Physical Detoxification from Substances Part 2

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Stimulants

Cocaine and amphetamines (such as methamphetamine) are the most frequently abused central nervous system stimulants. These agents are intensely rewarding and are self-administered by laboratory animals to the point of death. Individuals dependent on stimulants experience profound loss of control over stimulant intake, presumably in response to the stimulation and disruption of endogenous (originating internally) reward centers (Dackis and O'Brien 2001). They often use stimulants in a binge pattern that is followed by periods of withdrawal. It is not clear whether craving occurs predominantly during stimulant with-

drawal or after these symptoms have largely disappeared. While the processes that govern addiction to cocaine and amphetamines are believed to be similar, recent animal research suggests that there are also subtle differences in the ways in which these two types of drugs create sensitization (and perhaps addiction) in regular users (Li et al. 2005).

Stimulant Withdrawal Symptoms

Stimulants are associated with withdrawal symptoms that differ markedly from those seen with opioid, alcohol, and sedative dependence (see Figure 4-7). While most clinicians believe that alcohol and heroin withdrawal should be treated aggressively with detoxification, there has been little emphasis on treating symptoms of stimulant withdrawal. Consequently, no medications have been developed for this purpose. This situation is understandable because stimulant withdrawal usually does not involve medical danger or intense patient discomfort. However, if stimulant withdrawal predicts poor outcome, it may be a reasonable target for clinical interventions.

An often overlooked but potentially lethal "medical danger" during stimulant withdrawal is the risk of a profound dysphoria (depression, negative thoughts and feelings) that may include suicidal ideas or attempts. This may be, in part, a physiological response to cocaine or amphetamine withdrawal and, in part, a reaction to individuals' acute realization of the devastating psychosocial consequences after a binge ends. While both cocaine and amphetamine users may experience depression during withdrawal, the period of depression experienced by amphetamine users is more prolonged and may be more intense. Amphetamine users, in particular, should be monitored closely during detoxification for signs of suicidality and treated for depression if appropriate.

Although the literature on cocaine withdrawal is controversial, reasonable consensus supports the constellation of symptoms depicted in Figure 4-7 (Coffey et al. 2000; Cottler et al. 1993). These symptoms often disappear after several days of stimulant abstinence but can persist for 3 to 4 weeks (Coffey et al. 2000). In addition, since individuals addicted to stimulants often fail to achieve abstinence, withdrawal symptoms can be a persistent component of active addiction. In addition, individuals addicted to stimulants may experience impairment in hedonic function (ability to experience pleasure) that has been ascribed to stimulant-induced disruptions of endogenous reward centers (Dackis and O'Brien 2002). Research on animals has found that exposure to high doses of methamphetamine results in changes to both the dopaminergic and serotonergic systems of the brain (Nordahl et al. 2005) and dopamine abnormalities among animals and humans who had been ingesting cocaine (Schuckit 2000).

Figure 4-7
Stimulant Withdrawal Symptoms

• Depresion	• Poor concentration
• Hypersomnia (or insomnia)	• Psychomotor retardation
• Fatigue	• Increased appetite
• Anxiety	• Paranoia
• Irritability	• Drug craving

Source: Consensus Panelist Robert Malcolm, M.D.

Researchers have also observed abnormalities in regions of the brain that govern attention and memory in animals that were regularly administered methamphetamine (Nordahl et al. 2005).

Although cocaine withdrawal has traditionally been viewed as relatively mild (Satel et al. 1991; Weddington et al. 1990), evidence suggests that individuals dependent on cocaine with severe stimulant withdrawal are more likely to have a poor clinical outcome (Kampman et al. 2001*a*). The level of withdrawal symptoms, therefore, may be clinically significant and should be monitored and recorded for future treatment (Kampman et al. 2001*b*). Kampman reported significantly higher dropout rates in individuals dependent on cocaine who scored high on the Cocaine Selective Severity Assessment (CSSA), a reliable and valid structured interview designed to capture cocaine withdrawal symptoms (Kampman et al. 1998). Patients with high scores on the CSSA were five times more likely to leave treatment and four times more likely to resume cocaine use than those with low scores (Mulvaney et al. 1999). The CSSA is an easily administered 18-item questionnaire. Each item is a 7-point rating scale, so that a person can score a number of points on any given question. Scores in excess of 22 indicate the presence of significant cocaine withdrawal. See appendix C for more information on the CSSA. Given the poor prognosis associated with cocaine withdrawal, it is reasonable that more clinical attention be directed toward this phenomenon.

Medical Complications of Stimulant Withdrawal

As previously noted, stimulant withdrawal is not usually associated with medical complications. However, patients with recent cocaine use can experience persistent cardiac complications, including prolonged QTc interval and vulnerability for arrhythmia and myocardial infarction (Chakko and Myerburg 1995). QT is an interval of time that can be measured on an electrocardiogram (between the q wave and the t wave), while QTc is the relative (or "corrected") QT interval. Some conditions and many drugs (LAAM, other opioids, and even antibiotics) can cause the interval to lengthen and this can result in cardiac rhythm disturbances. Anterior chest pain or cardiac symptoms should therefore be fully evaluated in these individuals. Seizures also may be a complication of stimulant abuse and can occur during detoxification. Persistent headaches could represent a subdural, subarachnoid, or intracerebral bleed (bleeding in or around the brain) and should be appropriately evaluated. It also should be emphasized that people who abuse stimulants usually become addicted to other substances, such as alcohol, sedatives, or opioids, and therefore can experience any of the complications ascribed to detoxification from these substances. Covert (secretive) use of other substances should be suspected and assessed with urine toxicology.

Management of Withdrawal Without Medications

The most effective means of treating stimulant withdrawal involves establishing a period of abstinence from these agents. Access to brief hospitalization, a level of care previously available for those who abuse stimulants, has been largely eliminated by managed care initiatives. In its place, intensive outpatient treatment can assist the patient to cease use long enough for withdrawal symptoms to abate entirely. Rehabilitative approaches to achieve stimulant abstinence have been reviewed elsewhere (Dackis and O'Brien 2001). The avoidance of cue-induced craving is particularly important in these individuals, especially in light of research that shows limbic activation (activity in a certain part of the brain) in response to cue-induced craving (Childress et al. 1999). It also is important that individuals dependent on stimulants abstain from other addictive substances.

Management of Withdrawal With Medications

There are no medications with proven efficacy to treat stimulant withdrawal. However, researchers have investigated some medications for cocaine detoxification. Amantadine may help reduce cocaine use in patients with more severe withdrawal symptoms (Kampman et al. 2000). Modafinil, an antinarcolepsy agent with stimulant-like action, is currently under investigation by one research group as a cocaine detoxification agent (Dackis and O'Brien 2002). One small study in Thailand found the antidepressant mirtazapine (Remeron) was effective at reducing a number of the symptoms associated with amphetamine withdrawal (Kongsakon et al. 2005). None of these medications, however, are approved for use in treating stimulant withdrawal and further research is needed. Gorelick and colleagues (2004) review the full range of clinical literature on pharmacological intervention for cocaine addiction.

Patient Care and Comfort

Since stimulant withdrawal is not associated with severe physical symptoms, adjunctive medications are seldom required. These patients often are sleep deprived and might be unable to benefit from therapeutic activities during the first 24 to 36 hours of abstinence. They often are hungry and in need of large meal portions initially as their food intake may have been inadequate during active addiction. Stimulant users also may be irritable and care should be taken to avoid needless confrontation during the initial withdrawal phase. Headaches often are reported and can be treated symptomatically. Persistent headaches should be evaluated, as cocaine can produce cerebrovascular disease. Similarly, chest pain of possible cardiac origin should be evaluated medically with electrocardiography, cardiac enzymes, and appropriate medical attention. On occasion, patients undergoing withdrawal from cocaine or amphetamines report insomnia and may benefit from diphenhydramine (Benadryl) 50 to 100mg, trazodone (Desyrel) 75 to 200mg, or hydroxyzine (Vistaril) 25 to 50mg at bedtime. Benzodiazepines should be avoided unless required for concomitant alcohol or sedative detoxification. As stimulant withdrawal symptoms wane, patients are best treated with an active rehabilitative approach that combines entry into substance abuse treatment with support, education, and changes in lifestyle.

Other Immediate Concerns

Central nervous system stimulants exert most of their toxic effects through vasoconstriction (constriction of the blood vessels). Consequently, a number of medical conditions can arise from ischemia (lack of proper blood supply) or infarction (death of tissue as the result of lack of blood supply) as a result of stimulant use. Myocardial (heart muscle) infarction and stroke are widely recognized complications of stimulant use. However, other problems such as spontaneous abortion, bowel necrosis (tissue death), and renal (kidney) infarction also have been reported from cocaine-induced vasoconstriction. Cardiac arrhythmias also are common. Other medical problems that are associated with stimulant dependence include dental disease, neuropsychiatric abnormalities, and movement disturbances/disorders.

> Intensive outpatient treatment can assist the patient to cease use long enough for withdrawal symptoms to abate entirely.

Antidepressants, such as selective serotonin reuptake inhibitors, can be prescribed for the depression that often accompanies methamphetamine or other amphetamine withdrawal.

Inhalants/Solvents

Withdrawal Symptoms Associated With Inhalants/Solvents

The term "inhalants" is used to describe a large and varied group of psychoactive substances that all share the common characteristic of being inhaled for their effects. They are commonly found in household, industrial, and medical products. These drugs are used primarily by adolescents, although some, especially the nitrates, are used by adults as well (NIDA 2000). Figure 4-8 presents some of the more commonly abused inhalants.

Dependence on inhalants and subsequent withdrawal symptoms are both relatively uncommon phenomena (Balster 2003). There is no *specific* or characteristic withdrawal syndrome that would include all drugs in the inhalant class. Intoxication with the solvents, aerosols, and gases often produces a syndrome most like that of alcohol intoxication but lasting only 15 to 45 minutes (Miller and Gold 1990). Rarely, symptoms similar to sedative withdrawal have been described, including "fine tremors, irritability, anxiety, insomnia, tingling sensations, seizures and muscle cramps" (Miller and Gold 1990, p. 87). Toluene withdrawal has been reported to cause delirium tremens (Miller and Gold 1990). Longtime users also may exhibit weakness, weight loss, inattentive behavior, and depression (NIDA 2005). It has been reported that withdrawal symptoms can occur with as little as 3 months of regular usage (Ron 1986). When present, the withdrawal typically lasts 2 to 5 days (Evans and Raistrick 1987).

In addition to their short-term intoxicating affects, nitrates are used to enhance sexual pleasure by vasodilation (dilation of blood vessels) that produces a rush and sensation of warmth. There is no withdrawal syndrome that has been associated with nitrate abuse.

There are no specific assessment instruments available to measure inhalant withdrawal symptoms. A patient who presents with a history of inhalant use and symptoms of sedative-like withdrawal should alert the clinician to the possibility of inhalant withdrawal. These patients require a complete history and physical exam. Additionally, a blood alcohol level and urine drug screen are helpful in the cases of suspected polydrug abuse.

Medical Complications of Withdrawal From Inhalants/Solvents

There are a large number of medical complications associated with inhalant abuse and intoxication. Many of these complications are not the result of withdrawal but may still be seen when the patient presents to the clinician. Most inhalants produce some neurotoxicity with cognitive, motor, and sensory involvement. Additionally, damage to internal organs including the heart, lungs, kidneys, liver, pancreas, and bone marrow has been reported.

Management of Withdrawal Without Medications

It is crucial to provide the patient with an environment of safety that removes him from access to inhalants. This can pose a challenge due to the almost universal availability of these drugs in society. Many of the medical consequences of inhalant usage will remit once the patient achieves abstinence (Balster 2003). The patient should be monitored for withdrawal symptoms and changes in mental status.

Most patients presenting for treatment of inhalant dependence will be adolescents. Ideally, they should be entered into an age-appropriate treatment program that meets their medical and psychosocial needs. Supportive care, including helping them to get enough sleep and a well-balanced diet, usually will be sufficient to get patients safely through withdrawal (Frances and Miller 1998).

Figure 4-8
Commonly Abused Inhalants/Solvents

Type	Example	Chemicals in Inhalant/Solvent
Adhesives	Airplane glue	Toluene, ethyl acetate
	Other glues	Hexane, toluene, methyl chloride, acetone, methyl ethyl ketone, methyl butyl ketone
	Special cements	Trichloroethylene, tetrachloroethylene
Aerosols	Spray paint	Butane, propane (U.S.), fluorocarbons, toluene, hydrocarbons, "Texas shoe shine" (a spray containing toluene)
	Hair spray	Butane, propane (U.S.), chlorofluorocarbons (CFCs)
	Deodorant; air freshener	Butane, propane (U.S.), CFCs
	Analgesic spray	CFCs
	Asthma spray	CFCs
	Fabric spray	Butane, trichloroethane
	PC cleaner	Dimethyl ether, hydrofluorocarbons
Anesthetics	Gaseous	Nitrous oxide
	Liquid	Halothane, enflurane
	Local	Ethyl chloride
Cleaning agents	Dry cleaning	Tetrachloroethylene, trichloroethane
	Spot remover	Xylene, petroleum distillates, chlorohydrocarbons
	Degreaser	Tetrachloroethylene, trichloroethane, trichloroethylene

Management of Withdrawal With Medications

Patients presenting with only inhalant withdrawal are unusual. Clinicians should promptly ascertain if the patient has been abusing any other substances and proceed with appropriate detoxification as clinically indicated. When a patient presents with (1) a history of extensive inhalant usage, (2) a sedative-like withdrawal syndrome, and (3) no significant history or laboratory data that supports other substances, then the clinician can assume that the patient is in inhalant withdrawal.

As noted before, withdrawal from inhalants is similar to withdrawal from sedative-hypnotics. No systematic detoxification protocol has been established, although some clinicians have found phenobarbital useful (CSAT 1995*d*). The usefulness of benzodiazepines is unknown but would seem a reasonable alternative given our current understanding of inhalant withdrawal (Brouette and Anton 2001). No other medications have been routinely used for inhalant withdrawal.

