Patients with substance abuse problems are common in general medical practice and include people of all ages and socioeconomic groups. Initial diagnosis and treatment of addiction problems are often done by the primary care practitioner before referral to a specialist. This article provides information to help in recognition of addiction, guidelines for treatment of intoxication and withdrawal of various drugs of abuse (such as opioids, sedative-hypnotics, stimulants, hallucinogens, and volatile inhalants), and techniques for brief intervention as well as long-term care of substance-abusing patients. The physician can be a powerful influence for getting the patient to accept treatment, especially when the physician is empathic without being judgmental. Addiction is a chronic disorder with remissions and relapses like any other chronic disease, so exacerbations should not be seen as failures but as time to intensify treatment. Patients with substance abuse problems can be frustrating to treat, but it can also be a rewarding experience when a physician helps a substance-abusing patient return to normal and productive functioning in society.

From the Division of Addiction Medicine, Departments of Internal Medicine and Psychiatry, Medical College of Virginia/Virginia Commonwealth University, Richmond, Va (Drs Weaver and Schnoll), and Marworth, Waverly, Pa (Dr Jarvis).

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It is always easiest to recognize the problem of drug abuse when a patient presents with the request to discontinue using drugs. When this occurs, the physician should be prepared to seize this opportunity and initiate treatment or refer the patient to an appropriate treatment program. Since addiction is a common problem, each patient should be screened for it just as he/she is screened for diabetes mellitus or hypertension. Both physician and patient will feel more comfortable if this screening is part of the physician’s routine examination. A simple screening tool for problems of alcohol use is the CAGE questionnaire, which has been modified for screening for drug use and is known as the CAGE-AID questionnaire: C, Have you ever tried to cut down on your alcohol or drug use? A, Do you get annoyed when people comment about your drinking or drug use? G, Do you feel guilty about things you have done while drinking or using drugs? E, Do you need an eye-opener to get started in the morning? The more affirmative responses, the more likely that the person answering is chemically dependent.

A clue to chemical dependency is a sudden change in a patient’s behavior. This may be evident from meetings with the patient or reported by family members or employers. Sudden loss of a job or frequent job changes for no apparent reason are often a consequence of drug abuse. Unexplained financial or family problems can also be a result of drug abuse.

Certainly, the patient who presents exhibiting toxic behavior is potentially abusing drugs. A history of driving under the influence traffic citations or a blood alcohol concentration higher than 150 mg/dL with the patient still ambulatory is indication of significant tolerance and, therefore, evidence of long-term, high-dose use of alcohol. Any patient 18 years or older with a history of 2 or more non-sports-related traumatic events is considered at high risk for addiction. Another screening tool similar to the CAGE-AID questionnaire used to assess potential for substance abuse problems is the Trauma Test. Since your 18th birthday have you: Had any fractures or dislocations of your bones or joints (excluding sports injuries)? Been injured in a traffic accident? Injured your head (excluding sports injuries)? Been in a fight or been assaulted while intoxicated? Been injured while intoxicated? A positive response to 2 or more of these questions indicates a strong potential for addiction.

Almost all drugs of abuse alter sexual function as well as other behaviors. Although many people believe that drugs will enhance sexual performance, in reality drug use usually decreases it and may even cause impotence or other dysfunctions. Any patient presenting with complaints of sexual dysfunction should be evaluated for possible drug abuse as a contributing cause. There is mounting evidence that drug use is the leading cause of impotence in the United States.

Chemically dependent individuals frequently develop medical sequelae of drug abuse. Intravenous (IV) drug abuse often causes infections such as endocarditis, hepatitis, and human immunodeficiency virus. Needle marks may be present on the skin from recent injections, or “tracks” may be present over veins from repeated injections. Injection is not always confined to the obvious sites. Many users, in an attempt to hide their drug problems, will inject in the axilla, under the tongue, under the breast, in the legs, and even into the dorsal vein of the penis. Smoking or snorting cocaine and other drugs can cause respiratory problems (pneumomediastinum and decreased alveolar diffusion capacity), atrophy of the nasal mucosa, and perforation of the nasal septum.

Laboratory findings are often indications that drug abuse is occurring: the mean corpuscular volume is elevated during long-term alcohol use, the liver enzymes can be elevated by alcohol use and by hepatitis acquired from sharing needles, and quinine (used to cut heroin for sale “on the street”) can cause a widened QRS on an electrocardiogram. In all suspected cases, a urine sample should be collected for a drug screen. A urine toxicology screen can be helpful as an indication of recent drug use (past few days) but will not provide evidence of use outside of a small window of time. The best evidence for long-term drug use is a combination of a good history and a urine toxicology screen.

Although many of these signs and symptoms can be caused by other diseases, the differential diagnosis should include drug abuse, and steps should be taken to verify whether the patient is abusing substances. One method is to express to the patient in a nonaccusatory tone the concern that drug abuse is occurring and offer help. Give concrete examples of reasons for considering the substance abuse diagnosis. Many patients will be relieved that they no longer have to hide their problem and that help is available. Others will adamantly deny having a problem. Sometimes patients will need to hear the concerns about drug use several times before they will be able to respond.

A common problem in the differential diagnosis of substance abuse can be the patient who is prescribed addictive drugs on a long-term basis for the treatment of a disease (ie, a chronic pain syndrome). These patients develop neuroadaptation (physical dependence), but do not meet the behavioral criteria for drug dependence. Once these patients are stabilized on therapeutic doses of the drugs they need, they spend no more energy in seeking and consuming the drug than a patient with diabetes spends on checking his blood glucose levels and taking insulin. Typically, these are patients who do not end up in crisis any more often than patients with other chronic diseases, who do not “lose” their prescriptions, and do not require increasingly large doses of medication to control their symptoms. Under-treatment can result in pseudoaddiction. In these cases, patients seek more medication to treat a problem that is currently undertreated.

