarinic) syndrome may have these same features along with dry mucous membranes. In addition, patients with antimuscarinic delirium tend to be less violent and paranoid than those with sympathomimetic toxicity. The mental status evaluation should address both the level of consciousness and appropriateness of affect. Specific physical findings, such as dental disease,

skin abscesses, cardiac murmur, or focal neurologic abnormalities, such as tremor or ataxia, can assist in identification of chronic drug abuse (Table 140.1). Dental disease with extensive caries has traditionally been attributed to methamphetamine use, but it is common with other forms of chemical dependency.¹⁶ The skin provides important clues to substance abuse, such as residue of chemicals or drugs on the hand or face or track marks from injection drug use.

COMPLICATIONS

Illicit drugs produce a wide variety of complications involving all major organ systems. Neurologic complications are especially prominent. A significant percentage of strokes are secondary to drug abuse.¹⁷ Cerebral infarction, cerebral and cerebellar hemorrhage, and subarachnoid bleeding are often secondary to use of sympathomimetics and, occasionally, PCP or heroin. Single generalized tonic-clonic seizures are common with substance abuse, and status epilepticus can occur. Although sympathomimetics such as cocaine and amphetamines are responsible for the majority of seizures, heroin, tricyclic antidepressants, bupropion, and diphenhydramine are high risk. Withdrawal from benzodiazepines and alcohol can also result in seizures, including status epilepticus.

The dangers of substance abuse extend far beyond the toxic effects of a particular drug. Associated hazards include HIV infection, not only secondary to injection but also from the promiscuous lifestyle associated with the drug culture. The prevalence of HIV infection in injection drug users has been estimated at approximately 12% to 17%.

Recent declines in the incidence of HIV infection among injection drug abusers are encouraging, but resurgences have been associated with needle sharing and inadequate methadone treatment. Accompanying this phenomenon is a decrease in hepatitis B and hepatitis C among injection drug users in some cities in the United States. This is probably due to increases in preventive measures, such as needle-exchange programs, condom use, and vaccination for hepatitis B. Almost 20% of cocaine abusers have a positive tuberculosis skin test result. Sexually transmitted disease is common, especially in the sex-for-drugs culture of heroin and crack cocaine. Syphilis, in particular, is endemic among crack abusers.

The lungs are target organs for impurities in intravenous drugs, and pyrogens become trapped in this massive filter. This can produce “cotton fever,” characterized by high fever, tachycardia, and tachypnea 10 to 20 minutes after injection. This is usually a self-limited illness in contrast with the long-term restrictive and obstructive lung diseases with the prolonged intravenous abuse of methylphenidate. Right-sided endocarditis is a frequent sequela of chronic injection drug abuse, and the nonspecific influenza-like symptoms that accompany this disease can mislead the clinician. In addition to endocarditis and HIV infection, injection drug abusers have septic pulmonary emboli, cellulitis, botulism, tetanus, and other infectious complications. They may have unusual sites of osteomyelitis or septic arthritis involving the spine or sternal-clavicular or sacroiliac joints. A diagnosis of spinal epidural abscess, diskitis, or osteomyelitis should be considered in an injection drug user presenting with unexplained back pain.

Psychiatric complications of substance abuse are frequent and include anxiety, depression, suicidal ideation, mood swings, paranoia, and panic attacks. Paranoia and depression and associated suicide attempts are common among stimulant abusers, and hallucinations of parasites under the skin (formication) are frequent in those addicted to amphetamine derivatives and cocaine. Sympathomimetics are strongly associated with aggressive behavior and street crime. More than 50% of penetrating trauma from knife or gunshot wounds is now attributed to drug use

TABLE 140.1

Physical Examination Findings of Substance Abuse, the Agents Predominantly Involved, and the Proposed Mechanism