Patient Care and Comfort

For patients who have only been abusing inhalants, treatment of insomnia during withdrawal is not usually necessary. Sedative substitution during the period of detoxification may allow the patient to sleep. However, a period of postdetoxification insomnia should be expected and usually can be treated by the

Figure 4-8 (continued) Commonly Abused Inhalants/Solvents		
Solvents and gases	Nail polish remover	Acetone, ethyl acetate
	Paint remover	Toluene, methylene chloride, methanol acetone, ethyl acetate
	Paint thinner	Petroleum distillates, esters, acetone
	Correction fluid and thinner	Trichloroethylene, trichloroethane
	Fuel gas	Butane, isopropane
	Lighter	Butane, isopropane
	Fire extinguisher	Bromochlorodifluoromethane
Food products	Whipped cream	Nitrous oxide
	Whippets	Nitrous oxide
"Room odorizers"	Locker Room, Rush, Poppers	Isoamyl, isobutyl, isopropyl or butyl nitrate (now legal), cyclohexyl
Source: Balster 2003.		

recommendation of good sleep hygiene practices such as avoiding caffeine, daytime napping, and overstimulation in the evening.

If the patient is able to refrain from inhalant (and other substance) use and has no serious psychiatric or medical consequences, then outpatient treatment should be the first option. Inpatient or residential treatment should be used for those patients who cannot achieve abstinence or have serious co-occurring medical or psychiatric disorders. Hospitalized patients will need a thorough history and physical exam. Therapy to address denial, addiction, and pertinent psychosocial issues should be initiated as soon as possible during the hospitalization. Supportive care and abstinence will resolve most medical problems associated with chronic inhalant usage (Balster 2003).

Nicotine

In 2004, approximately 44.5 million adults were cigarette smokers (23.4 percent were men and 18.5 percent were women) (CDC 2005*a*). Nicotine addiction in the form of cigarette smoking accounts for more deaths each year than AIDS, alcohol, cocaine, heroin, homicide, suicide, motor vehicle crashes, and fires combined (U.S. Department of Health and Human Services [U.S. DHHS] 2000*b*). Between 1995 and 1999, there were 490,000 smoking-related premature deaths annually, and smoking cost the country at least $157 billion yearly in health-related economic losses. This amounts to approximately $7.18 per pack of cigarettes (Fellows et al. 2002), a truly staggering figure.

Smokers are at increased risk for several medical problems, including myocardial infarction, coronary artery disease, hypertension, stroke, peripheral vascular disease,

chronic obstructive lung disease, chronic bronchitis, and several types of cancer (lung, stomach, head and neck, and bladder). Other problems associated with nicotine addiction include gastro-esophageal reflux disease and gastric ulcerations, cataracts, and premature wrinkling of the skin. There also appears to be an antiestrogen effect (suppression of an important hormone) that may lead to early development of osteoporosis in women (Okuyemi et al. 2000).

In 1988, the U.S. Surgeon General's Report concluded that nicotine is the principal addictive agent in tobacco. Nicotine binds to nicotinic acetylcholine receptors in the brain and has the direct ability to stimulate the release of dopamine in the nucleus accumbens area. The nucleus accumbens has long been considered the "reward center" in the brain. This increase in dopamine is similar to what occurs when patients use stimulants and is felt to be an essential element in the reward process of addiction (Glover and Glover 2001).

As many as 90 percent of patients entering treatment for substance abuse are current nicotine users (Perine and Schare 1999). There has long been controversy in the field of addiction medicine as to how best to handle the problem of nicotine dependence in patients seeking treatment for other types of substance abuse. Traditionally, it has been argued that patients would find that trying to stop smoking while also contending with other (more pressing) addiction problems would be too difficult and distracting in early abstinence. However, others argue that nicotine dependence is a lethal disease and that physicians have the responsibility to intervene in this addiction with the same aggressiveness they show toward other addictive substances. This pro-intervention position has received increasing attention from clinicians, inasmuch as it is now understood that alcohol consumption is associated with increased nicotine usage (Henningfield et al. 1984). Gulliver and colleagues (1995) have demonstrated that the urge to smoke is correlated with the urge to drink, and others have shown that continued nicotine dependence may be a relapse trigger for resumption of drinking (Stuyt 1997). The concern that smoking cessation may precipitate relapse to other substances of abuse has not been supported in the literature (Hughes 1995).

Treatment programs that have attempted to treat nicotine dependence in conjunction with other drugs of addiction have met with limited success (Bobo and Davis 1993; Burling et al. 1991; Hurt et al. 1994) and have generated increased interest in smoking cessation as a part of a patient's overall substance abuse treatment (Sees and Clark 1993). One study reported that forcing unmotivated patients (or patients who did not consider smoking a problem) to quit was countertherapeutic (Trudeau et al. 1995).

Moreover, it has traditionally been accepted that nicotine detoxification concurrent with detoxification from other substances makes the undertaking more difficult. Several factors are involved including the following: (1) patient ambivalence and/or lack of interest in smoking cessation; (2) physician ambivalence about the importance of smoking cessation early in treatment; (3) staff's use of nicotine; (4) staff's ambivalence about the importance of nicotine cessation early in treatment; (5) easy availability of cigarettes from peers, family, visitors, staff, and at 12-Step meetings; (6) lack of sufficient training and expertise on the part of physicians and staff in managing nicotine withdrawal; and (7) staff resistance to patient smoking cessation because withdrawal symptoms include irritability, anxiety, and depression, all of which can make patients more difficult to manage.

Withdrawal Symptoms Associated With Nicotine

The *Diagnostic and Statistical Manual of Mental Disorders, 4th edition, text revision* (DSM-IV-TR) (APA 2000) notes that typically, a person in nicotine withdrawal will have four

or more of the signs presented in Figure 4-9, though some clinicians believe that three or more is sufficient to make the diagnosis of nicotine withdrawal. Furthermore, it should be noted that symptoms vary in duration and intensity, with decreased heart rate and lightheadedness resolving in 48 hours, while increased appetite may remain present for weeks to months (Glover and Glover 2001). Smokers who have severe craving during withdrawal are less likely to be successful in their attempt at quitting (Hughes and Hatsukami 1992). Depression during withdrawal also has been linked to relapse to smoking (Covey et al. 1993).

Assessing Severity

Since 1978, the standard instrument used to measure physical dependence on nicotine has been the eight-item Fagerstrom Tolerance Questionnaire (FTQ) (Fagerstrom 1978). A later revision known as the Fagerstrom Test for Nicotine Dependence (FTND) (see Figure 4-10) has been reduced to six questions (Giovino et al. 1995; Heatherton et al. 1991). Scores greater than seven are consistent with nicotine dependence.

While both the FTQ and FTND are very useful for estimating a patient's physical dependence on nicotine, there is still a need to assess more accurately the degree to which smoking behavior plays a role in maintaining addiction. The Glover-Nilsson Smoking Behavioral Questionnaire (GN-SBQ) is an 11-question, self-administered test that evaluates the impact of behaviors and rituals associated with smoking (see Figure 4-11, p. 88). It was designed to assist clinicians in identifying and quantifying behavioral aspects of smoking that play a role in maintaining nicotine dependence, which can then help the clinician develop a cessation strategy that takes into account both physical dependence and behavioral dependence (Glover et al. 2002).

Figure 4-9
DSM-IV-TR on Nicotine Withdrawal

A. Daily use of nicotine for at least several weeks.

B. Abrupt cessation of nicotine use, or reduction in the amount of nicotine used, followed within 24 hours by 4 or more of the following signs:

1. Dysphoric or depressed mood
2. Insomnia
3. Irritability, frustration, or anger
4. Anxiety
5. Difficulty concentrating
6. Restlessness
7. Decreased heart rate
8. Increased appetite or weight gain

C. The symptoms of Criterion B cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

D. The symptoms are not due to a general medical condition and are not better accounted for by another mental disorder.

Source: APA 2000, pp. 244–245.

Figure 4-10
Items and Scoring for the Fagerstrom Test for Nicotine Dependence

Questions	Answers	Points
1. How soon after you wake up do you smoke your first cigarette?	Within 5 minutes 6–30 minutes 31–60 minutes After 60 minutes	3 2 1 0
2. Do you find it difficult to refrain from smoking in places where it is forbidden (e.g., in church, at the library, in the cinema, etc.)?	Yes No	1 0
3. Which cigarette would you hate most to give up?	The first thing in the morning All others	1 0
4. How many cigarettes/day do you smoke?	10 or less 11–20 21–30 31 or more	0 1 2 3
5. Do you smoke more frequently during the first hours of waking than during the rest of the day?	Yes No	1 2
6. Do you smoke if you are so ill that you are in bed most of the day?	Yes No	1 0

Source: APA 1996.

To better understand a patient's level of nicotine dependence, providers can assess biochemical markers including nicotine, cotinine, and carbon monoxide. Nicotine and its metabolite cotinine can be measured in urine, blood, or saliva. Cotinine continues to be present in bodily fluids for up to 7 days after cessation. Clinicians should use caution when interpreting the meaning of nicotine and cotinine assays, as they are not specific to tobacco-derived nicotine and may indicate the patient's compliance with nicotine replacement therapy rather than smoking.

Carbon monoxide is easily measured in expired breath and can show whether the patient has been smoking within a few hours prior to the test. It can be used to monitor smoking cessation for patients receiving nicotine replacement therapy and patients often find it a helpful motivator in their attempt to maintain abstinence (Benowitz 1983).

Medical Complications of Withdrawal From Nicotine

There are no major medical complications precipitated by nicotine withdrawal itself. However, patients frequently experience uncomfortable withdrawal symptoms starting within a few hours of cessation. In addition to the symptoms previously noted, patients may complain of increased coughing, a desire for sweets, and difficulty concentrating (Hughes and Hatsukami 1992). Clinicians should be aware that withdrawal symptoms can masquer-

Figure 4-11
The Glover-Nilsson Smoking Behavioral Questionnaire (GN-SBQ)

Please indicate your choice by circling the number that best reflects your choice.
0 = Not at all; 1 = Somewhat; 2 = Moderately so; 3 = Very much so; 4 = Extremely so

How much do you value the following (Specific to Questions 1–2)?

1.	My cigarette habit is very important to me.	0	1	2	3	4
2.	I handle and manipulate my cigarette as part of the ritual of smoking.	0	1	2	3	4

Please indicate your choice by circling the number that best reflects your choice. (Specific to Questions 3–11).
0 = never; 1 = seldom; 2 = sometimes; 3 = often; 4 = Always

3.	Do you place something in your mouth to distract you from smoking?	0	1	2	3	4
4.	Do you reward yourself with a cigarette after accomplishing a task?	0	1	2	3	4
5.	If you find yourself without cigarettes, will you have difficulties in concentrating before attempting a task?	0	1	2	3	4
6.	If you are not allowed to smoke in certain places, do you then play with your cigarette pack or a cigarette?	0	1	2	3	4
7.	Do certain environmental cues trigger your smoking (e.g., favorite chair, sofa, room, car, or drinking alcohol)?	0	1	2	3	4
8.	Do you find yourself lighting up a cigarette routinely (without craving)?	0	1	2	3	4
9.	Do you find yourself placing an unlit cigarette or other objects (pen, toothpick, chewing gum, etc.) in your mouth and sucking to get relief from stress, tension or frustration, etc.?	0	1	2	3	4
10.	Does part of your enjoyment of smoking come from the steps (ritual) you take when lighting up?	0	1	2	3	4
11.	When you are alone in a restaurant, bus terminal, party, etc., do you feel safe, secure, or more confident if you are holding a cigarette?	0	1	2	3	4

TOTAL_____

Scoring for Behavioral Dependence

<12	Mild
12–22	Moderate
23–33	Strong
>33	Very Strong

*S*ource: Glover et al. 2002

ade as other psychiatric conditions, especially anxiety and depression (see Figure 4-12).

Smoking cessation also may affect the metabolism of other drugs primarily through the Cytochrome P 450 (CYP450) system. This system is one of many hepatic liver enzyme systems that is responsible for the metabolic breakdown of various drugs into inactive compound products. Different drugs and compounds have varying affinities for the CYP450 system. The higher the affinity, the faster the breakdown of the drug or compound in the body. Some compounds can slow the metabolism or breakdown of other drugs with a lower affinity, leading to a buildup of that drug or compound in the body.

During detoxification from nicotine, some medications will have their metabolism altered, including theophylline, caffeine, tacrine, imipramine, haloperidol, pentazocine, propranolol, flecainide, and estradiol; in general, these effects are short-lived and seldom drastic. Nicotine also reduces beta blockers' ability to lower blood pressure and heart rate and decreases the amount of sedation from benzodiazepines as well as decreases the amount of pain relief provided by some opioids, most likely because of its stimulant effects (Zevin and Benowitz 1999). A complete discussion of nicotine's effects on medications is beyond the scope of this TIP and physicians are encouraged to consult the *Physicians' Desk Reference* (2004) or equivalent pharmaceutical guide. Figure 4-13 (p. 90) shows the effects of abstinence from smoking on blood levels of a number of medications.

Management of Withdrawal Without Medications

About one third of current smokers attempt to quit smoking each year and more than 90 percent of these try to do so without any formal nicotine cessation treatment. Most smokers will make several attempts on their own to quit and ultimately, only about 50 percent are successful over a lifetime (U.S. DHHS 2000*b*). While some smokers are able to quit on their own, others may require intervention in the form of behavioral treatment and/or pharmacotherapy.

There are insufficient data available to determine who will benefit most from a particular type of treatment. Some patients may prefer to stop smoking without the use of medication. An elevated score on the GN-SBQ would indicate a strong behavioral component to smoking that might guide the clinician in recommending behavioral treatment as a primary intervention. Patients who also have elevated FTQ scores may benefit by a combination of behavioral and pharmaceutical intervention.