There are chemically dependent patients addicted to prescription medications. Identification of these patients can be made by watching for requests for increased doses of prescribed abusable drugs or requests for refills more frequently than anticipated. Tolerance develops to al-
most all drugs of abuse. However, tolerance develops to the euphoric effects of the drugs more rapidly than to the therapeutic effects of the drugs. Therefore, patients abusing drugs desire increasing amounts soon after a therapeutic level of the drug is reached. Anyone can lose a prescription once, but the patient who repeatedly requests new prescriptions may have a substance abuse disorder. Patients who are dependent on prescription medications may get prescriptions from several physicians, so calling the pharmacy may reveal previously unknown drug abuse. Many pharmacists will call physicians to alert them to the problem of prescriptions from several sources.11

Once the diagnosis of substance abuse is made, both acute and long-term treatment is necessary; simple admonitions to stop are sometimes helpful if the diagnosis is made early but in most cases are insufficient. Therapy for substance abuse sometimes begins with withdrawal, or detoxification, but this is merely a first step in overall treatment.

**ACUTE OPIOID INTOXICATION**

Table 1 describes the clinical findings of acute opioid intoxication.

<table>
<thead>
<tr>
<th>Physical Symptoms</th>
<th>Psychiatric Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pupillary constriction†</td>
<td>Initial euphoria</td>
</tr>
<tr>
<td>Drowsiness or coma</td>
<td>Apathy/dysphoria</td>
</tr>
<tr>
<td>Decreased respiration, heart rate</td>
<td>Psychomotor agitation/retardation</td>
</tr>
<tr>
<td>Pulmonary edema</td>
<td>Impaired judgment</td>
</tr>
<tr>
<td>Slurred speech</td>
<td>Impaired social functioning</td>
</tr>
<tr>
<td>Impairment in attention/memory</td>
<td>Impaired occupational functioning</td>
</tr>
</tbody>
</table>

*Adapted from the American Psychiatric Association.9  
†Pupils may be dilated if the patient has been anoxic or if meperidine was the intoxicating agent.

If an opioid overdose is suspected, 1.2 mg (3.0 mL) of naloxone should be administered IV. If there is no response to the initial dose of naloxone within 1 or 2 minutes, a second or third dose may be administered. If there is no improvement in the patient’s condition after 3 IV doses of naloxone, it can be assumed that the patient has not taken an opioid overdose, since the majority of patients who have taken opioids respond after 1 or 2 doses of naloxone.

In treating opioid intoxication with naloxone, it is important to remember that the duration of action of naloxone IV is 1 or 2 hours—whereas the duration of action of most opioids is 3 to 6 hours, and that of methadone is 24 to 36 hours. Because of this, the patient who has initially responded to naloxone may lapse into coma again unless carefully monitored. Patients who have received naloxone should be monitored for vomiting. Suction should be readily available to reduce the chance of aspiration.

The patient who has responded favorably should be monitored for level of consciousness, respirations, pulse, and blood pressure at least every 15 minutes. If the patient appears to be losing consciousness, additional naloxone should be administered. An alternative form of therapy is to administer naloxone by IV drip. Add 4 mg of naloxone to a liter of 5% dextrose solution, and titrate the dose to deliver the amount of naloxone per hour necessary to maintain the desired level of consciousness.

The patient with acute opioid intoxication should be observed for at least 24 hours before being released from the hospital. Plans for long-term management of the drug problem should be made as well; psychiatric consultation is frequently indicated.

**LONG-TERM USE OF OPIOIDS**

Because of the development of tolerance, patients who are long-term users of opioids are unlikely to manifest symptoms of acute intoxication unless they have ingested an unusually large dose. Tolerance does not develop to the miotic effects, nor to the constipating and respiratory depressing effects.

Although sudden withdrawal from opioids usually produces physical effects no worse than a bad case of influenza, this form of therapy is not justifiable because of the extreme anxiety produced in opioid users by sudden cessation of the drug. Methadone is used frequently for withdrawal from illicit opioids, but prescribing methadone for withdrawal or long-term treatment of drug dependence requires a special state and federal Drug Enforcement Administration license, and therefore this treatment option may not be available in every situation. Current federal regulations restrict use of methadone for treatment of opioid addiction. It may only be used for chronic addiction by a licensed narcotic treatment program or licensed inpatient hospital detoxification unit. Methadone may be used by a private practice physician for temporary maintenance or detoxification when an addicted patient is admitted to a hospital for an illness other than opioid addiction. It may also be used by a private practitioner in an outpatient setting when administered daily for a maximum of 3 days while a patient awaits admission into a licensed methadone treatment program. However, methadone can be prescribed on an outpatient basis for treatment of pain outside of a licensed narcotic treatment program. A Drug Enforcement Administration license to prescribe schedule 2 medications is required.

When choosing a medication for withdrawal from any physical dependence-inducing drug, there are several considerations. For opioids, there are many different drugs with different potencies and different durations of action (Table 2).
The effects of short-acting medications can be controlled precisely, but require frequent assessment and dosage adjustment. Patients may experience some severe withdrawal symptoms toward the ends of dosing periods. Short-acting medications are most appropriately used in intensive care units or in other situations where the patient’s condition is likely to change rapidly and the patient can be closely monitored. Long-acting medications are more convenient for medical and nursing staff, produce less severe withdrawal symptoms themselves (if any symptoms are seen), but the withdrawal symptoms may last for long periods. These medications are most appropriately used when the patient is medically stable (other than the opioid withdrawal).