PHYSICAL FINDING OF SUBSTANCE ABUSE	SUBSTANCE INVOLVED	PROPOSED MECHANISM
Dental carries and gum disease	Amphetamine derivatives, predominantly methamphetamine	Unknown, possibly poor oral hygiene due to lack of attention
Skin abscesses	Intravenous and "skin popping" abuse of methamphetamine, heroin	Injection of drugs with non-sterile technique introducing bacteria into skin
Cardiac murmur	Intravenous heroin	Introduction of bacteria into bloodstream through non-sterile technique that embolized to the heart and adhere to valves leading to vegetations
Tremor, ataxia	All sympathomimetics, such as methamphetamine and cocaine; withdrawal from ethanol, benzodiazepines, and other sedatives; N ₂ O; toluene	Excessive stimulation of catecholamine receptors in the CNS with sympathomimetics and withdrawal syndromes; functional vitamin B12 deficiency with N ₂ O, cerebellar damage with toluene
Septic emboli, septic arthritis, osteomyelitis, spinal epidural abscess	Any intravenous drug but predominantly heroin	Introduction of bacteria into the bloodstream through non-sterile technique with resultant seeding of various tissues
Stroke	Sympathomimetic agents, predominantly methamphetamine or cocaine, or intravenously injected heroin	Vasoconstriction of cerebral vessels, or embolization of particulate matter
Cardiac dysrhythmias	Predominantly cocaine, but also methamphetamine and derivatives; methadone can cause QT interval prolongation	Cocaine blocks cardiac sodium channels leading to a prolonged QRS duration and ventricular dysrhythmias; methamphetamine can hyper-stimulate beta receptors on heart muscle cells; methadone affects cardiac myocyte repolarization
Convulsions	All sympathomimetics, bupropion, hypoxia related to sedatives or opioids; diphenhydramine, tricyclic antidepressants and other antimuscarinic agents; withdrawal from alcohol and other sedatives	Vasoconstriction, excessive release of brain catecholamines; hyperthermia related to antimuscarinic anhidrosis or CNS sodium channel blockade; excessive CNS catecholamine stimulation and GABA receptor changes
Coma	Sympathomimetics, ethanol, opioids, all sedatives	Depletion of brain catecholamines, excessive stimulation of GABA receptors in the CNS
Violent, paranoid behavior	Sympathomimetics, especially methamphetamine and derivatives, cocaine, PCP, and synthetic cannabinoids	Excessive dopamine or serotonin stimulation in the CNS; NMDA receptors may also be involved
Depression	Predominantly withdrawal from sympathomimetics	Possible depletion of CNS catecholamines or upregulation of receptors
Psychosis	All sympathomimetics, synthetic cannabinoids	Excessive dopamine or serotonin stimulation in the CNS

CNS, Central nervous system; GABA, gamma-aminobutyric acid; N₂O, nitrous oxide; NMDA, N-methyl-D-aspartate; PCP, phencyclidine.

(particularly methamphetamine) in some communities. Traumatic injuries from motor vehicle collisions are also endemic in substance abusers. Psychedelic drugs, such as LSD and PCP can prompt extreme behavioral changes and violence that can in turn lead to traumatic injuries. On occasion, trauma can be occult, and the unwary physician may overlook wounds in patients whose clinical picture is predominantly drug-induced agitation.

DIFFERENTIAL DIAGNOSES

Many serious illnesses can be confused with the effects of drug abuse, including sepsis, meningitis, encephalitis, head trauma, unintentional poisoning (eg, carbon monoxide), hypothermia, heatstroke, intracranial hemorrhage, complex seizures, and drug withdrawal. Hypoglycemia and other metabolic and endocrine derangements are important considerations. Similarly, drug intoxication should be considered in the differential diagnosis of altered mental status or abnormal vital signs regardless of age. Although patients with decompensated psychiatric disease can present similarly to those with drug intoxication, the hallucina-

tions from psychiatric disease are usually auditory in nature, whereas hallucinations from drug intoxication or withdrawal tend to be visual hallucinations. There are other differences, as well, such as the maintenance of orientation with psychosis, but it nevertheless is difficult for the clinician to clearly differentiate between behaviors and agitation associated with drug abuse and those of decompensated psychiatric disease.

DIAGNOSTIC TESTING

All patients with acute alterations in mental status in whom hypoglycemia is possible require a point-of-care glucose test. Electrolytes and renal function are indicated for patients who are unstable or present with altered mental status. An electrocardiogram is indicated for patients with drug-related chest pain and will identify changes specific to certain drugs and medications, such as prolongation of the QRS or QTc interval in patients with significant toxicity. Arterial or venous blood gas analysis may be useful in assessment of presence of respiratory acidosis, as well as in measurement of oxygenation and ventilation, specifically if a

patient is sedated and hypoventilating. It may also be helpful if there is concern for a co-ingestant that can cause a metabolic acidosis such as salicylates or a toxic alcohol. Rhabdomyolysis, most often seen with psychostimulant abuse, drug-induced hyperthermia, or prolonged periods in the same body position after abuse of sedatives (eg, barbiturates), is best detected by measurement of serum creatine kinase or myoglobin.¹⁸