Figure 4-12
Some Examples of Nicotine Withdrawal Symptoms That Can Be Confused With Other Psychiatric Conditions

Anxiety
Depression
Increased REM (rapid eye movement) sleep
Insomnia
Irritability
Restlessness
Weight gain

Source: APA 1996.

Figure 4-13
Effects of Abstinence From Smoking on Blood Levels of Psychiatric Medications

Abstinence Increases Blood Levels	Abstinence Does Not Increase Blood Levels	Effect of Abstinence on Blood Levels Is Unclear
Clomipramine Clozapine Desipramine Desmethyldiazepam Doxepin Fluphenazine Haloperidol Imipramine Oxazepam Nortriptyline Propranolol	Amitriptyline Chlordiazepoxide Ethanol Lorazepam Midazolam Triazolam	Alprazolam Chlorpromazine Diazepam

Source: APA 1996.

The U.S. Public Health Service's *Treating Tobacco Use and Dependence: Clinical Practice Guideline* is a comprehensive review of the smoking cessation literature (Fiore et al. 2000*a*). It discusses a range of nonpharmacological interventions for the management of withdrawal from nicotine; these can be separated into two basic categories: self-help interventions and behavioral interventions (Anderson and Wetter 1997).

Self-help interventions

Many tobacco users prefer to attempt to quit without any assistance from professionals. A number of self-help products are available that can assist them in their cessation attempts. These include a wide array of pamphlets, manuals, video- and audiotapes (e.g., from the American Lung Association and the National Cancer Institute), 12-Step self-help support groups, and telephone helplines. The U.S. Public Health Service's *Guideline*, which analyzed all types of self-help interventions together, found that the self-help approach to cessation yielded results only slightly better than no intervention at all. To date, self-help interventions alone have not been very successful at helping people achieve abstinence from tobacco. The *Guideline* suggests, however, that self-help can be a useful adjunct to other forms of treatment (Fiore et al. 2000*a*).

One type of self-help intervention that shows some promise is the use of computer-generated personalized written feedback for patients. The computer makes recommendations based on an individual's response to standardized questions about her smoking (Etter and Perneger 2001; Shiffman et al. 2000).

Behavioral interventions

The U.S. Public Health Service study noted that when physicians took as little as 3 minutes to advise their patients to stop smoking, long-term quit rates were modestly improved from 7.9 percent to 10.2 percent (Fiore et al. 2000*a*). Westmaas and colleagues note that "simple, clear advice from a physician can be considered an easy, cost-effective intervention that not only moves smokers closer to the decision to quit, but also may motivate some smokers to make an actual attempt"

(Westmaas et al. 2000, p. 58). The greater the amount of time in face-to-face interventions, the higher the success rate for patients, but interventions as short as 3 minutes have been found to be effective (Fiore et al. 2000*a*). A counseling session of longer than 10 minutes produced a cessation rate of 20.1 percent compared to a rate of 10.9 percent for no treatment. The guideline also indicated that if cessation information is given by multiple types of providers (e.g., physician, psychologist, dentist, nurse, and pharmacist) it can have a dramatic effect on cessation rates, increasing the rate to 23 percent compared to 10.8 percent for patients who had no provider contact.

A review of behavioral intervention studies concluded that both supportive care by a clinician and the ability of patients to develop problemsolving and coping skills improved success rates for smoking cessation (Anderson and Wetter 1997). Other components such as cigarette fading (gradually decreasing the number of cigarettes smoked over a period of time), establishing a quit date, enhanced environmental support, improved diet and increased exercise, relaxation training, and contingency contracting were not associated with improved outcome. Aversive conditioning, such as rapid smoking techniques, is effective but not routinely recommended (Fiore et al. 2000*a*).

Management of Withdrawal With Medications

A U.S. Public Health Service panel recommends that all primary care physicians provide a five-step intervention, known as the "5 A's," to all tobacco users. The panel recommends that all smokers who want to quit should be offered active medication that has been approved for assisting in smoking cessation unless there is a medical contraindication (Fiore et al. 2000*a*). Figure 4-14 provides a summary of the "5 A's" for brief intervention.

Nicotine Replacement Therapy (NRT)

Nicotine polacrilex gum was approved by the FDA in 1984. In the 1990s other NRTs received FDA approval, including the nicotine transdermal patch, the nicotine nasal spray, and the nicotine inhaler. Nicotine gum and nicotine transdermal patch are now available over the counter. After the acute withdrawal period, patients are then weaned off the medication until they become nicotine free. All NRTs are

Figure 4-14
The "5 A's" for Brief Intervention

Ask about tobacco use. Identify and document tobacco use status for every patient at every visit.
Advise to quit. In a clear, strong, and personalized manner urge every tobacco user to quit.
Assess willingness to make a quit attempt. Is the tobacco user willing to make a quit attempt at this time?
Assist in quit attempt. For the patient willing to make a quit attempt, use counseling and pharmacotherapy to help him or her quit.
Arrange followup. Schedule followup contact, preferably within the first week after the quit date.

Source: Fiore et al. 2000*a*, p. 26.

effective, with 1-year quit rates between 11 and 34 percent (Okuyemi et al. 2000).

There has been some concern about the addictive potential of NRTs, and it has been reported that 5 to 20 percent of patients using nicotine polacrilex gum continue to use it for more than 1 year (Hughes 1989). There was also initial concern that the nicotine nasal spray, with its rapid onset of action and high plasma concentrations, might become a drug of abuse. This has not been reported in the literature, and it could be speculated that this is because of the nasal spray's relatively uncomfortable side effects that cause many patients to dislike the product (Schuh et al. 1997). In general, withdrawal symptoms from NRTs are mild compared to those that occur in smoking cessation, and continued use of these products may be the result of patients' fear of returning to active smoking (APA 1996). For those patients who continue to use NRTs, providers should balance the patient's continued dependence on nicotine with the considerable health benefit of decreasing active tobacco usage. It is clear that constituents of tobacco other than nicotine are responsible for causing cancer. No ill effects have been attributed to long-term use of nicotine replacement therapy (Benowitz and Gourlay 1997).

Patients should be encouraged to use combined NRT treatments if they are unable to quit using a single type of first line pharmacotherapy.

Bupropion SR

Bupropion SR (Sustained Release) was initially manufactured under the name Wellbutrin as a treatment for major depressive disorder. In 1997, the FDA approved bupropion SR for smoking cessation, and it has been marketed under the name Zyban. Bupropion is a novel antidepressant that is involved primarily with dopamine but also affects adrenergic mechanisms in the central nervous system. Its exact mechanism of action is unknown, but it is not a nicotine substitute or replacement like the NRTs. The recommended dose is 150mg daily for 3 days and then 150mg twice daily for 7 to 12 weeks. Typically patients set their quit date 1 to 2 weeks from the time they start the medication in order to get the drug to therapeutic levels. This is an ideal time for the patient to focus on making behavioral changes and enlisting social support to augment his quit attempt. Bupropion SR has proven useful in smoking cessation with a 12-month abstinence rate of 35.5 percent compared to a placebo at 15.6 percent and the nicotine patch at 16.4 percent (Westmaas et al. 2000). The most commonly reported side effects include dry mouth and insomnia. Bupropion SR should not be used in patients with a history of seizures, heavy alcohol use, head trauma, or with anorexia or bulimia.

Other nonnicotine pharmacotherapy

Covey and colleagues examined nonnicotine pharmaceutical products that have been evaluated in controlled trials of smoking cessation (Covey et al. 2000). These drugs include the following:

- The alpha-2 agonist antihypertensive, clonidine
- The tricyclic antidepressant, nortriptyline
- The monoamine oxidase inhibitor (MAOI) antidepressant, moclobemide
- The serotonin 5-HT1A agonist anxiolytic, buspirone

- The antihypertensive CNS nicotinic receptor blocker, mecamylamine
- Oral dextrose tablets

Although none of these agents has been approved by the FDA for smoking cessation, clonidine, nortriptyline, and moclobemide have all been found to be effective treatments (Covey et al. 2000). Clonidine may be a helpful adjunct to nicotine replacement during acute nicotine withdrawal. Doses of 0.05mg to 0.1mg three times a day can be tried as tolerated (sedation and low blood pressure are concerns), and the medication needs to be tapered when discontinued to avoid rebound hypertension.

The Public Health Service's *Treating Tobacco Use and Dependence: Clinical Practice Guideline* (Fiore et al. 2000*a*) has classified nortriptyline and clonidine as second-line treatments. Clonidine is an antihypertensive and may be appropriate for patients addicted to certain types of drugs but not appropriate for others. The antidepressant selective serotonin reuptake inhibitor (SSRI) fluoxetine has been tested in a number of multisite trials (Cook et al. 2004; Hitsman et al. 1999; Niaura et al. 2002) and found to have a small benefit at best, although for patients who experience mild depressive states it may be a worthwhile adjunctive treatment. The usefulness of other SSRIs for smoking cessation is unknown, but studies have generally been unfavorable. More information on smoking cessation for people with co-occurring substance use and other mental disorders can be found in appendix D of TIP 42, *Substance Abuse Treatment for Persons With Co-Occurring Disorders* (CSAT 2005*c*).

Combination drug therapy

Combining NRT products

NRT products typically provide less than half the nicotine plasma levels that cigarette users achieve through smoking (Benowitz et al. 1997; Dale et al. 1995; Gupta et al. 1995; Lawson et al. 1998). To attempt to increase nicotine levels, several clinical trials have evaluated the effectiveness of combining available products. The simultaneous use of nicotine gum and the nicotine patch has been evaluated in several studies. Short-term gains in cessation were seen with the combination compared to either medication alone, but no long-term benefits in abstinence were demonstrated (Anderson and Wetter 1997). Blondal and colleagues (1999) compared the combination of nicotine nasal spray and the nicotine patch to the patch alone and found that at 3 months 37 percent of the patients were smoke free (compared to 25 percent for the patch alone). An open-label study of the combined use of nicotine inhaler and the nicotine patch found a 12-week cessation rate of 30 percent and good tolerability for the combination (Westman et al. 2000).

So-called "combination NRT" involves combining different types of nicotine replacement products, such as the patch and gum, on the premise that doing so will boost nicotine blood levels. Further rationale for this practice is that a "passive" nicotine delivery system (i.e., patch) produces relatively steady levels of nicotine in the body that prevent the user from going below a threshold minimum while "active" NRTs (i.e., gum, inhaler, spray, sublingual tablet, etc.) permit the user to respond to situational cravings with ad libitum dosing on an acute basis. Several clinical trials have evaluated the effectiveness of combining available NRT products (for a review see Silagy et al. 2000). After reviewing available data, the *Guideline* panel (Fiore et al. 2000*a*) felt that there was moderately strong evidence to conclude that "Combining the nicotine patch with a self-administered form of nicotine replacement therapy (either the nicotine gum or nicotine nasal spray) is more efficacious than a single form of nicotine replacement, and patients should be encouraged to use such combined treatments if they are unable to quit using a single type of first-line pharmacotherapy" (Fiore et al. 2000*a*, p. 77).

NRT using high-dose nicotine patch therapy

The highest dose of nicotine available by patch is 22mg. Several studies have evaluated whether higher doses of nicotine (up to 44mg) improve abstinence rates. The effect of this strategy has been small and the routine use of higher dose patches is not recommended (Hughes et al. 1999; Killen et al. 1999).

Combining nicotine patch and bupropion SR

In a double-blind, placebo-controlled study, the combination of bupropion SR and the nicotine transdermal patch showed higher abstinence rates at 12 months (35.5 percent) compared to bupropion SR alone (30.3 percent), nicotine patch alone (16.4 percent), or placebo patch and pill group (15.6 percent) (Jorenby et al. 1999). This combination was well tolerated. Clinicians who use this combination should first start the patient on bupropion SR 150mg for 3 days and then increase the dosage to 150mg twice daily for 1 to 2 weeks prior to the day of smoking cessation. On the "quit day," nicotine patch therapy should be initiated and the combination treatment continued for 3 to 6 months (Okuyemi et al. 2000).

Patient Care and Comfort

Most smokers attempt cessation on an outpatient basis and without any assistance from professionals. However, if a patient decides that she or he wants help with smoking cessation, it is important for the clinician to present a supportive and nonjudgmental attitude and develop a therapeutic alliance with the patient. It must be emphasized that nicotine dependence is a chronic relapsing disorder and that patients often make several attempts at quitting before succeeding.

Most smokers who want treatment will seek help from their primary care physician. The physician has the responsibility of providing pharmaceutical treatment, education about common problems associated with cessation, and emotional support to patients attempting to quit. Discussing nicotine withdrawal symptoms can often help allay patient concerns.

Fear of weight gain is a barrier for many who want to quit smoking (French et al. 1995). This is an especially important issue for women and may deter their attempts to stop smoking (Gritz et al. 1989). Though the health gains of stopping smoking clearly outweigh the health risks of weight gain, this argument does little to assuage patients' fears. Dieting during smoking cessation is not recommended in general and has been shown to increase the likelihood of smoking relapse (Hall et al. 1992). Physicians should, however, recommend both exercise and proper nutrition for patients attempting to stop smoking. Patients should be informed that alcohol use also is considered a risk factor for relapse to smoking by most clinicians (Shiffman 1982), and patients who can abstain from drinking during the withdrawal period should do so.

Patients generally will find a smoke-free environment helpful during quit attempts. If the patient lives in a household where others smoke, household members and friends can help by not smoking in front of the patient and limiting the number of smoking cues in their residence.

Patients with more severe nicotine dependence may benefit from enrollment in a specialized smoking cessation program. They might also benefit from more intensive medical management using several drugs (NRT + anticraving), medication for longer periods of time, closer followup, and longer enrollment in treatment. There are a number of cessation programs available from organizations such as the American Lung Association (www.lungusa.org) and the American Cancer Society (www.cancer.org). Some community and local organizations also sponsor smoking cessation programs. For the most severely dependent smokers, there are a limited number of residential facilities that treat nicotine dependence on an inpatient basis (Hurt et al. 1992). Providers of detoxification services

should be familiar with the programs available in their communities in order to make referrals.