A problem with substituting methadone or another narcotic for illicit opioids is how to determine what dose of methadone is approximately equivalent to the dose of opioid being used by the patient. Although there is no clear-cut evidence that the severity of withdrawal symptoms is related to the amount of opioid being used, the method described in Table 3 has been used extensively to titrate methadone for opioid withdrawal, without producing oversedation or severe discomfort to the patient during withdrawal. It is better to err on the side of estimating a dose that is a bit too large rather than too small.

After 24 hours, the total dose of methadone or other opioid that has been administered to the patient is computed. This dose of methadone is approximately equivalent to the dose of opioid the individual was taking. After being stabilized on the appropriate dose of methadone, the patient can be withdrawn by gradually reducing the dose. Reduce the total daily intake by approximately 10% per day, maintaining the dosing frequency as long as possible. By reducing the frequency (increasing the interval between doses) at which the drug is given, the patient goes into withdrawal repeatedly, making the process uncomfortable and difficult, especially with short-acting narcotics like morphine, meperidine, and hydromorphone. Once a withdrawal schedule is determined, it should not be altered unless the patient shows objective signs of worsening. Some treatment centers subscribe to blind treatments in which patients are never told their dosage. In some cases, this can help allay anxiety the patient might have as the dose is decreased.

Clonidine, an alpha2-agonist, has been shown to be effective in reducing withdrawal symptoms in patients on low doses of opioids. Doses as high as 1.2 mg/d in divided doses have been used. Clonidine can be used in conjunction with methadone when the methadone dose is below 15 mg. It is important to monitor the blood pressure for hypotension and then to gradually taper the patient off of the clonidine to avoid a hypertensive rebound. Clonidine has also been used in conjunction with naltrexone as part of a protocol for rapid opioid detoxification to help ameliorate the severity of symptoms from naltrexone-induced opioid withdrawal syndrome.

A method for ultrashort opioid detoxification has been recently developed in which the substance-abusing patient is anesthetized during the initial induction of withdrawal by large doses of naloxone. Patients who undergo this regimen are anesthetized, then intubated and mechanically ventilated. They are then given a large bolus of naloxone to precipitate acute opioid withdrawal while unconscious. The patient is given a diuretic to enhance excretion of the opioid. After awakening from anesthesia, patients will experience mild withdrawal symptoms for about 6 days compared with similar withdrawal symptoms on a 20-day methadone taper. Ultrashort detoxification can reduce the length of withdrawal symptoms, but patients must be in good health to be able to tolerate general anesthesia and the physiological stress of rapid induction of acute withdrawal by naloxone. This type of withdrawal is not com-

<table>
<thead>
<tr>
<th>Medication</th>
<th>Onset, min</th>
<th>Dosage Interval, h</th>
<th>PO Equivalent Dose, mg</th>
<th>IM Equivalent Dose, mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Codeine</td>
<td>10-30</td>
<td>4</td>
<td>200</td>
<td>120</td>
</tr>
<tr>
<td>Fentanyl</td>
<td>7-8</td>
<td>No data</td>
<td>NA</td>
<td>0.1</td>
</tr>
<tr>
<td>Hydromorphone (Dilauidid)</td>
<td>15-30</td>
<td>6</td>
<td>7.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Laudanum (tincture of opium)</td>
<td>No data</td>
<td>6</td>
<td>30 mL</td>
<td>NA</td>
</tr>
<tr>
<td>Levorphanol (LevoDromoran)</td>
<td>30-90</td>
<td>4</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Meperidine (Demerol, Mepergan)</td>
<td>10-45</td>
<td>4</td>
<td>300</td>
<td>75</td>
</tr>
<tr>
<td>Methadone (Dolophone)</td>
<td>30-60</td>
<td>6</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Morphine (Rxolan)</td>
<td>15-60</td>
<td>4</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>Morphine sulfate, controlled release (MS Contin)</td>
<td>NA</td>
<td>12</td>
<td>90</td>
<td>NA</td>
</tr>
<tr>
<td>Oxycodone (Percoet, Percodan, Tylox)</td>
<td>15-30</td>
<td>6</td>
<td>30</td>
<td>NA</td>
</tr>
<tr>
<td>Oxymorphine (Normophan)</td>
<td>5-20</td>
<td>6</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Paragoric (camphorated tincture of opium)</td>
<td>No data</td>
<td>6</td>
<td>80 mL</td>
<td>NA</td>
</tr>
<tr>
<td>Propoxyphene (Darvon, Darvocet-N)</td>
<td>30-60</td>
<td>4</td>
<td>200</td>
<td>No data</td>
</tr>
<tr>
<td>Sufentanil</td>
<td>1.3-3.0</td>
<td>No data</td>
<td>NA</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Table 2. Equivalent Doses of Opioids

Table 3. Sample Methadone Dosage Calculation Chart

<table>
<thead>
<tr>
<th>Total 24-Hour Score†</th>
<th>Total</th>
<th>Severity at*</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 6 12 18 24 h</td>
<td>1 2 3</td>
<td></td>
</tr>
</tbody>
</table>

*Severity of symptoms is rated as 0, not present; 1, present; and 2, strongly present. †Total amount of methadone given in first 24 hours. §The dose of methadone is related to the symptom severity score. The dose equals the severity score as long as the severity score is 5 or greater. For example: if the severity score is 4, the dose is 0, severity score, 5, the dose, 5 mg; and severity score, 13, the dose, 13 mg.

*PO indicates by mouth; IM, intramuscular; and NA, not applicable. Data are compiled from references 4 through 46.
monly available since it requires specific personnel who are knowledgeable about anesthesia as well as substance abuse and the patients require intensive monitoring.