The use of qualitative toxicology screens is less important than the patient's history and clinical status. Although unsuspected drugs may be detected on a urine toxicology screen, this knowledge rarely affects acute management of the patient.¹⁹ Quantitative levels of suspected substances, such as acetaminophen, acetylsalicylic acid, lithium, and certain anticonvulsants, may be valuable in certain circumstances. A new generation of rapid bedside "drug of abuse" urine toxicology screens utilizing newer techniques, such as liquid chromatography and mass spectrometry, may provide more accurate and timely information.²⁰ There are some special circumstances in which rapid qualitative urine toxicology screening may have some utility. For example, positive urine screens for sympathomimetics can occasionally be found in children presenting with bizarre or abnormal behavior or new-onset convulsions if they have been exposed to these substances in the home environment where they are being used or manufactured. These findings in older children may also assist parents in assessing changing behavior or school performance in some situations.

MANAGEMENT

Agitation

Few antidotes exist for psychoactive drug intoxication, and with a few notable exceptions, treatment is supportive. Violent or agitated patients require rapid sedation. Benzodiazepines are the preferred agents to treat anxiety and agitation, especially if caused by sympathomimetic or hallucinogenic drug intoxication. Treatment options include lorazepam 1 to 2 mg IV, repeated every 10 minutes until the patient is calm or diazepam 5 to 10 mg IV, repeated every 1 to 4 hours. More frequent dosing may be necessary in the setting of seizures or alcohol withdrawal. When the drug-induced agitation has not responded to what the clinician believes to be an adequate dose of a benzodiazepine, an antipsychotic medication should then be added. Butyrophenone antipsychotic agents such as haloperidol and droperidol, are rapidly effective and generally safe for all drug-induced psychosis or agitation states including sympathomimetics. Haloperidol, 2–5 mg IM, may be repeated every 20–30 minutes. Although not approved for intravenous use, this route is widely used and apparently safe. However, the FDA added a warning that "torsade de pointes and QT prolongation have been observed in patients receiving haloperidol, especially when the drug is administered intravenously or in higher doses than recommended." The sedative dose for droperidol is 2.5–5 mg IM. Droperidol has a box warning from the Food and Drug Administration (FDA) for QT prolongation and potentially torsade de pointes. Most reported cases of butyrophenone-induced dysrhythmias have been in individuals receiving large doses for prolonged periods, such as hours to days, or in elderly populations (older than 60 years of age). These medications lack the respiratory depression potentially caused by other agents and may be beneficial in some cases when sedation is required. For these reasons, the butyrophenones remain effective agents for treatment of drug-induced agitation. We do not recommend the routine use of second-generation or "atypical" antipsychotic agents, such as olanzapine, because there is no evidence for superiority of these agents over the "typical" antipsychotic medications, which have stood the test of time. In a patient felt inappropriate for a typical antipsychotic agent (eg, listed

allergy, prolonged QT), the dose of olanzapine for agitation is 2.5 to 10 mg IM, given every 2 hours up to a maximum of 30 mg. We do not recommend the use of "first generation" phenothiazines, such as chlorpromazine, in the drug-intoxicated patient because of their strong anticholinergic effects and potential to produce hypotension and possibly lower the seizure threshold. Finally, temperature abnormalities, such as severe hyperthermia stemming from substance abuse with sympathomimetics, should be treated with sedation and rapid cooling measures.

Drug Seeker

As the front line in medical care, emergency departments (EDs) are frequently confronted by patients with drug-seeking behavior, typically for opioids or benzodiazepines. This drug-seeking behavior is described as a compulsion for seeking and taking drugs after prolonged use of a certain drug but also may be motivated by obtaining prescription drugs for the purposes of trafficking (selling) them. The street value of some prescription opioids, such as oxycodone, is greater than that of marijuana and heroin.

Self-admission of drug dependency would provide an excellent screening test, but 90% of patients who abuse opioids deny it.²¹ A prior history of drug or alcohol abuse may identify patients at risk for abuse of opioids, the most commonly abused agents of the prescription drug seeker.²² Repeated visits for the same complaint, rapid dose escalation, unusual and multiple allergies, and demands for specific agents (often in specific milligram amounts) are all warning signs of potential drug seeking.²³ Unfortunately, there is no reliable finding that can consistently identify drug seeking while not penalizing those in true need of analgesics.