Marijuana and Other Drugs Containing THC

Marijuana and hashish are the two substances containing THC (delta-9-tetrahydrocannabinol) commonly used today. The field of addiction medicine has given considerable attention to the question of whether there is a specific withdrawal syndrome associated with cessation from prolonged THC use. In the past, many have stated that there is no acute abstinence syndrome that develops in people who abruptly discontinue THC (CSAT 1995*d*). More recently this has been called into question and most experts now believe that a THC-specific withdrawal syndrome does occur in some patients who are heavy users (Budney et al. 2001), though cannabis withdrawal is not yet included in the APA's *Diagnostic and Statistical Manual of Mental Disorders*.

The THC abstinence syndrome usually starts within 24 hours of cessation. The amount of THC that one needs to ingest in order to experience withdrawal is unknown. It can be assumed, however, that heavier consumption is more likely to be associated with withdrawal symptoms. The most frequently seen symptoms of THC withdrawal are anxiety, restlessness and irritability, sleep disturbance, and change in appetite (usually anorexia). Other symptoms of withdrawal are less frequently seen and appear to include tremor, diaphoresis (sweating), tachycardia (elevated heart rate), and GI disturbances, including nausea, vomiting, and diarrhea. Cognitive difficulties including depression also have been reported and may persist but usually improve with time. There are no medical complications of withdrawal from THC, and medication is generally not required to manage withdrawal.

Clinicians may see a variety of the symptoms mentioned above, but these generally require no immediate medication during the detoxification period and usually are self-limiting. However, the clinician should be aware of the potential for more persistent problems. Screening the patient for suicidal ideation or other mental health problems is warranted. Some reviews have advocated the use of buspirone as an alternative to benzodiazepines for the management of persistent generalized anxiety (Gatch and Lal 1998). Other common problems encountered during withdrawal can be managed with nonaddictive, supportive medications. For patients with more persistent difficulty sleeping, clinical experience suggests that Trazodone may be useful. Trazodone can lead to low blood pressure upon standing, dizziness, and may increase falls, particularly in individuals over age 60. Benzodiazepines and other addictive medications should be avoided.

Most experts now believe that a THC-specific withdrawal syndrome does occur in some patients who are heavy users, though cannabis withdrawal is not yet included in the APA's *Diagnostic and Statistical Manual of Mental Disorders*.

The patient should be encouraged to maintain abstinence from THC as well as other addictive substances. Some patients will require a substance-free, supportive environment to achieve and maintain abstinence. Clinicians should educate all patients about the effects of withdrawal, validate their complaints, and reassure them that their symptoms will likely improve with time. Symptomatic relief may be provided in order to increase the patient's comfort.

There are no clinical assessment instruments available that measure THC withdrawal. Both animal and human studies indicate that a withdrawal syndrome starts within 24 hours of cessation and may last for up to a week.

Anabolic Steroids

Anabolic steroids, as differentiated from corticosteroids and female gonadotropic hormones, are androgens (male hormones) and subject to abuse as a means of increasing muscle mass. These agents also can produce aggressive, manic-like behavior that may include delusions (Lukas 1998). Males involved in professional sports, weight lifting, body building, or other pursuits that value muscular mass are more likely to use these substances than are women, although use in women has been reported. Adolescents use anabolic steroids to improve their appearance and may have increased access to these compounds (Yesalis et al. 1993). The large numbers of anabolic steroid preparations that have medical and veterinary uses are primarily obtained illegally through diversion. High doses of anabolic steroids can be medically dangerous but side effects, usually involving endocrine, liver, central nervous system, and cardiac function, tend to be reversible upon cessation of anabolic steroid use. However, neither cessation nor disclosure of anabolic steroid use can be assumed when treating these individuals.

> Interventions directed toward cessation should involve patient education regarding the dangers and medical complications of anabolic steroids, their behavioral effects, and a thorough evaluation of the patient's rationale for misuse.

Withdrawal Symptoms Associated With Steroids

Anabolic steroids can be associated with withdrawal symptoms emerging after their abrupt discontinuation. Withdrawal symptoms include (in descending order of prevalence) craving for more steroids, fatigue, depression, restlessness, anorexia (loss of appetite), insomnia, reduced libido (sex drive), headaches, and nausea (Lukas 1998). It is not known how commonly this syndrome occurs, but steroid withdrawal appears more likely in heavy users. The clinician's index of suspicion should be raised when evaluating individuals who are predisposed to steroid misuse and who exhibit these symptoms. Also indicative of possible steroid abuse are certain physiological signs of androgen exposure, including hair loss, acne, dysuria (difficult or painful urination), small testicles, edema of the extremities, and rapid weight gain. Females can develop decreased breast size, acne, virilism (clitoral enlargement, excessive and abnormal bodily hair growth, male pattern baldness) and amenorrhea (suppression of menstruation). Males who abuse steroids have been reported to possess a distorted body image and may inaccurately view themselves as small and weak (Pope et al. 1993).

Medical Complications of Steroid Withdrawal

Due to anabolic steroids' long duration of action, side effects that might emerge cannot be quickly reversed by the discontinuation of these substances. Therefore, related side effects might require medical management beyond the simple recommendation that steroids immediately be discontinued. Persistent side effects include urinary tract infections, bladder irritability, skin blistering (at the injection site), erythema (abnormal skin redness) when given as a skin patch, and

priapism (prolonged erections lasting hours). The latter condition involves a painful penile erection and constitutes an emergency that requires specialized medical attention. Edema (swelling) of the hands or feet, commonly seen with anabolic steroids, can be treated with diuretics (medications that increase urine flow). Elevated liver function tests and jaundice usually resolve with cessation of anabolic steroid administration, although hepatic carcinoma (cancer of the liver) has been reported. Other side effects such as headache, nausea, vomiting, acne, insomnia, and lethargy are time-limited and resolve after steroid cessation. Behavioral disturbances, such as psychosis or severe aggressiveness, should be treated symptomatically with appropriate psychopharmacological interventions. In extreme cases of psychotic or manic presentations, emergency psychiatric hospitalization might be necessary to address dangerousness to self or others.

Management of Steroid Withdrawal

There is no recommended detoxification protocol for anabolic steroids. The key medical goal is that of persuading the patient to cease steroid misuse. This intervention should be followed by evaluating and treating any side effects (discussed above) that might be present. Interventions directed toward cessation should involve patient education regarding the dangers and medical complications of anabolic steroids, their behavioral effects, and a thorough evaluation of the patient's rationale for misuse. A family meeting often is helpful if agreed upon by the patient. Unfortunately, education alone often is insufficient. Patients with distorted body images might be especially difficult to dissuade from steroid misuse, and referral to psychotherapy by a qualified clinician trained in the treatment of body image disorder should be considered. Similarly, patients who derive significant muscle gain from anabolic steroids might be resistant to cessation and may conceal continued steroid use.

Patient Care and Comfort

Patient comfort during steroid withdrawal can be achieved by addressing side effects, if present, that are discussed above. Counseling also is a useful intervention and specialized psychiatric interventions may be necessary. If the individual also is using other substances of abuse, referral to drug or alcohol rehabilitative treatment should be made.

Club Drugs

Club drugs represent diverse classes of drugs that include sedative-hypnotic type agents as well as stimulant/hallucinogens. Club drugs are illicit drugs used in the setting of nightclubs, dance clubs, parties, and "raves." Raves are overnight dance parties, usually with several hundred people in attendance.

Abuse of these drugs by adolescents and young adults has risen greatly in recent years. All healthcare professionals need familiarity with their short- and long-term effects. Although withdrawal syndromes have been reported with some of these drugs, this is not the most common clinical problem. Intoxication and severe intoxication with overdose are more frequent problems. With some of these compounds, there appears to be the potential for neurotoxicity (destructive effects on the nervous system) and persistent psychiatric and neurologic syndromes. At the present time, much of the available information regarding club drugs comes from surveys and anecdotal case reports. Human laboratory studies and rigorously controlled clinical trials are not common.

One difficulty in assessing the effects of intoxication, overdose, withdrawal, and long-term health consequences of club drugs is that in general, there are no baseline evaluations of individuals before they used club drugs. Also, these individuals abuse more than one substance. Some of these patients may have had moderate to severe psychopathology (including psychosis) prior to their introduction to club drugs. In the past, some club drugs were

referred to as "designer drugs" because of their production in a laboratory rather than being processed from plant products.

Hallucinogens

Hallucinogens are a broad group of substances that can produce sensory abnormalities and hallucinations. Most hallucinogens have some adrenergic effects as well. Hallucinogens also are referred to as psychedelics and psychomimetics. The more traditional hallucinogens such as lysergic acid diethylamide (LSD) are considered primarily serotonergic-acting agents. Some of the other compounds include phenylethylamines which have hallucinogenic properties but act like amphetamines as well. These drugs include mescaline and MDMA (3,4-methylenedioxy-N-methylamphetamine). Other drugs include MDA (3,4-methylenedioxyamphetamine) and DOM (dimethyloxymethylamphetamine). (See section on ecstasy below.) Other hallucinogens are acetylcholine antagonists. These include belladonna, drugs such as benzotrophine used to treat parkinsonian symptoms, and many common over-the-counter antihistamines.

Hallucinogen intoxication often begins with autonomic effects, sometimes nausea and vomiting, and mild increases of heart rate, body temperature, and slight elevations of systolic blood pressure. Dizziness and dilated pupils may occur. The prominent effects during intoxication are sensory distortions with illusions and hallucinations. Visual distortions are more common than auditory or tactile ones. So-called "bad trips" may involve anxiety including panic attacks, paranoid reactions, anger, violence, and impulsivity. Either due to delusions or misperceptions, individuals may feel they can fly or have special powers, and thus injure themselves in falls or other accidents. Suicide attempts also can occur during "bad trips" and possible suicidal ideation should be carefully evaluated, even though it may be quite transient.

Withdrawal syndromes have not been reported with hallucinogens; however, considerable attention has been paid to residual effects such as delayed perceptual illusions with anxiety, "flashbacks," residual psychotic symptoms, and long-term cognitive impairment. Controversies around these issues are not important in the clinical setting. The important thing is to determine whether residual symptoms are present and provide an appropriate environment and appropriate care for the individual who has them. Generally, staff of emergency rooms, clinics that treat people who abuse substances, and social detoxification centers have individuals who are very familiar with "talking down" individuals with bad hallucinogenic trips.

Acute intoxication and bad trips usually can be managed with placement of the individual in a quiet, nonstimulating environment with immediate and direct supervision so that the patient does not cause harm to herself or to others. Occasionally, a low dose of a short- or intermediate-acting benzodiazepine may be useful to control anxiety and promote sedation. Individuals with chronic depressive-like reactions may require antidepressant therapy. Individuals with residual psychotic symptoms are likely to require antipsychotic medications. On rare occasions, the use of a low dose, high-potency antipsychotic medication may be required orally or parenterally (any method other than the digestive tract, e.g., intravenously, subcutaneously, or intramuscularly). Assessment of residual psychiatric and cognitive symptoms should be made prior to treatment referral.

Gamma-hydroxybutyrate (GHB)

GHB use has increasingly been reported in night clubs and at raves by adolescents and young adult populations. GHB is a compound that is produced in the central nervous system, and it acts as an inhibiting neurotransmitter similar to GABA (Shannon and Quang 2000). In pharmacologic (medication-propor-

tioned) doses, GHB serves as a sedative-hypnotic medication. GHB intoxication may look like alcohol or sedative-hypnotic intoxication.

Although GHB is illegal, psychotropic compounds similar to GHB such as gamma-hydroxy lactone (GBL) and 1,4-butanediol (1,4-BD) are widely available chemical compounds and may be obtained through catalogs and the Internet. These compounds produce effects similar to those of GHB. At the present, overdose syndromes are more likely to be seen than withdrawal syndromes. Overdose syndromes may require airway and respiratory management. GHB has been studied in Europe (Addolorato et al. 1999*a*) in a randomized, single-blind study comparing it to diazepam as a treatment for alcohol withdrawal. GHB was as effective as diazepam in suppressing alcohol withdrawal symptoms and was said to be quicker in reducing anxiety and agitation with less sedation than diazepam. Because of its history of abuse in the United States, it is unlikely to be viewed as a therapeutic agent any time in the near future.

Miotto and Roth (2001) describe a GHB withdrawal syndrome, noting that it shares features of both alcohol and benzodiazepine withdrawal. They have found this syndrome most pronounced in patients who have taken GHB around-the-clock, at 2- to 4-hour intervals. The GHB withdrawal syndrome has the prolonged duration of symptoms found in benzodiazepine withdrawal and features delirium tremens that appear early (often within an hour) with peak manifestations occurring within 24 hours; the delirium may last up to 14 days. Confusion, psychosis, and delirium are the most prominent features of GHB withdrawal, and the autonomic effects (i.e., tremor, diaphoresis [sweating], hypertension, and temperature changes) are less severe than found in alcohol withdrawal. They note that brief periods of significant tachycardia (rapid heart rate) begin early in GHB withdrawal. Garvey and Fitzmaurice (2004) also report seizure activity in a case of GHB withdrawal in a male who had been using the substance regularly over a 2-year period, and Rosenberg and colleagues (2003) note that in severe cases GHB withdrawal may be life-threatening.

Milder cases of GHB withdrawal syndrome may be managed with benzodiazepines such as lorazepam and supportive care. However, in more severe cases high doses of intravenous benzodiazepines (e.g., lorazepam) or barbiturates (e.g., phenobarbital, pentobarbital) may be required (Miotto and Roth 2001; Rosenberg et al. 2003). Patients experiencing GHB withdrawal are likely to have a high tolerance for the sedative effects of benzodiazepines and require large and frequent doses to manage the withdrawal (Miotto and Roth 2001); in cases where high doses of lorazepam prove ineffective, pentobarbital may be effective (Sivilotti et al. 2001). Clonidine may be used to treat episodes of tachycardia (rapid heart rate) (Miotto and Roth 2001).