Frequently, patients receiving methadone require analgesic medications for coexisting medical problems. In most cases, attempts should be made to control the pain through the use of nonnarcotic analgesics. If this is not possible, the dose of methadone that the patient is receiving should be used as a baseline, and additional narcotic analgesics should be added in standard therapeutic doses to control the pain. It is important to remember that neither pentazocine (Talwin), nalbuphine (Nubain), nor butorphanol (Stadol) should be administered to any patient taking pure agonists such as methadone because these drugs have antagonist properties and can precipitate an immediate withdrawal.

**ACUTE SEDATIVE-HYPNOTIC INTOXICATION**

The clinical features of acute sedative-hypnotic intoxication are presented in Table 4.

The patient who has taken an overdose of sedative-hypnotics should be treated initially like any other patient with drug intoxication: provide an adequate airway and ventilation and maintain the cardiovascular system. In a patient who has taken the drug orally, once these initial measures have been carried out, activated charcoal should be administered. This prevents absorption of the drug into the system and also prevents the drug or active metabolites from being absorbed through enterohepatic recirculation. Laxatives may be used to induce catharsis.

If barbiturates are the cause of the overdose, administer a sufficient amount of IV sodium bicarbonate to alkalize the patient’s urine. The dose of bicarbonate will vary depending on the patient’s metabolic state. This alkalization increases the rate of excretion of barbiturates; the urine pH should be monitored and kept at about 7.5. Depending on the gravity of the patient’s condition, dialysis may be required.

Some of the older sedative-hypnotics (eg, glutethimide or ethchlorvynol) are highly lipophilic, and consequently these drugs may be erratically absorbed, highly protein bound, and stored in body fats. Some are metabolized to active substances that have long half-lives. Excretion via bile results in reabsorption through enterohepatic circulation. Because of these effects, blood levels of the drug may fluctuate, causing fluctuations in the level of consciousness. Therefore, it is important to keep patients who have taken overdoses of these drugs under observation for several days.

Benzodiazepines are the most commonly prescribed sedative-hypnotics. Short-, intermediate-, and long-acting benzodiazepines are available, and the longer-acting benzodiazepines are often converted by the liver into active metabolites with long half-lives. Although these drugs produce less respiratory depression than barbiturates, the long-acting metabolites often cause intoxication that lasts for several days. Benzodiazepine overdose is most dangerous in combination with other sedative-hypnotics. A benzodiazepine antagonist, flumazenil (Romazicon), is available for the treatment of benzodiazepine intoxication. It must be used with some caution as in some cases it has not completely reversed the respiratory depression, can cause seizures in patients with physical dependence, and in a mixed overdose, could precipitate tricyclic antidepressant–induced arrhythmias covered by the sedative. It should be given in the lowest possible dose. The starting dose for treatment of an overdose is 0.2 mg IV over 30 seconds. An interval of at least 30 seconds should pass before trying the next dose at 0.3 mg. Further doses of 0.5 mg may be given every 60 seconds up to a total of 5 mg. In patients who are physically dependent on benzodiazepines, repeated doses should be administered slowly. Flumazenil is a short-acting drug so there may be reedation after an initial awakening. This can be treated by repeating doses at 20-minute intervals, if necessary.

**LONG-TERM USE OF SEDATIVE-HYPNOTICS**

Clinical features of long-term use of sedative-hypnotics are similar to acute features, but may be accompanied by a dementia consisting of loss of memory (recent and remote). The symptoms of sedative-hypnotic withdrawal are listed in Table 5. In addition, generalized seizures may occur, sometimes followed by status epilepticus. As in the case of major alcohol withdrawal (delirium tremens), confusion and psychotic behavior can be a part of any sedative-hypnotic withdrawal.

It is unusual to see patients who are solely abusing short-acting barbiturates. The majority of sedative-hypnotic abusers take 1 or more benzodiazepines and ethanol, along with barbiturates and other sleeping pills. Since many of the benzodiazepines have long-acting metabolites, the patient may not show signs of withdrawal for 7 to 10 days after stopping all drugs.

Treatment is identical for withdrawal from all sedative-hypnotics, including barbiturates, sleeping pills, benzodiazepines, and alcohol, because all drugs in these categories exhibit cross-dependence. The first step is to objectively determine an approximate level of drug to which the patient is tolerant since pa-

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Table 4. Sedative-Hypnotic Intoxication

<table>
<thead>
<tr>
<th>Physical Symptoms</th>
<th>Psychiatric Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stupor or coma</td>
<td>Inappropriate behavior</td>
</tr>
<tr>
<td>Impaired attention or memory</td>
<td>Mood lability</td>
</tr>
<tr>
<td>Nystagmus</td>
<td>Impaired judgment</td>
</tr>
<tr>
<td>Decreased reflexes</td>
<td>Impaired social functioning</td>
</tr>
<tr>
<td>Slurred speech</td>
<td>Impaired occupational functioning</td>
</tr>
</tbody>
</table>

*Adapted from the American Psychiatric Association.*

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Reducing the dose by 10% of the initial dose each day provides a comfortable taper, especially if the patient is expected to participate in demanding psychological therapy exercises or if the patient has coexisting medical conditions. The taper can be accomplished much more rapidly if these conditions do not exist. The use of a long-acting barbiturate decreases the severity of withdrawal symptoms, and phenobarbital is chosen in preference to other sedatives because it has a longer half-life than diazepam. Patients rarely achieve a “high” from phenobarbital as they do from the other drugs, and it is available in multiple dosage forms. The dose of phenobarbital can be given in a constant volume of liquid for each dose so the patient is not aware of the amount being decreased each day (“blind taper”), if this is desirable.