Chronic or recurrent pain syndromes (with notable exceptions like renal colic occurring after an interval of months to years) are not acute problems amenable to treatment in, or from, the ED. Patients with these conditions require consistent outpatient treatment from a regular provider or a pain management center. Some hospitals and states are starting to track patients who repeatedly receive opioid prescriptions. The effectiveness of such programs is not yet clear. Some locales have had success with pain guidelines that restrict the use of opioids to proven conditions, with electronic flagging of habitual visitors who present for medical care.²³ Such approaches may work if they are done in conjunction with referral to chronic pain clinics or detoxification centers. A multifaceted approach combining counseling, denial of opioid or other psycho-active prescriptions in the ED, and referral to a single pharmacy may dramatically decrease ED visits by frequent users. Use of a prescription drug monitoring program, which is now available in many states, can also impact emergency clinician ability to recognize the substance abusing patient.²⁴

Finally, pain contracts or explaining to the patient that opioids or other controlled substances are not appropriate may be helpful, but only if other physicians in the group or community agree on such a strategy for a particular patient.

DISPOSITION

After acute medical issues have been managed, substance abusers should be asked whether they would like help in overcoming their addiction. Studies show that intervention may be most successful for abusers of heroin, non-prescribed methadone, and benzodiazepines. Users of crack cocaine or methamphetamine appear to be more resistant to treatment. Offering symptomatic relief from withdrawal with short courses of medications, including antiemetics, antidiarrheals, and benzodiazepines, when indicated, may improve the patient's ability to sustain sobriety. Any patient with suicidal ideations or intent warrants immediate psychiatric evaluation. Those with a history of substance abuse requesting

assistance with sobriety should be given resources or a social work evaluation if available. If inpatient resources are not available or not deemed required, discharging the patient in the care of a family member or reliable friend is ideal.

Patients with acute intoxication and altered mental status that does not normalize after a period of observation would require admission or a prolonged observation period. Those under the influence of sympathomimetic drugs (such as, cocaine or methamphetamine) may develop delayed complications (such as,

rhabdomyolysis) that warrant inpatient hospitalization. After the patients' acute intoxication has resolved, withdrawal symptoms may develop requiring hospitalization and adjunctive medications, such as benzodiazepines. Admission to the intensive care unit may be needed in certain situations, such as severe hyperthermia, intractable convulsions, respiratory depression necessitating airway support, myoglobinuric renal failure, severe metabolic acidosis, or severe agitation requiring large doses of sedatives.

KEY CONCEPTS

- Substance abuse can affect people from all socioeconomic groups and all ages.
- For the majority of patients with toxin-induced violent behavior, intramuscular butyrophenones (such as, haloperidol) are safe and rapidly effective sedating agents. With suspected sympathomimetic (eg, cocaine and amphetamines) intoxication, benzodiazepines (such as, lorazepam) should be used.
- Presentation to an ED with a complication of substance abuse may be a "teaching moment." Substance abusers should be offered drug treatment services.

The references for this chapter can be found online by accessing the accompanying Expert Consult website.

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CHAPTER 140: QUESTIONS & ANSWERS

140.1. The toxic syndrome for anticholinergic overdose is similar to sympathomimetic toxicity and includes all of the following signs with the exception of:

- A. Altered mental status
- B. Diaphoresis
- C. Hyperthermia
- D. Increased heart rate
- E. Urinary retention

Answer: B. Anticholinergic (antimuscarinic) syndrome includes all of the signs above except for diaphoresis. Typically, anticholinergic poisoning presents with dry skin and mouth but otherwise has similar features to sympathomimetic toxicity. Sympathomimetic overdose often presents with diaphoresis. Anticholinergic patients are also less paranoid and violent.

140.2. What percentage of emergency department (ED) patients are in need of substance abuse treatment?

- A. 1%
- B. 10%

- C. 25%
- D. 50%
- E. 75%

Answer: C. Approximately 1% of ED patients have a formerly recorded diagnosis of substance abuse, but about 25% are actually in need of substance abuse treatment. Many patients are in denial about their dependency or hiding their substance abuse problems and will avoid talking about this. Because substance abuse increases the risk for injury or illness, these patients are at much higher risk for the need for emergency care than the general population.