Withdrawal syndromes have not been reported with hallucinogens; however, considerable attention has been paid to residual effects such as delayed perceptual illusions with anxiety, "flashbacks," residual psychotic symptoms, and long-term cognitive impairment.

Ecstasy

MDMA (3, 4-methylenedioxy-methamphetamine) commonly known as ecstasy, was synthesized around the turn of the century and patented by Merck Pharmaceuticals in 1914 (Christophersen 2000; Parrot et al. 2000). These drugs are phenel-ethylene stimulants

with various substitution groups off the benzene ring that give the medications hallucinogenic properties. There are a number of related compounds that are designated by their initials (MDMA, MDA, MDEA, DOM, 2-CB, and DOT). Clinicians are likely to have to manage the complications of intoxication and overdose but not withdrawal.

Patients using MDMA or related compounds frequently are hyperactive and hyperverbal, reporting heightened tactile and visual sensations. They frequently will use camphor on the skin in facial masks, gloves, and other clothing to heighten their tactile sensations. Sometimes light sticks are used to heighten visual experiences at raves. Hyperthermia, dehydration, water intoxication with low sodium, rhabdomyolysis (severe muscular injury and breakdown of muscle fibers), renal failure, cardiac arrhythmia, and coma have been reported.

MDMA has been proven to be toxic to serotonergic neurons in several animal studies. Heavy ecstasy users can have paranoid thinking, psychotic symptoms, obsessional thinking, and anxiety (Parrott et al. 2000). Impaired cognitive performance in heavy ecstasy users also has been identified (Gouzoulis-Mayfrank et al. 2000). Ecstasy users performed more poorly than control groups in complex attention, memory, and learning tasks. The duration or permanence of such effects has not yet been well studied.

Ketamine and PCP (Phencyclidine)

Ketamine and PCP (phencyclidine) were both developed in the 1950s as anesthetic agents for humans. Phencyclidine was briefly marketed for human anesthetic use but taken off the market because of an unusual high incidence of psychotic symptoms. PCP remains in legitimate use for veterinarian anesthesia for large animals as does ketamine for small animals. Although both drugs were originally developed for intravenous use, they are now manufactured illicitly as oral drugs of abuse. PCP frequently is sold as LSD.

Some studies have found that ketamine and PCP act specifically at the MDMA/glutamate receptor as noncompetitive MDMA receptor antagonists. Research in animals indicates that both drugs are reinforcing, in that animals will press a bar to obtain doses of either drug. Furthermore, in these same animal models, abstinence syndromes have been observed. Withdrawal symptoms in humans have included depression, drug craving, increased appetite, and hypersomnolence (excessive sleep).

In the clinical setting, syndromes of acute intoxication with hallucinations, delusions, agitation, and violence are the most pressing problems. A human laboratory study (Lahti et al. 2001) conducted a comparison of ketamine and placebo in normal volunteers never exposed to ketamine and to people with schizophrenia with a previous history of ketamine use. In both groups, ketamine produced a dose-related, but brief, increase in psychotic symptoms. The magnitude of ketamine-induced positive psychotic symptoms was similar for both groups, although the schizophrenia group had higher baseline scores.

Although originally MDMA receptor antagonists were felt to have neuroprotective effects (preventing damage to brain cells) and have been explored as post-stroke medications, there is some evidence now that ketamine and PCP may in fact have some neurotoxic effects. Studies (e.g., Curran and Monaghan 2001) have found greater memory impairment among chronic ketamine users than infrequent ketamine users. Acute human laboratory studies by this group indicate persistent memory impairment with ketamine exposure. This same study did not find persistent psychotic features beyond acute use.

In the clinical setting, ketamine and PCP use require management for the agitation and psychotic features produced during acute use. Occasionally, patients will have such large

overdoses, intentionally or accidentally, that they will require airway management and ventilatory support for some hours. The behavioral management of the agitation and violence that may be seen is best managed in a controlled environment with limited stimuli and very close supervision. Occasionally, oral or parenteral uses of sedating medications such as benzodiazepines will be required. In extreme cases, restraints may be required for protection of the patient and staff.

Following acute management, assessment of persistent mood and cognitive effects must be made prior to any treatment attempts. The persistence of psychotic symptoms may represent an underlying psychiatric disorder that may require medication treatment. There are no studies to guide the treatment of ketamine or PCP detoxification. The need to manage withdrawal symptoms from these drugs is unlikely, but if it should arise, benzodiazepines should be administered.

Other

Rohypnol is a benzodiazepine that is sold under trade names in Europe and Mexico as a sedative-hypnotic. Rohypnol is occasionally used as a club drug and at dance clubs. In the last decade it began to be smuggled into the United States and was commonly used among homeless youth involved in the sex industry. Rohypnol has a reputation as a "date rape" drug because it can produce powerful amnestic and hypnotic effects, as well as coma. For further details on benzodiazepines, see the benzodiazepine section regarding intoxication and potential withdrawal reactions.

Management of Polydrug Abuse: An Integrated Approach

One of the most significant changes in detoxification services in recent years has been the increase in the number of patients requiring detoxification from more than one substance.

In an evaluation of admissions to publicly funded detoxification programs in Massachusetts between 1984 and 1996, McCarty and colleagues (2000) found a steady increase in the number of patients using both alcohol and other substances in the month prior to admission. In 1988, 26 percent of admissions reported using two or more substances in the previous month; by 1996 that number had nearly doubled to 50 percent (McCarty et al. 2000). There is no reason to believe that this trend has not appeared elsewhere in this country. As Miller and colleagues (1990*a*) note, "For the contemporary drug addict, multiple drug use and addiction that includes alcohol is the rule" (p. 597).

One of the most significant changes in detoxification services in recent years has been the increase in the number of patients requiring detoxification from more than one substance.

In the Massachusetts evaluation, which did not include marijuana or nonopioid prescription medication use, the most commonly seen combination of substances was alcohol and cocaine. Thirty percent of patients admitted for detoxification in 1996 reported using this combination; 12 percent used alcohol, cocaine, and heroin together; 10 percent combined alcohol and cocaine; and 7 percent combined heroin and cocaine (McCarty et al. 2000). Other studies, evaluating patient populations at inpatient treatment centers, found that between 70 and 90 percent of patients who reported cocaine abuse also abused alcohol. Rates of alcohol dependence among methadone patients and patients dependent on heroin were between 50 and 75 percent,

An Example of Potential Problems: Detoxification for Polydrug Abuse

Mr. L is a 43-year-old male with a 25-year heroin dependence. He is well known to the detoxification center, having been through the program there (which consisted primarily of support and hydration) on many occasions over the years. Though he looked more gaunt and, not surprisingly, a bit more ill each time he arrived, his course usually was about the same: 2 or 3 days of serious stomach cramps, nausea, and diarrhea, then a few days of feeling poorly, and then a return to the community. This time, however, was different. He looked "sicker" than usual. Mr. L usually was a compliant patient; now he was hostile and belligerent. He seemed to be talking to himself and did not seem as alert as he should have been. The staff asked him several times if he had used anything else and each time he denied it. His drug of choice was always heroin—he drank alcohol once in a while, and occasionally smoked marijuana when he could not get anything else. On the third day of detoxification, Mr. L seemed acutely more ill. On his way to the bathroom he was observed staggering, and as he reached for the door he fell, striking his head, and suffered a grand mal seizure. At the local hospital, a toxicological screen showed the presence of PCP, high levels of barbiturates, opioids, and trace amounts of benzodiazepines

and 80 to 90 percent who were being treated for cannabis abuse also reported alcohol abuse (Miller et al. 1990*a*).

Clinicians need to be constantly aware that a patient may be abusing multiple substances. Even if a patient admits the abuse of one substance he may not admit to using others. Patients may not see that other substances are a problem, they may be worried about the legal consequences of use, or they sometimes may not even be aware of what substances they have been using. For these reasons, clinicians should not rely on patients' self-reports to determine which substances are being used. Interviews with family, friends, or others who know the patient may be helpful, but these also are insufficient. The consensus panel strongly recommends that all patients receive an immediate urine drug screening upon admission to a detoxification program to determine the types of substances being abused. It is not necessarily true that the person is drug free simply because a drug is not detected on a drug screen. It is possible that the toxicology is not able to detect the class or type of drug. Staff should be aware of what the program/detoxification center/hospital tests for, what is not tested for, what cannot be tested for or found, and the limitations of "dip" tests.

Prioritizing Substances of Abuse

While substances of abuse may have complex interactions, it is not always possible to determine how those interactions will affect withdrawal. Therefore, it is generally best practice to prioritize the substances an individual has been dependent on and treat them sequentially according to the severity of the withdrawal produced by the substance. The substances with the most serious withdrawal syndromes, those where the withdrawal syndrome can be fatal, are alcohol and the sedative-hypnotics. When detoxifying a patient who has been dependent upon multiple substances, the sedative-hypnotics must be addressed first.

Oral methadone, LAAM, or buprenorphine should be used to stabilize withdrawal from opioids while tapering the dose of the sedative-hypnotic or anxiolytic (anti-anxiety medication) by 10 percent each day. After the patient has been tapered off of the sedative-hypnotic or anxiolytic, withdrawal from the substitute opioid can begin (Wilkins et al. 1998). Some patients can successfully be detoxified from both sedative-hypnotics and opioids simultaneously, but this requires a great deal of medical and nursing attention. Most patients will benefit from opioid mainte-

nance for an extended period of time following the completion of sedative withdrawal.

If the patient has been abusing multiple sedative-hypnotic substances or a sedative-hypnotic and alcohol, withdrawal should be handled in the same way as withdrawal from one such substance. The patient should be administered a regularly decreasing dosage of sedative-hypnotic, usually a benzodiazepine that the clinician is comfortable with and accustomed to using. The dosage should be decreased according to the patient's physiologic response. Providers also may administer an anticonvulsant such as carbamazepine (Tegretol XR), even in the absence of epilepsy or withdrawal seizures, to help ensure patient safety (Wilkins et al. 1998). Phenobarbital also may be used for detoxifying patients who have been abusing both alcohol and benzodiazepines. When the dose of alcohol and sedative-hypnotics that a patient is taking is not known, tolerance testing as previously described can be helpful in determining the dose of phenobarbital.

When treating patients detoxifying from substances other than sedative-hypnotics, management of opioid detoxification should be the next priority. Generally, other substances of abuse, including stimulants, marijuana, hallucinogenics (LSD and similar drugs), and inhalants, will not require specific treatment in patients who are being detoxified from sedative-hypnotics and/or opioids.

Patients may abuse a wide range of substances in various combinations, and the clinician must be vigilant in assessing and treating withdrawal from multiple substances. The case study above illustrates some of the serious problems the clinician faces in evaluating and treating patients withdrawing from multiple substances.

In the private sector, where money for toxicological screening is readily available, the first question many would ask concerning the case of Mr. L. is, "Why wasn't the drug screen done sooner?" However, those working in public facilities will recognize that such screenings often are unavailable or available only after an extended turnaround time. Toxicological screening, even a hand-held screening, can be an expensive item for what often is a very limited budget. Besides, in this case, the patient was believed to be a known quantity—someone who only used heroin.

This scenario is not uncommon. It is likely that the patient himself was unaware of what was in his body. One of the more frightening facts concerning the purchase of illicit drugs is the lack of knowledge of what is in them. To make buyers believe that they are buying a higher-quality product than they are, drugs often are cut with adulterants (inferior ingredients) that can produce effects similar to the drug they think they are buying. In this case, Mr. L may have been buying barbiturates and benzodiazepines in his heroin for some time without knowing it, a fact that could have had deadly consequences. Both are sedating and could have given him some of the comfortable sedation and euphoria he was seeking from his drug of choice. Unfortunately, however, where opioid withdrawal is not life-threatening, withdrawal from barbiturates can be. Furthermore, he could have gotten PCP in the marijuana he occasionally used, again without knowing it.

Alternative Approaches

Alternative methods that have been studied scientifically do not claim to be stand-alone withdrawal methods, nor stand-alone treatment modalities. Alternative approaches are designed to be used in a comprehensive, integrated substance abuse treatment system that promotes health and well-being, provides palliative symptom relief, and improves treatment retention. Therefore, because isolation of any of these approaches as an independent variable in rigorous controlled studies is difficult, if not impossible, there are no conclusive data on the effectiveness of alternative methods (Trachtenberg 2000).

Auricular (ear) acupuncture has been used throughout the world, beginning in Hong Kong, as an adjunctive treatment during opioid

detoxification for about 30 years. Its use in the United States originated in California (Seymour and Smith 1987) and New York (Mitchell 1995) but has not been subjected to rigorous controlled research. One report (Washburn et al. 1993) noted that patients dependent on heroin with mild habits appeared to benefit more than those with severe withdrawal symptoms, which acupuncture did not alleviate. The 1997 National Institute of Health Consensus Statement on acupuncture stated that acupuncture treatment for addiction could be part of a comprehensive management program. The National Acupuncture Detoxification Association has developed acupuncture protocols involving ear acupuncture in group settings that originated at Lincoln Hospital in the Bronx and are used by over 400 drug treatment programs and 40 percent of drug courts. SAMHSA's National Survey of Substance Abuse Treatment Services (NSSATS) found that 5.4 percent of the 13,720 facilities polled in 2001 offered acupuncture as a service (Office of Applied Studies 2002*b*).