If a patient who has been using sedative-hypnotics on a long-term basis presents in advanced withdrawal (ie, elevated vital signs or delirium), it is important to medicate rapidly and in sufficiently large doses so that the withdrawal is suppressed. Medications with rapid onset of action should be used to initiate suppression of severe withdrawal signs and may be given IV for immediate effect. Lorazepam and diazepam are good choices since they have rapid onset when given IV, and diazepam is suppressed. Medications with rapid onset of action should be used to initiate suppression of severe withdrawal signs and may be given IV for immediate effect. Lorazepam and diazepam are good choices since they have rapid onset when given IV, but they have shorter duration of action than when given orally since first-pass liver metabolism is bypassed. After stabilization with rapidly acting medications, the patient can be switched to an equivalent dose of a long-acting medication such as phenobarbital. As long as the patient is awake, he/she will not undergo significant respiratory depression from the withdrawal medication and, at times, large doses are required (up to 700 mg/d of phenobarbital). Advanced withdrawal from alcohol—delirium tremens—carries a 5% mortality rate, even when adequately treated. Withdrawal is most safely done in an inpatient setting if the patient has been using high doses of sedative-hypnotics, has a history of withdrawal seizures or delirium tremens, or has concurrent medical illness.

Table 5. Sedative-Hypnotic Withdrawal

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mild Withdrawal</th>
<th>Severe Withdrawal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>Slightly increased</td>
<td>Increased</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>Slightly increased</td>
<td>Increased</td>
</tr>
<tr>
<td>Respiration</td>
<td>Slightly increased</td>
<td>Increased</td>
</tr>
<tr>
<td>Heart rate</td>
<td>Slightly increased</td>
<td>Increased</td>
</tr>
<tr>
<td>Autonomic</td>
<td>Slightly increased</td>
<td>Increased</td>
</tr>
<tr>
<td>Level of consciousness</td>
<td>Aroused</td>
<td>Delirious</td>
</tr>
<tr>
<td>Involuntary and voluntary</td>
<td>Normal voluntary;</td>
<td>Normal voluntary;</td>
</tr>
<tr>
<td>movements</td>
<td>tremulousness, convulsions</td>
<td>tremulousness;</td>
</tr>
<tr>
<td></td>
<td>possible; increased reflexes</td>
<td>increased reflexes</td>
</tr>
<tr>
<td>Orientation</td>
<td>Minimally disoriented</td>
<td>Disoriented</td>
</tr>
<tr>
<td>Thought content</td>
<td>Normal</td>
<td>Hallucinations</td>
</tr>
</tbody>
</table>

Table 6. Sedative-Hypnotic Equivalent Doses*

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dose Schedule, Interval in Hours</th>
<th>Equivalent Dose Orally, mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alprazolam (Xanax)</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Amobarbital (Amytal)</td>
<td>8</td>
<td>100</td>
</tr>
<tr>
<td>Butabarbital (Butisol)</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>Butalbital (Fiorinal)</td>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td>Chloral hydrate (Nocetc)</td>
<td>8</td>
<td>500</td>
</tr>
<tr>
<td>Chlordiazepoxide (Librium)</td>
<td>6</td>
<td>25</td>
</tr>
<tr>
<td>Clonazepam (Klonopin)</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Clorazepate (Tranxene)</td>
<td>8</td>
<td>7.5</td>
</tr>
<tr>
<td>Ethchlorvynol (Placidyl)</td>
<td>6</td>
<td>500</td>
</tr>
<tr>
<td>Diazepam (Valium)</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Estazolam (ProSom)</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Flurazepam (Dalmane)</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Glutethimide (Doriden)</td>
<td>8</td>
<td>250</td>
</tr>
<tr>
<td>Halcetazepam (Paxipam)</td>
<td>6</td>
<td>40</td>
</tr>
<tr>
<td>Lorazepam (Ativan)</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Meprobamate (Miltown, Equanil)</td>
<td>6</td>
<td>400</td>
</tr>
<tr>
<td>Methypyrrolon (Noludar)</td>
<td>6</td>
<td>200</td>
</tr>
<tr>
<td>Oxazepam (Serax)</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Pentobarbital (Nembutal)</td>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td>Phenobarbital (Luminal)</td>
<td>12</td>
<td>30</td>
</tr>
<tr>
<td>Prazepam (Cenax)</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Quazepam (Doral)</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>Secobarbital (Seconal)</td>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td>Temazepam (Restoril)</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>Triazolam (Halcion)</td>
<td>2</td>
<td>0.25</td>
</tr>
</tbody>
</table>

*Data are compiled from references 44, 46, and 47.
Anticonvulsant agents that do not show cross-dependence with sedative-hypnotics (ie, carbamazepine or valproate) have been used successfully in the treatment of mild sedative-hypnotic withdrawal. They are given at full anticonvulsant doses for several weeks during the withdrawal. These medications have not been studied for use in severe withdrawal and are only appropriate for use with mild withdrawal.24

A prolonged benzodiazepine withdrawal syndrome, or symptom rebound, can be seen in particular following long-term use of benzodiazepines. The insomnia and anxiety that accompany this may last for several months and, while not life-threatening, are sufficiently uncomfortable that they frequently are a trigger for relapse to drug use. A long taper (2-3 months) of the original benzodiazepine is useful in this situation.25

ACUTE STIMULANT INTOXICATION

The clinical findings of acute stimulant intoxication are presented in Table 7. Amphetamine intoxication is the classic example of stimulant intoxication, but cocaine intoxication is seen most commonly today. Abused methamphetamines include dimethoxymethylamphetamine (DOM, or “STP”), methylenedioxyamphetamine (MDA, the “love drug”), and methylenedioxymethamphetamine (MDMA, or “Ecstasy”), which are “designer drugs” with psychoactive properties.

In recent years, there has been increased popularity of cocaine, a short-acting local anesthetic with marked stimulant effects. Cocaine is most commonly used by infiltration (snorting), but the drug can be injected IV or made into a free base (“crack”) and then smoked, resulting in a rapid attainment of high blood levels and sometimes extreme paranoid behavior. A crack cocaine habit can cost several thousand dollars a week; running out of money is the most common reason patients come in for treatment. The long-term medical sequelae of crack cocaine use include pulmonary dysfunction,7 arrhythmias,26 myocardial infarction,27 cardiomyopathy,28 and paranoia.29 The smokable free-based form of methamphetamine (“ice”) has similar effects to crack, but may last 10 times as long.

For acute management, it is important to approach the acutely intoxicated stimulant user in a subdued manner; never speak in a loud voice or move quickly, never approach the patient from behind, and try to avoid touching the patient unless absolutely sure it is safe to do so (which may include the presence of more than 1 strong, trained assistant).

Treatment of acute amphetamine intoxication (assuming no hepatic dysfunction) includes acidification of the urine with ammonium chloride, up to 4 g orally, 4 times daily. Seizures may be treated with diazepam. Haloperidol may also be used in treating the acute psychotic reactions. Since cocaine is such a short-acting drug, treatment of acute intoxication is rarely necessary except in instances of acute psychotic reaction.

LONG-TERM USE OF STIMULANTS

Although amphetamines are frequently withdrawn abruptly from long-term users, gradual tapering over several days can be more effective. There is currently no accepted treatment of cocaine withdrawal. There are numerous uncontrolled reports in the literature, but no drug has proved to be effective in controlled studies. There is currently debate regarding the presence of a cocaine withdrawal syndrome.30 The hypersomnia, severe craving, and anhedonia that frequently occur after cessation of stimulant use are considered by some investigators to be part of a withdrawal syndrome. During this period, the user often attempts to resume use of stimulants. Supportive psychological therapy is required to prevent relapse to drug use.

The depression that sometimes results from stimulant withdrawal gradually clears over several days. If marked depression persists longer than 1 week, patients should be evaluated carefully to determine if they are self-medicating an underlying depression, which should then be treated properly.

HALLUCINOGENS

The most commonly used hallucinogens are lysergic acid diethylamide (LSD), mescaline, and psilocybin; LSD is used in 99% of cases. Hallucinogen abuse dropped off precipitously in the middle and late 1970s and remained at low levels during the 1980s. In the past few years, there has been a slight increase in hallucinogen use on college campuses. However, this is nowhere near the level of use during the late 1960s and early 1970s.

Table 8 presents the clinical features of hallucinogens. The quality of the LSD-induced psychedelic state, or “trip,” is influenced by the mood and environment of the user at the time of induction (set and setting). A bad trip can be caused by fear,
When treating a bad trip, it is important to make physical contact with the patient, for example, by holding the patient’s hand. This may be the only way that contact can be made with someone who is having severe hallucinations, but be careful about the patient reacting suddenly or violently to your touch. The physician should continually reassure the patient that adequate medical care is being administered. As in treating any drug overdose, if verbal contact can be made, ascertain what was taken, how much was taken, and how long ago it was taken. In treating a patient in a psychedelic state, this information will provide some idea of the trip’s prior and future duration. Also, try to make contact with the patient during lucid intervals and maintain this contact into the intense periods of drug reaction. Efforts to make contact with the patient during an intense period are generally a waste of time.

The area in which treatment takes place should be quiet (away from large groups of people), have soft lighting, and possibly a source of music to help distract the person. The physician should try to focus the patient’s attention on objects in the room, music, or simple tasks; however, make sure that he/she is not overwhelmed by excessive stimuli. Deep, slow breathing may be helpful as an alternative distraction, if a suitably calming or en-grossing environment is not available. It may be necessary for someone to demonstrate such breathing and pace the patient.

PHENCYCLIDINE

Phencyclidine has achieved great popularity as a street drug. It is identified by various street names such as “PCP,” “peep,” “hog,” “angel dust,” and “crystal.” Virtually all “tetrahydrocannabinol [THC] extract” that used to be sold illicitly was actually phencyclidine, since it is relatively easy to manufacture chemically compared with processing of tetrahydrocannabinol. Phencyclidine is also frequently sold in mixtures with other drugs.

The drug can be taken orally or IV, smoked, or inhaled. In low-dose intoxication, the patient presents with nystagmus, confusion, ataxia, and sensory impairment. Phencyclidine is the only drug of abuse that causes a characteristic vertical nystagmus (however, it can cause horizontal or rotatory nystagmus as well), which helps to identify it as the cause when a patient presents with intoxication by an unknown drug. When it is taken in moderate doses, the patient presents with a catatoniclike picture, staring blankly and not responding to any stimuli; the eyes remain open, even when the patient is in a comatose state. In high doses, the drug produces seizures and severe hypertension. The hypertension should be treated vigorously because it may cause hypertensive encephalopathy or intracerebral bleeding. Phencyclidine can also cause life-threatening hyperthermia with temperatures higher than 106°F Fahrenheit, which may occur many hours after use. This drug causes a disso-ciative phenomenon and individuals using it exhibit dangerous behaviors and can be violent.

The effects of phencyclidine may last for several days. While the patient is recovering from the intoxication, levels of consciousness may fluctuate fairly rapidly. The patient may also appear psychotic. The most effective treatment of phencyclidine intoxication is to enhance its urinary excretion by acidifying the urine with ammonium chloride or ascorbic acid. The urine pH should be monitored and kept around 5.5. Once this pH is reached, the patient may also appear psychotic. The physician should then administer a diuretic to enhance excretion. The urinary sample should be checked for presence of phencyclidine to ensure that it is being excreted. Urine acidification should only be performed after it is determined that the patient does not have myoglobinuria (indicating rhabdomyolysis) to prevent the development of acute renal failure. Some practitioners believe that the benefits of urine acidification are outweighed by the risks, especially in patients with hepatic or renal impairment. For psychotic behavior, the patient should be treated with haloperidol.