Acupuncture is one of the more widely used alternative therapies within the context of addictions treatment. It has been used as an adjunct to conventional treatment because it seems to reduce the craving for a variety of substances of abuse and appears to contribute to improved treatment retention rates. In particular, acupuncture has been viewed as an effective adjunct to treatment for alcohol and cocaine disorders, and it also has played an important role in opioid treatment (i.e., methadone maintenance). It is used as an adjunct during maintenance, such as when tapering methadone doses. The ritualistic aspect of the practice of acupuncture as part of a comprehensive treatment program provides a stable, comfortable, and consistent environment in which the client can actively participate. As a result, acupuncture enhances the client's sense of engagement in the treatment process. This may, in part, account for reported improvements in treatment retention (Boucher et al. 2003). A 1999 CSAT-funded study showed that patients choosing outpatient programs with acupuncture were less likely to relapse in the 6 months following discharge than were patients who had chosen residential programs (Shwartz et al. 1999).

Ear acupuncture detoxification, which was originally developed as an alternative treatment for opioid agonist pharmacotherapy, is now augmenting pharmacotherapy treatment for patients with coexisting cocaine problems (Avants et al. 2000). The advocates of acupuncture have joined with the advocates of opioid agonist pharmacotherapy to create a holistic synthesis. Each has contributed to the success of the other, both clinically and in public perception.

Care must be taken to ensure sterile acupuncture needles in the heroin-dependent population, given the high incidence of HIV infection, viral hepatitis, and other infections. Acupuncture is not recommended as a standalone treatment for opioid withdrawal.

Other alternative management approaches that are not supported by controlled studies include neuroelectric therapy (the administration of electric current through the skin) and herbal therapy. In fact, the former has been shown to be no better than placebo in a controlled study (Gariti et al. 1992). The use of herbs for healing purposes dates back to the dawn of civilization, while the use of herbs in the treatment of substance abuse has been documented since 1981 in methadone programs, free clinics, therapeutic communities, outpatient programs, and hospitals (Nebelkopf 1981). Herbal remedies are used in substance abuse detoxification and treatment in a number of cultures around the world. However, in no scientific studies have herbs been isolated as a discrete variable to test their efficacy. Much research is currently being conducted on the effectiveness of herbal medicine on a wide variety of physical conditions.

Considerations for Specific Populations

All individuals undergoing detoxification are especially vulnerable. Patients who experience negative attitudes from staff may experience further loss of self-esteem, may leave detoxification prematurely, or may experience other psychologically damaging feelings. Negative experiences can undermine the recovery process. It is important to recognize that individuals do not fit into just one population category. A person will be a member of several populations (e.g., a Latina woman who is pregnant, bisexual, and has psychiatric diagnoses of posttraumatic stress disorder and major depression) and may benefit from a number of the considerations discussed below. It also should be noted that the information in the specific populations sections should not be used to categorize individuals or leave the reader with the impression that the information below will fit all individuals who are members of a group.

Pregnant Women

While in detoxification, pregnant women should receive comprehensive medical care, especially since this may be the first time they have sought any type of care or treatment. Ideally, programs detoxifying pregnant women from alcohol and illicit drugs should include the following services:

- Detoxification on demand
- Woman-centered medical services
- Transportation services to and from detoxification (as well as to substance abuse treatment afterward)
- Childcare services
- Counseling and case management services
- Access to drug-free, safe, affordable housing
- Help with legal, nutritional, and other social service needs

While it is recognized that provision of all of these services is an ideal to be striven for, at a minimum detoxification programs must have strong linkages to agencies that provide the above-mentioned services and should set up systems to ensure that pregnant women can access the additional services they need.

Pregnant women who present for detoxification will benefit from a comprehensive medical examination that includes a careful obstetrical component. Since it is estimated that approximately 44 to 70 percent of women who abuse substances have a history of physical, emotional, and sexual abuse (Moylan et al. 2001; Stevens et al. 1997), care should be given to the comfort of the patients during the examination. One of the major internal barriers that prevents pregnant women from seeking treatment is the shame and stigma attached to substance use, especially during pregnancy. Any negative experience encountered during detoxification can lead these women to leave treatment and not return.

Pregnant women who present for detoxification will benefit from a comprehensive medical examination that includes a careful obstetrical component.

Detoxification during pregnancy poses a special risk in that care should be taken to ensure the health and safety of both the mother and fetus. From a clinical standpoint, before giving any medications to pregnant women it is of vital importance that they understand the risks and benefits of taking these medications and sign informed consent forms verifying that they have received and understand the information provided to them. Since pregnant women often present to treatment in mid- to late-second trimester and polydrug use is the norm rather than the exception (Jones et al. 1999), it is important first to

screen these women for dependence on the two classes of substances that can produce a life-threatening withdrawal: alcohol and sedative-hypnotics. Pregnant women should be made aware of all wraparound services that will assist them in dealing with newborn issues, including food, shelter, medical clinics for inoculations, as well as programs that will help with developmental or physical issues that the neonate (newborn baby) may experience as a result of substance exposure.

A National Institutes of Health consensus panel recommended methadone maintenance as the standard of care for pregnant women with opioid dependence.

Alcohol

When pregnant women are detoxified from alcohol, benzodiazepine tapers appear to be the current practice of choice. The current state of knowledge suggests that benzodiazepine therapy in general does not have as much of a teratogenic (producing a deformed baby) risk as do other anticonvulsants as long as they are given over a short time period. It appears that short-acting benzodiazepines, like the ones described to treat alcohol withdrawal above, can be used in low doses for acute uses such as detoxification, even in the first trimester (Robert et al. 2001). Long-acting benzodiazepines should be avoided—their use during the third trimester or near delivery can result in a withdrawal syndrome in the baby (Garbis and McElhatton 2001).

Although no teratogenic effects have been observed, little is known about the effects of naltrexone, naloxone, or nalmefene administration during pregnancy. Although propranolol (Inderal), labetalol (Trandate), and metoprolol (Lopressor) are the beta blockers of choice for treating hypertension (high blood pressure) during pregnancy (McElhatton 2001), the impact of using them for alcohol detoxification during pregnancy is unclear. The use of SSRIs, a class of antidepressant medication, is safer for the mother and fetus than are tricyclic antidepressants (Garbis and McElhatton 2001). Fluoxetine (Prozac) is the most studied SSRI in pregnancy and no increased incidence in malformations was noted, nor were there neurodevelopmental effects observed in preschool-age children (Garbis and McElhatton 2001). However, possible neonatal withdrawal signs have been observed. Given that the greatest amount of data are available for fluoxetine, this is the recommended SSRI for use during pregnancy (Garbis and McElhatton 2001).

The use of anticonvulsants, such as valproic acid, is associated with several disfiguring malformations. If this type of medication must be used during pregnancy, the woman must be told that there is substantial risk of malformations (Robert et al. 2001). Barbiturate use during pregnancy has been studied to some extent, and phenobarbital is used therapeutically during pregnancy, but the risk of any anticonvulsive medication should be discussed with the patient (Robert et al. 2001). There also are reports of a withdrawal syndrome in the neonate following prenatal exposure to phenobarbital (Kuhnz et al. 1988).

Opioids

While it is not recommended that pregnant women who are maintained on methadone undergo detoxification, if these women require detoxification, the safest time to detoxify them is during the second trimester. For further information, consult the forthcoming TIP *Substance Abuse Treatment: Addressing the Specific Needs of Women* (CSAT in development *e*) and TIP 43

Medication-Assisted Treatment for Opioid Addiction in Opioid Treatment Programs (CSAT 2005*d*). In contrast, it is possible to detoxify women dependent on heroin who are abusing illicit opioids by using a methadone taper.

Before starting a detoxification, women should weigh the risks and benefits of detoxification, since many women eventually relapse to drug use and thus place themselves and their fetuses at risk for adverse consequences (Jones et al. 2001*b*). During pregnancy, the protein binding of many drugs, including methadone and diazepam (a benzodiazepine), is decreased (e.g., Adams and Wacher 1968; Dean et al. 1980; Ganrot 1972) with the greatest decrease noted during the third trimester (Perucca and Crema 1982). This decreased binding may be due to the decreased levels of albumin reported during pregnancy (Yoshikawa et al. 1984). From a clinical standpoint, it may be that pregnant women could be at risk for developing greater toxicity and side effects, yet at the same time an increase in metabolism of the drug may result (such as found with methadone). This may result in reduced therapeutic effect from the drug, since many women require an increase in their dose of methadone during the last trimester (Pond et al. 1985).

Other medications used to treat the withdrawal signs and symptoms include clonidine. Clonidine is used as a second-line drug to treat hypertension (high blood pressure) during pregnancy and appears to lack teratogenic effects (McElhatton 2001). It has reportedly been abused by pregnant women. Some pregnant women take clonidine with their methadone because it is hard to detect in urine and it increases the high they get from methadone. However, little is known about its effects on the baby following therapeutic doses given in a detoxification context or doses taken in higher than therapeutic amounts (Anderson et al. 1997*a*). Buprenorphine has been examined in pregnancy and appears to lack teratogenic effects but may be associated with a withdrawal syndrome in the neonate (Jones and Johnson 2001).

A National Institutes of Health consensus panel recommended methadone maintenance as the standard of care for pregnant women with opioid dependence. Methadone currently is the only medication recommended for medication-assisted treatment for pregnant women. Clinical trials are being conducted to determine the efficacy and safety of buprenorphine with pregnant women but it has not yet been approved for use with this population. Two early studies on treatment of pregnant women with opioid dependence with buprenorphine showed promising results (Fischer et al. 2000; Johnson et al. 2001). Comer and Annitto (2004) conclude, from their review of the research literature, that buprenorphine should be used more aggressively to detoxify pregnant women who want to be opioid-free at delivery.

Because of the potential for premature labor and delivery and risks of morbidity and mortality to the fetus related to withdrawal from opioids, it is recommended that a pregnant woman who is dependent on opioids be maintained during pregnancy (Kaltenbach et al. 1998). Other reasons to stabilize a pregnant woman on methadone rather than attempt withdrawal are the risks of relapse, consequences associated with HIV and use of multiple needles, and the potential lack of prenatal care.

The Federal government mandates that prenatal care be available for pregnant women on methadone. It is the responsibility of treatment providers to arrange this care. More than ever, there is need for collaboration involving obstetric, pediatric, and substance abuse treatment caregivers. Comprehensive care for the pregnant woman who is opioid dependent must include a combination of methadone maintenance, prenatal care, and substance abuse treatment.

Pregnant women should be maintained on an adequate (i.e., therapeutic) methadone dose. An effective dose prevents the onset of withdrawal for 24 hours, reduces or eliminates drug craving, and blocks the euphoric effects of other narcotics. An effective dose usually is in the range of 50–150mg (Drozdick et al. 2002). Dosage must be individually determined, and some pregnant women may be able to be successfully maintained on less than 50mg while others may require much higher doses than 150mg. The dose often needs to be increased as a woman progresses through gestation, due to increases in blood volume and metabolic changes specific to pregnancy (Drozdick et al. 2002; Finnegan and Wapner 1988).

Generally, dosing of methadone is for a 24-hour period. However, because of metabolic changes during pregnancy it might not be possible to adequately manage a pregnant woman during a 24-hour period on a single dose. Split dosing, particularly during the third trimester of pregnancy, may stabilize the woman's blood methadone levels and effectively treat withdrawal symptoms and craving.

Breastfeeding is not contraindicated for women who are on methadone. Very little methadone comes through breast milk; the American Academy of Pediatrics (AAP) Committee on Drugs lists methadone as a "maternal medication usually compatible with breastfeeding" (AAP 2001, pp. 780–781).

Benzodiazepines

The principles of detoxification from benzodiazepines are the same for pregnant and nonpregnant patients. It is important to taper the dose of benzodiazepine slowly in order not to induce fetal withdrawal or other adverse consequences in the fetus or mother. Detoxification is most likely safest during the second trimester in order to avoid spontaneous abortion or premature labor. For more information, see the forthcoming TIP *Substance Abuse Treatment: Addressing the Specific Needs of Women* (CSAT in development *e*). There is a documented withdrawal syndrome in neonates who have been prenatally exposed to benzodiazepines (Sutton and Hinderliter 1990), and this syndrome may be delayed in onset more than that associated with other drugs.

Stimulants

The principles of detoxification from stimulants such as cocaine are the same for pregnant and nonpregnant women. Since there is no current pharmacotherapy to use in tapering individuals from stimulant use, the use of any medications to treat medical complications that might arise from the withdrawal should only be done after discussion with the patient of the risks and benefits of each medication.

Solvents

The principles of detoxification from solvents are the same for pregnant and nonpregnant women. It should be noted that based on a review of case reports, there is a complex array of characteristics that appear to be similar to fetal alcohol effects. Fetal Alcohol Syndrome (FAS) is characterized by growth deficiency (born small for gestational age; failure to grow at a normal rate), particular facial features (e.g., eyes are too close together, ears are set low on the head), and CNS dysfunctions (mental retardation, microencephaly [small brain size]) and brain malformations (Costa et al. 2002). Thus fetal development in pregnant women who have a history of solvent abuse should be evaluated and carefully monitored (Jones and Balster 1998).

Nicotine

There is extensive documentation that smoking during pregnancy causes numerous adverse fetal consequences (see Schaefer 2001). Cigarette smoking during pregnancy is the largest modifiable risk for pregnancy-related morbidity and mortality in the United States (Dempsey and Benowitz 2001). While women

are undergoing detoxification, they should be offered education about the risk of cigarette smoking during pregnancy and, ideally, prevented from smoking. This is especially important since cigarette smoking is strongly associated with decreased birth weight, which is a predictor of developmental problems in newborns (Ernst et al. 2002). If women are unable to stop smoking using behavioral interventions, nicotine replacement products may be used; however, the woman should fully understand the possible risks and benefits of these pharmacotherapies (Jones and Johnson 2001).

It also is important to point out to patients that there are data to suggest that women may derive less benefit from NRT than do men and that they may derive greater benefit from some non-NRT medications (e.g., bupropion), thus producing quit rates in women comparable with those in men (Perkins 2001). However, the data regarding the use of bupropion during pregnancy are limited.