Table 8. Hallucinogen Effects

<table>
<thead>
<tr>
<th>Physiological</th>
<th>Psychological</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pupillary dilation</td>
<td>Anxiety/depression</td>
</tr>
<tr>
<td>Tachycardia</td>
<td>Ideas of reference (ie, getting special messages from the television or radio)</td>
</tr>
<tr>
<td>Sweating</td>
<td>Fear of losing mind</td>
</tr>
<tr>
<td>Palpitations</td>
<td>Paranoia</td>
</tr>
<tr>
<td>Blurred vision</td>
<td>Impaired judgment</td>
</tr>
<tr>
<td>Tremors</td>
<td>Impaired social/occupational functioning</td>
</tr>
<tr>
<td>Incoordination</td>
<td>Intensification of perception</td>
</tr>
<tr>
<td>Tremors</td>
<td>Depersonalization (“I’m not real”)</td>
</tr>
<tr>
<td></td>
<td>Derealization (“This environment is not real”)</td>
</tr>
<tr>
<td></td>
<td>Illusions</td>
</tr>
<tr>
<td></td>
<td>Hallucinations</td>
</tr>
<tr>
<td></td>
<td>Synesthesias (“See the sounds, taste the colors”)</td>
</tr>
</tbody>
</table>

*Adapted from the American Psychiatric Association."
VOLATILE INHALANTS

It was once believed that volatiles were only abused by adolescents who sniff airplane glue. Although this problem persists, especially in indigent areas, new types of volatile abuse have emerged. Factory workers exposed to solvents in industrial processes will sometimes take these home for use in the evening and over weekends. Amyl nitrate “poppers” and butyl nitrite vials (“Rush”) have become popular. Nitrous oxide is also abused.

The most severe consequence from abuse of these substances is hypoxia or anoxia, which may cause death. Many of the solvents are similar to general anesthetics and sensitize the myocardium to catecholamines: fatal arrhythmias have been reported secondary to solvent abuse.33 Long-term use by industrial workers has caused peripheral neuropathies; hepatic, renal, and bone marrow damage have been reported.34,35 Cases of methemoglobinemia have been reported secondary to butyl nitrite abuse.36

Treatment of short-term effects of these drugs is simply removal of the person from the drug and clearing the drug through the respiratory system. The chronic complications of abuse usually clear if the person can be kept free of drugs.

TREATING THE DRUG ABUSER

Many substance-abusing patients recognize the risks and costs associated with drug use, especially if they have experienced an acute toxicity or withdrawal reaction as described earlier. However, they are still attracted to addictive behavior for a variety of reasons despite the risks. They want to continue drinking or abusing drugs, but they also do not want to, and they are not exactly sure what to do about their situation. This is known as ambivalence, and it is a normal and common component of many psychological problems. Some patients are unable to admit the substance abuse problem to themselves and try to conceal it from family, friends, and physicians; this is the mechanism of denial. The patient cannot see the relationship between substance abuse and its consequences; instead, the patient rationalizes, intellectualizes, minimizes, or covers up the consequences with reasons why they are not serious. Ambivalence and denial are common components of most chronic diseases. The job of a physician who recognizes drug addiction is to help the patient resolve this ambivalence or denial. This allows the substance-abusing patient to make a decision to stop using drugs and move along the path toward change. The process of helping the substance-abusing patient come to a decision can be accomplished through motivational interviewing.37

Motivation can be described as a state of readiness or eagerness to change. It may fluctuate from one situation to another. The substance-abusing patient is ambivalent about changing behavior from abusing drugs, seeking treatment, and remaining abstinent. The physician’s goal is to increase the patient’s intrinsic motivation, so that change arises from within rather than being imposed from without. Motivational interviewing is a particular way to help people recognize and do something about their present and potential problems. It is useful with people who are reluctant to change and helps resolve ambivalence to get a patient moving along the path to change. In a substance-abusing patient, the path to change means accepting treatment and beginning to work at a program of recovery from substance abuse. A patient-centered interpersonal relationship between physician and patient provides an ideal atmosphere for change. Substance-abusing patients are allowed to explore their experiences openly to reach resolution of their own problems, while the physician acts as facilitator. To do this, the physician must express empathy, which means understanding the patient’s feelings and perspectives without judging, criticizing, or blaming. Aggressive confrontational tactics have been shown to predict treatment failure; empathy is the opposite of hostile confrontation. It is important to avoid arguing, since someone who is ambivalent about changing behavior will almost always take the side of defending the behavior when confronted by a physician or therapist who aggressively argues that they must change the behavior. Instead, the physician should listen to the patient and elicit statements from the patient that indicate willingness to change. Some patients will not be ready to change their addictive behavior and will still be ambivalent about it. The physician should continue to express empathy without confrontation, which shows respect for the patient’s self-determination. Sometimes careful confrontation may help overcome the patient’s ambivalence, but the physician should back off as soon as the patient shows signs of resistance. Using motivational interviewing techniques over several short (≤5 minutes) encounters in the course of routine primary care visits can have a cumulative effect equivalent to a much longer single session.

The physician’s task is also to assist the patient in practical problem solving. Most barriers to successful recovery have to do with access to treatment; this is where a primary care practitioner can be instrumental by providing referral to an appropriate facility for counseling and other long-term substance abuse treatment. Physicians should involve the patient actively in the process of problem solving to help promote the freedom of personal choice while reminding the patient of responsibility for all actions. The responsibility of the practitioner is not only to dispense advice but also to motivate the patient to seek recovery from addictive behavior instead of blaming the patient for being unmotivated to change.