Examinations of the acute effects of NRT in pregnant women reveal that nicotine has minimal impact on the maternal and fetal cardiovascular systems. NRT may well be viewed as the lesser of two evils, inasmuch as smoking cigarettes delivers, in addition to nicotine, thousands of chemicals. Among these are many that also are viewed as developmental toxins (e.g., carbon monoxide and lead). It is doubtful that the reproductive toxicity of cigarette smoking is primarily related to nicotine. Thus, if NRT is to be used during pregnancy, the dose of nicotine in NRT should be similar to the dose of nicotine that the pregnant woman received from her ad lib (whenever desired) smoking. Although intermittent-use formulations of NRT (e.g., chewing gum) have been recommended over continuous-use formulations (e.g., transdermal patch) due to reductions in the total dose of nicotine delivered to the fetus (Dempsey and Benowitz 2001), it is unknown what the impact of intermittent acute doses followed by withdrawal of nicotine has on the fetus.

Marijuana, anabolic steroids, and club drugs

The principles of detoxification from these drugs is the same for pregnant and nonpregnant women. The use of anabolic steroids during pregnancy is rare; however, these can be catastrophic to a pregnancy, and if use is found, a detailed ultrasound examination is recommended to determine the morphological (physical or structural) development of the fetus (Scialli 2001).

Although the class of club drugs is relatively new there have been a few reports (McElhatton et al. 1999) suggesting that there is an increased risk of congenital malformation in neonates prenatally exposed to ecstasy. Other club drugs such as flunitrazepam (Rohypnol) may have effects similar to those of some benzodiazepines; however, this is speculative. For comprehensive information on the treatment of this specific population, see the forthcoming TIP *Substance Abuse Treatment: Addressing the Specific Needs of Women* (CSAT in development *e*).

While women are undergoing detoxification, they should be offered education about the risk of cigarette smoking during pregnancy and, ideally, prevented from smoking.

Older Adults

It has been recommended that, when treating older adults, there should be a policy of using age-specific group treatment that is both supportive and nonconfrontational (Royer et al. 2000; West and Graham 1999). Older adults may be dealing with depression, loneliness,

and loss of career or a loved one. Thus, as a standard policy, older adults should be screened for depression and grief or loss-related issues. Similar to the situation with other specific populations, the detoxification setting should ideally have in place a policy that mandates, at a minimum, well-established linkage with general medical services and specialized services for the aging, because of their increased vulnerability to physical ailments. Establishing policies that create an environment that is positive and does not tolerate "ageism"—a general tendency to react negatively toward elderly adults—is important for the optimal treatment of older individuals.

Alcohol and other drug-related disorders in elderly individuals often are more severe than those of younger individuals and they are at increased risk for co-occurring medical disorders. It is the medical complications rather than age itself for which detoxification in a medical setting is needed. The elderly may have slower metabolism of medications making dosage adjustments necessary in some cases. The elderly also may be at greater risk for drug interactions, since they may be receiving medications to treat other problems. A complete and careful assessment with ongoing monitoring should be done to examine the existence of diseases such as, but not limited to, heart disease, respiratory disease, diabetes, and dementia. Potential for falls also should be evaluated in the context of prescribed medications. The previously presented protocols for detoxification from alcohol, opioids, benzodiazepines, stimulants, solvents, nicotine, marijuana, anabolic steroids, and club drugs (anabolic steroids and club drug abuse are rare in this population) appear to be applicable to the elderly population as long as sensitivity to the withdrawal medication is considered. TIP 26, *Substance Abuse Among Older Adults* (CSAT 1998*f*), provides comprehensive information on the treatment of this population.

People With Disabilities or Co-Occurring Conditions

In any patient population, the clinician should expect to encounter persons with disabilities including co-occurring medical or mental disorders. These patients often will require special assistance to overcome both physical and psychological barriers in undergoing detoxification and treatment, including their own psychological barriers that must be overcome, as well as those attitudinal and communication barriers that often prevent complete and clear understanding between patient and clinician or clinician and institution. Effective communication is essential for effective services. Accommodations must take into consideration the expressed preference of the individual with a disability. Substance abuse treatment programs need to be in compliance with two Federal laws regarding this matter: the 1992 Amendments to the Rehabilitation Act of 1973 and the Americans with Disabilities Act [ADA] of 1990. According to the ADA, programs must remove or compensate for physical or architectural barriers to existing facilities when accommodation is readily achievable, meaning "easily accomplishable and able to be carried out without much difficulty or expense" (P.L. 101-336 § 301). Providers should examine their programs and modify them to eliminate four fundamental groups of barriers to treatment for people with disabilities and/or co-occurring disorders: (1) attitudinal barriers; (2) discriminatory policies, practices, and procedures; (3) communications barriers; and (4) architectural barriers. Federal, State, and other sources of assistance might be available to fund ADA-related improvements. See TIP 29, *Substance Use Disorder Treatment for People With Physical and Cognitive Disabilities* (CSAT 1998*g*) for further information.

The following passage clarifies terms and addresses the basic issues presented by patients with disabilities and/or co-occurring disorders. Diseases, disorders, and injuries,

whether congenital or acquired, can have diverse effects on organs and body systems. Conditions (and *diseases*) such as multiple sclerosis, traumatic brain injury, spinal cord injury, diabetes, and cerebral palsy can lead to *impairments*, such as impaired cognitive ability, paralysis, blindness, or muscular dysfunction. These impairments in turn cause *disabilities*, which limit an individual's ability to function in various areas of life, such as learning, reading, and mobility. While diseases, impairments, and disabilities are distinct categories, they often are used interchangeably. These essential terms are defined in Figure 4-15.

The field of disability services has developed its own terminology to discuss physical, sensory, and cognitive disabilities (see definitions below), and many treatment providers of people with substance use disorders will not be familiar with these terms as the profession defines them. WHO has devised a method for the classification of impairments and disabilities (WHO 1980). This complex system has been simplified here into four main categories:

1. *Physical* impairments are caused by congenital or acquired diseases and disorders or by injury or trauma. For example, spinal cord injury is a disorder that can cause paralysis, an impairment.
2. *Sensory* impairments include blindness and deafness, which may be caused by congenital disorders, diseases such as encephalopathy or meningitis, or trauma to the sensory organs or the brain.
3. *Cognitive* impairments are disruptions of thinking skills, such as inattention, memory problems, perceptual problems, disruptions in communication, spatial disorientation, problems with sequencing (the ability to follow a set of steps in order to accomplish a task), misperception of time, and perseveration (constant repetition of meaningless or inappropriate words or phrases).

Figure 4-15
Some Definitions Regarding Disabilities

Disease: An interruption, cessation, or disorder of body functions, systems, or organs.

Impairment: Any loss or abnormality of psychological, physiological, or anatomical structure or functions.

Disability: Any restriction or lack (resulting from an impairment) of the ability to perform an activity in the manner or within the range considered normal for a human being. A disability is always perceived in the context of certain societal expectations, and it is only within that context that the disadvantages resulting from a disability can be properly evaluated.

Functional capacities: The degree of ability possessed by an individual to meet or perform the behaviors, tasks, and roles expected in a social environment.

Functional limitations: The inability to perform certain behaviors, fulfill certain tasks, or meet certain social roles as a consequence of a disability. Those limitations can be anatomical (e.g., amputation), physiological (e.g., diabetes), cognitive (e.g., traumatic brain injury), sensory (e.g., blindness, deafness), or affective (e.g., depression) in origin and nature. They represent substandard performance on the part of the individual in meeting life activities and reflect the interaction between the person and the environment. (A list of the areas of functional capacity and disabilities most often assessed is in Figure 4-16, p112.)

Sources: Livneh and Male 1993; Stedman 1990; World Health Organization (WHO) 1980.

Figure 4-16
Impairment and Disability Chart

Impairment Category	Common Disabilities
Physical	Spina bifida Spinal cord injury Amputation Diabetes Chronic fatigue syndrome Carpal tunnel Arthritis
Sensory	Blindness Hearing impairment Deafness Deaf-blindness Visual impairment
Cognitive	Learning disabilities Traumatic brain injury Mental retardation Attention deficit disorder
Affective	Depression Bipolar disorder Schizophrenia Eating disorder Anxiety disorder Posttraumatic stress disorder

Source: CSAT 1998*e*.

4. *Affective* impairments are disruptions in the way emotions are processed and expressed. For the purposes of this discussion, affective impairments are considered to include problems caused by both affective and mood disorders, such as major depression and mania. These impairments include the symptoms of mental disorders, such as disorganized speech and behavior, markedly depressed mood, and anhedonia (joylessness).

One of the most important practices that should be in place as a standard in any detoxification setting is routine screening for disabilities and co-occurring medical and/or psychiatric conditions. The failure to recognize these problems in patients can result in poor outcomes (Cook et al. 1992). Additionally, intoxicated individuals with co-occurring depressive disorders are at high risk for suicide attempts. Of course, an individual patient may present with two or more disabilities and/or co-occurring disorders. Clinicians treating people with co-occurring substance use and mental disorders should consult TIP 42, *Substance Abuse Treatment for Persons With Co-Occurring Disorders* (CSAT 2005*b*).

All programs should make a good faith effort to provide equal access in as comprehensive a manner as possible for all patients. Individual unique needs should be taken into account when providing services. For example, patients with physical, sensory, or cognitive disabilities may need help with self-care (e.g., eating, grooming), moving (e.g., using stairs, walking), communication (e.g., reading, speaking), learning, social skills, and executive functions (e.g., planning and organization, decisionmaking). Unresponsiveness to instructions, lack of participation in discussions and activities, forgetfulness, or confusion by an individual with cognitive disabilities should not be viewed as a lack of motivation, resistance, or denial. Programs may need to develop the expertise or engage an expert on cognitive disabilities to determine the limitations resulting from the substance abuse and those resulting from the disability. Both require patience in the response. Information presented to the person with a cognitive disability should include different and complementary media; for example, visual and tactile materials can reinforce the usual verbal interaction.

Programs also may need to alter their policies regarding the use of drugs prescribed for pain control, since most medications of this class are drugs with a high abuse potential. A number of patients with substance use disorders also live with chronic pain. Living in a drug-free state may not be desirable if it is associated with unrelieved pain, which can be quite disabling. The clinician should explore with patients what pain management options have been tried in the past, and which management medications are being used currently. Patients should be encouraged to discuss their feelings about pain and how it affects their daily life, and especially to what extent it curtails or prevents their participation in the activities of daily living.

There are a number of alternative treatments for chronic pain. Acupuncture is already in use in some treatment programs for detoxification to help relieve symptoms of withdrawal. Physical therapy and exercise, chiropractic care, biofeedback, hypnotism, and therapeutic heat or cold are some other approaches to caring for persons with physical problems. Most of these alternative treatments have limited or no research support of their efficacy; yet some clinicians believe they work. Thus, consultation with experts on their use is necessary before starting a person with chronic pain on these remedies.

An alternative model supports the idea that patients should be treated simultaneously in substance abuse treatment, mental/physical health, and detoxification settings, yet treatments may occur in separate facilities and be conducted by separate staff. The consequent task for all is to be supportive and knowledgeable about each other's interventions. The severity of the addiction and medical/psychiatric problems at the time of detoxification entry should determine which acute services the patient receives first. Naturally, a person's medical and psychiatric disabilities must be accounted for in the preparation of any treatment plan. In some cases, substance abuse treatment cannot begin until issues relating to medical and psychiatric disabilities are settled.

There are a number of resources for clinicians to employ, including experts in the field of disability services. Figure 4-17 (p. 114) discusses ways of locating expert help for treating patients with disabilities and/or co-occurring disorders.

Finally, integrated treatment combines substance abuse treatment, treatment for co-occurring disorders, and detoxification services into one program. For more complete information on the treatment of many of these disorders, see chapter 5.

African Americans

For African Americans, entrance into detoxification has been associated with enrolling in further treatment, reductions in HIV/AIDS risk behaviors, and linkages with social and health-

Figure 4-17
Locating Expert Assistance

"Experts" in disability services can be located in several ways, depending upon the nature of the patient's disability and the local resources available. Patients who understand their disability may in fact be the best "experts" on their condition and specific needs; however, it is not uncommon that persons requiring treatment for substance use disorders will not understand basic aspects of their situation or condition. In such cases, immediate family members or close friends may be important sources of information and guidance. The treatment team also should consider contacting other sources:

- A disability-specific service organization (e.g., United Cerebral Palsy, organizations for the blind or deaf such as the National Association of the Deaf and American Deafness and Rehabilitation Association, the Association for Retarded Citizens)
- Social workers
- Case managers
- Rehabilitation specialists
- Psychologists
- Nurses or physicians associated with a social service agency providing disability services for the individual patient in question (e.g., vocational rehabilitation, family services for people who are deaf and hard of hearing, the Department of Veterans Affairs' physical rehabilitation unit, community case management services)
- Other organizations recognized by the disability community (e.g., Centers for Independent Living, governors' committees for persons with disabilities, Paralyzed Veterans of America, local or State consumer coalitions for persons with disabilities)

Source: CSAT 1998*e*.

care services (Lundgren et al. 1999). African Americans are at greater risk than other populations for the co-occurrence of diabetes and hypertension (high blood pressure) that can predispose them to a risk of stroke. This should be taken into account when placing and monitoring them on withdrawal medications.

In treating African-American patients, treatment efficacy and therapist efficacy may be associated with the therapist's understanding of how race plays a role in recovery (Luborsky et al. 1988; Pena et al. 2000). In addition, when working with counselors from other cultures, African Americans may display mistrust and a reluctance to show any weakness. To overcome this mistrust and to build rapport, especially when the clinician is discussing the detoxification process, it is particularly important for the clinician to keep in mind the standard of respecting the client as an equal partner in treatment. For further information on this subject (as well as information on working with members of other cultural/ethnic groups), see the forthcoming TIP *Improving Cultural Competence in Substance Abuse Treatment* (CSAT in development *a*).

The previously discussed protocols for detoxification from all substance of abuse appear adequate for the detoxification of African Americans. However, there are a few further aspects to consider:

- If treating African Americans with beta blockers, propranolol is less effective in treating African Americans than Caucasians (Pi and Gray 1999).
- African Americans are more likely (15 to 25 percent) to have less of the enzyme activity

needed to eliminate diazepam than others, so it may have a longer half-life in African Americans than it does in other ethnic groups (Pi and Gray 1999).

- Since co-occurring disorders such as depression frequently are seen in people with substance use disorders, it is important to know that African Americans may require lower doses and may be at greater risk of developing toxic side effects when prescribed antidepressants, since they are likely to metabolize tricyclic antidepressants and SSRIs less efficiently than Caucasians (Pi and Gray 1999).
- Although the clearance of nicotine is similar for African Americans and Caucasians, the clearance of cotinine, a metabolite of nicotine, is slower in African Americans, which may cause different smoking patterns than found in Caucasians (Ahijevych 1998).

Asians and Pacific Islanders

This group is the most diverse in nations of origin and has widely differing languages, beliefs, practices, dress, and values. Often the only common thread among these people is their geographic origin (Chang 2000). Although this group appears to have lower rates of alcohol and illicit drug use, these problems should not be overlooked; members of this group may not seek treatment until the problems are quite severe. Successful treatment involves the family and important values include balance, harmony, wisdom, and modesty. Thus, it may be important to talk to the family about the process of detoxification and dispel their fears and concerns as well as the patient's.

Asians and Pacific Islanders tend to be concerned about the clinician's credibility and trustworthiness. Generally speaking, maleness, mature age, the projection of self-confidence, possession of sound cultural competence skills, good educational background, and level of experience are of importance. In addition, a concrete logical approach to the problem at hand is valued (Brems 1998). The previously discussed protocols for detoxification from all substances of abuse appear adequate for the detoxification of Asians and Pacific Islanders. During the detoxification process, there are a number of issues to consider:

- If possible and appropriate, incorporate traditional healing methods (e.g., meditation and religious exercises). These can help reduce stress and anxiety and promote recovery (Chang 2000). While there is a large immigrant population among many Asian-American groups, it is erroneous to assume that all are foreign born. Variation in practice of traditional healing methods is considerable and consistent with generational differences. When considering detoxification, recognize the importance of bicultural practices, values, and beliefs that might influence responsiveness to treatment.
- When discussing detoxification medications, discuss with patients their feelings about taking "Western" medications for detoxification. In some Southeast Asian cultures, Western medications are believed to be too strong for the Asian person. It is important to assess a person's feelings about these since the patient may not wish to disagree with the clinician yet may be noncompliant in taking the medications. Compliance with detoxification medication may be better achieved if doses are reduced or regimens shortened, yet this should only be attempted if it is in the best interest of the patient.
- Racial differences in alcohol sensitivity among Asians and Caucasians have long been recognized, with more than 80 percent of some Asians compared to 10 percent of Caucasians being sensitive to alcohol (i.e., having a flushing reaction) (Wolff 1972, 1973). This is the result of genetic differences in alcohol metabolizing enzymes. Approximately 50 percent of Asians lack the enzyme ALDH2, found in the liver, that helps the body get rid of alcohol (Hsu et al. 1985; Yoshida et al. 1985). One reason for lower drinking rates among Asians may be the flushing reaction in the face and body following alcohol ingestion and an increase in skin temperature. Other uncomfortable signs and symptoms associated with the negative reac-

tion to alcohol ingestion can include nausea, dizziness, headache, fast heartbeat, and anxiety (Caetano et al. 1998).

- Five studies have shown that the metabolism of codeine is slower in Chinese people than in Caucasians. Chinese patients seem to require lower doses of codeine, since the slower metabolism leads to a higher concentration of codeine in the blood (Smith and Lin 1996).
- If treated with beta blockers, Asians require much lower doses than Caucasians, since they are very sensitive to this medication's blood pressure and heart rate effects (Pi and Gray 1999).
- Asians as a group have a higher number of individuals than other ethnic groups who are poor metabolizers of diazepam. This may result in the need for lower doses, since they report greater sedative effects with a typical dose (Lesser et al. 1997). It also may be that a lower body fat, which is typical of Asian-American individuals, can lead to differences in the pharmacokinetics of lipophilic drugs (Lesser et al. 1997).
- In treatment for co-occurring depression and a substance use disorder, Asians appear to metabolize clomipramine more slowly than Caucasians (Pi and Gray 1999). In contrast, Asians may metabolize phenelzine faster, resulting in the need for a higher dose relative to that which would be appropriate for Caucasians (Pi and Gray 1999).
- Chinese Americans tend to metabolize nicotine 35 percent more slowly than Hispanics/Latinos and Caucasians. Thus, they may need to smoke less frequently and take in less nicotine to achieve the same nicotine levels as do Hispanics/Latinos and Caucasians. This may have implications for the dosing of NRTs (Benowitz et al. 2002).
- Smoking rates among male Asian Americans, especially immigrant males, are exceedingly high and masked by the lower rates among Asian-American females.

American Indians

There are currently more than 500 federally recognized American-Indian tribes, and there is among them great variability in appearance, dress, values, religious beliefs, practices, and traditions. More than 200 different languages are spoken by American-Indian tribes. Alcohol use varies widely among tribes (Mancall 1995). Of all ethnic and racial groups, American Indians have the greatest rates of alcohol and illicit drug use (Office of Applied Studies 2002*a*).

An early study of treatment utilization by American Indians found that there was a significant association between involvement in society and treatment outcomes. Those involved in either the traditional Indian society or both the traditional Indian society and Caucasian society had more than a 70 percent success rate, whereas those involved in neither society had a 23 percent success rate (Ferguson 1976). At a 10-year followup, those who had reported greater Indian culture affiliation and more severe liver dysfunction at baseline had better alcohol treatment outcomes (Westermeyer and Neider 1984).

When engaging an American Indian in the process of detoxification, moving through the process too quickly or abruptly can be perceived as showing a lack of caring and is considered contrary to trust building (Brems 1998). The pace of conversation is important; a slower pace is more agreeable than a rapid conversation. Moreover, a confrontational approach also is not advised with this population (Abbott 1998). American Indians may want a close and involved relationship with their therapists and often want the clinician to be a friend or relative (Brems 1998). The trust often is built by idle small talk to a level of shared understanding. Use of fables and illustrative stories to express ideas can be extremely helpful. According to the forthcoming TIP *Improving Cultural Competence in Substance Abuse Treatment* (CSAT in development *a*), avoidance of eye contact also is traditional. The Talking Circle is a native tra-

dition that can be helpful in the treatment process (Canino et al. 1987; Coyhis 2000). The previously discussed protocols for detoxification from all substances of abuse appear adequate for the detoxification of American Indians. The following are some issues to consider during detoxification.

- Fetal Alcohol Syndrome is 33 times higher in this population than the national average (CSAT in development *a*). This may be important for pregnant women coming to detoxification and also may be important if the adult has FAS.
- Indian women who drink have a six-fold increase in cirrhosis of the liver relative to Caucasian women (Heath 1989).
- Although some American Indians have reported a flushing response to alcohol, it appears that the flushing reaction in American Indians is milder and less adverse than that experienced by Asians (Gill et al. 1999).
- If Alcoholics Anonymous or other 12-Step programs are to be introduced, framing the steps in terms of a circle rather than a ladder may be better received, since the circle is important concept in Indian culture (CSAT in development *a*).
- If possible and appropriate, other traditional methods that can help recovery are sweat lodges, vision quests, smudging ceremonies, sacred dances, and four circles (Abbott 1998).
- Overall, detoxification for this population is the same as for other populations, but American Indians are likely to seek treatment later and have more medical complications and poorer nutrition (Abbott 1998).

Hispanics/Latinos

Hispanics/Latinos are now the largest ethnic minority group in America. Assessment of the patient's level of acculturation can be helpful in understanding substance abuse patterns. Language is one of the most difficult barriers to treatment entry and success for Hispanics/Latinos. However, simply knowing Spanish or Portuguese does not guarantee cultural sensitivity or competence. For instance, it is important that the treatment staff understand the role of the family. The functional family can be extended and should take into account people who have day-to-day contact with and a role in the family (Markarian and Franklin 1998). Hispanics/Latinos are likely to view drug dependency as moral failing or personal weakness. Traditional healing such as folk remedies and folk healers may provide benefit. The previously discussed protocols for detoxification from alcohol, opioids, benzodiazepines, stimulants, solvents, nicotine, marijuana, anabolic steroids, and club drugs appear adequate for the detoxification of Hispanics/Latinos.

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Gays and Lesbians

Approximately 5 to 33 percent of all lesbian and gay individuals are estimated to have a substance abuse problem (Cochran and Mays 2000; Hughes and Wilsnack 1997). A contributing factor may be the stress and anxiety associated with the social stigma attached to homosexuality. Further, alcohol and drugs may serve as an escape and ease social interactions at social settings such as bars. More information on this subject will be available in the forthcoming TIP *Improving Cultural Competence in Substance Abuse Treatment* (CSAT in development *a*). The previously discussed protocols for detoxifica-

tion appear adequate for gay and lesbian patients. Since numerous misconceptions and stereotypes exist concerning gay and lesbian individuals, it is important for the clinician to assess his beliefs and take care not to impose them on the patient.

There are a number of principles of care for treating gay and lesbian individuals, which are outlined in *A Provider's Introduction to Substance Abuse Treatment for Lesbian, Gay, Bisexual, and Transgender Individuals* (CSAT 2001). These principles include: (1) counselors' being able to monitor their own feelings about working with this population of patients in order to provide professional, ethical, and competent care; (2) helping patients heal from the negative experiences of homophobia and heterosexism; (3) helping patients understand their reactions to discrimination and prejudice; and (4) helping patients accept personal power over their own lives by helping them improve their self-images and build support networks.

Adolescents

The previously discussed protocols for detoxification from all substances of abuse appear adequate for the detoxification of adolescents; however, there are several additional aspects to consider:

- Physical dependence generally is not as severe, and response to detoxification is more rapid than in adults.
- Retention is a major problem in adolescent treatment (Thurman et al. 1995).
- Peer relationships play a large role in treatment. Among adolescents who do not use drugs, few of their friends reported use. In one study, among those who reported specific drug use, over 90 percent of their friends reported using the same drug (Dinges and Oetting 1993).
- It is estimated that 75 percent of those reporting steroid use are high school students, and most of them are male. Detoxification from steroids does not typically require specific pharmacological intervention unless there is liver toxicity or suicidal intent (Giannini et al. 1991). The use of club drugs is higher in this population than in others.

TIP 31, *Screening and Assessing Adolescents for Substance Use Disorders* (CSAT 1999*d*), and TIP 32, *Treatment of Adolescents With Substance Use Disorders* (CSAT 1999*f*), provide comprehensive information on the treatment of adolescents.

Incarcerated/Detained Persons

Substance use disorders are common among inmate populations. At the time of arrest and detention, it has been estimated that 70 to 80 percent of all inmates in local jails and State and Federal prisons had regular drug use or had committed a drug offense, and 34 to 52 percent of these inmates were intoxicated at the time of their arresting offense (Federal Bureau of Prisons 2000; Mumola 1999). Although women comprise a small proportion of the incarcerated population (12.3 percent in jails and 7.4 percent in State and Federal prisons) than men (Harrison et al. 2004), females have a greater prevalence of illicit drug use (i.e., 40 percent compared to 32 percent were under the influence of drugs at the time the crime was committed) than do males (Greenfeld and Snell 1999).

Persons who are incarcerated or detained in holding cells or other locked areas should be screened for physical dependence on alcohol, opioids, and benzodiazepines and provided with needed detoxification and treatment. Screening should occur over time, since the onset and intensity of withdrawal is dependent on the type of drug taken, when the person last took the drug, and how long the drug lasts in the person's body. The duration of detention will affect what detoxification services can be provided, and many facilities will not be able to provide detoxification or continuing care services. There are some special considerations for the detoxification of this population:

- Abrupt withdrawal from alcohol can be life-threatening.

- Abrupt withdrawal from opioids or benzodiazepines is not life-threatening but can cause severe withdrawal signs and symptoms and great distress.
- It should be determined whether dependence on either opioids or benzodiazepines is the result of illicit use and not the result of taking medications that have been prescribed to treat pain or anxiety disorders.
- If medically supervised withdrawal is indicated, the substitution of a long-acting drug from the same class of substances the patient is using (e.g., giving methadone to treat heroin dependence) and the gradual tapering of that substance (no faster than 10 to 20 percent per day) should be conducted under closely monitored settings.
- There are cases when individuals maintained on opioid agonist medications are detained or incarcerated. If the incarceration is 30 days or less, the individual should be maintained on her usual dosage. If the incarceration is longer, the individual may be appropriate for gradual dose tapering.
- Persons who transition from a state of opioid dependence to a drug- or medication-free state are at greater risk of overdose upon relapse to opioid use.
- Many correctional facilities have restrictions on the use of methadone or LAAM and special provisions for maintaining or tapering the individual may need to be made.
- If medications are provided to medically detoxify inmates, the Federal Bureau of Prisons' *Clinical Practice Guidelines for Detoxification of Chemically Dependent Inmates* (2000) suggest retaining strict control over access to these medications to prevent diversion or misuse (e.g., eating clonidine patches to obtain a state of euphoria).

TIP 44, *Substance Abuse Treatment for Adults in the Criminal Justice System* (CSAT 2005*b*), and TIP 30, *Continuity of Offender Treatment for Substance Use Disorders From Institution to Community* (CSAT 1998*b*), provide more detailed information about the treatment of this population. TIP 21, *Combining Alcohol and Other Drug Abuse Treatment With Diversion for Juveniles in the Justice System* (CSAT 1995*b*), also provides information about incarcerated youth.

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