Addictive behaviors are chronic relapsing conditions. Remissions and exacerbations are to be expected as in any chronic disease process such as ulcerative colitis, asthma, or multiple sclerosis. Instead of blaming the patient for a personal failing when a relapse occurs, treatment should be intensified. Patients should be taught to identify warning signals of impending relapse so that a slip—use of a small amount of alcohol or other drug of abuse—does not escalate into a full-blown relapse. The chronic nature of addiction should be put into a realistic perspective to
keep the substance-abusing patient from becoming disheartened. Slips or relapses can be viewed as learning experiences on the road to recovery that teach skills to cope with new situations to prevent a return to old addictive behaviors.

BRIEF INTERVENTION

The techniques of motivational interviewing can be incorporated into a conceptual framework for the early treatment of addiction known as brief intervention.38 Low rates of compliance with referral to substance abuse treatment programs should not be attributed just to client resistance or poor motivation. The counseling style of a physician strongly predicts patient outcomes and certain aspects of physician behavior influence the probability that a substance-abusing patient will seek further consultation for substance abuse treatment. Due to the number of drug abuse problems encountered in virtually any medical practice, health care workers should be comfortable and competent in brief motivational counseling.

The emphasis of this intervention strategy is on multiple brief sessions with the substance-abusing patient. The elements described later can be incorporated into the course of a routine primary care office visit without taking up much additional time for a busy practitioner. Using these techniques can take only 5 minutes or less, and the key is to continue to use them over several visits until the patient is motivated to take definite action to change his/her addictive behavior. Often this means following through with a referral to a specific substance abuse treatment program.

While there is no specific protocol for a brief intervention, the important elements can be summed up with the mnemonic “FRAMES”37: feedback, responsibility, advice, menu, empathy, self-efficacy.

Feedback involves increasing the patient's awareness of adverse consequences of addictive behavior, both current and potential. This can include going over abnormal laboratory results like liver function tests or pulmonary function tests, pointing out evidence of physical tolerance such as escalating doses, connecting legal problems (driving under the influence) or frequent job changes with current drug use, or helping the patient realize that current family problems are a direct result of continued drinking or drug use. If close associates (family or coworkers) express concern, offer help, and reiterate the adverse consequences of continued drug use, this increases the patient's motivation to change. The substance-abusing patient's spouse and other family members can be powerful motivators to help overcome ambivalence. Clear knowledge of the present situation is important to motivate change. If objective tests or expressions of concern from family and friends do not improve motivation, a self-monitoring diary may help.

The goal of feedback is to promote awareness of the costs of the present course of behavior to motivate the patient to seek treatment.

Responsibility emphasizes the patient’s personal responsibility for change. This often involves clarifying important goals for patients, which can help develop discrepancy between where they are and where they want to be. However, it is important to set realistic and attainable goals, such as cutting down gradually instead of stopping “cold turkey.” Based on these goals, the physician should offer clear, concrete advice to make a change in drinking or drug use. An experienced physician will take a different approach with each patient depending on where he/she is in the process of change. Menu means providing a range of options allowing opportunity for patients to select strategies that match their particular needs and situations. This reinforces personal freedom, encourages the addict to take responsibility for his/her own choices, and gives the patient the opportunity to take an active part in the treatment process. However, the number of options provided should be limited to 2 or 3, so that the patient does not become overwhelmed.

Empathy involves skillful listening while offering responses that clarify and amplify the patient's own experiences and meaning without imposing the physician's own values. Self-efficacy involves building up patients' belief in their ability to carry out or succeed with a specific task. This means providing a sense of optimism, often by setting a series of simple, attainable early goals toward recovery that will increase the substance-abusing patient's self-confidence when accomplished. All aspects of FRAMES will increase intrinsic motivation for the substance-abusing patient to actively pursue a recovery program.

Multiple studies have shown brief intervention to be the most cost-effective intervention modality for alcohol problems, and probably for other substance abuse problems as well. When well planned and consistently administered, it can have an overall impact comparable with that of more extensive counseling. It should not be viewed as sufficient in itself, but as a way to provide preparation and motivation for further needed substance abuse services. It has a beneficial impact on treatment participation and posttreatment outcomes. Brief intervention is an effective option that should be implemented as part of routine care.

AMETHYSTIC AGENTS

Medications are sometimes used to prevent relapse to drug use, once an initial remission is secured. These medications are only useful when used with concurrent counseling and provide an additional “insurance” against return to illicit drug use. For opioid abuse/dependence, naltrexone (ReVia), an opioid antagonist, is used (50 mg/d in 1 dose). Naltrexone blocks the opioid receptors so that use of opioid drugs does not produce euphoria and the reinforcing effect of the drug is lost. It is important that the patient be free from opioids for at least 1 week before beginning this medication as it can produce withdrawal symptoms if given too soon. The medication should be discontinued several days before surgical procedures so that opioid analgesia can be given. In emergencies, high doses of opioids can be given to override the blockade, but this should only be done in well-monitored settings.

Naltrexone has received Food and Drug Administration approval.
for use with alcohol-dependent patients. At the same dose used with opioid-dependent patients, naltrexone decreases craving for alcohol and reduces the likelihood that a full relapse will follow if a slip occurs. There are a number of theories to explain this phenomenon, however, none have been confirmed.39,40

Disulfiram (Antabuse), when taken in conjunction with alcohol, causes an accumulation of acetaldehyde by blocking the enzyme aldehyde dehydrogenase. This causes vasodilatation over the whole body, headache, respiratory difficulty, nausea and vomiting, sweating, thirst, chest pain, hypotension with vertigo and syncope, blurred vision, and confusion. This reaction can be severe enough to warrant intensive care unit admission and can cause death. This potential reaction on drinking with disulfiram is used as an aversion to drinking. However, the medication only works if it is taken (dosage, 250–500 mg/d in 1 dose) and cessation of use is often the first hint that a patient may be relapsing. It is useful if the patient’s use is monitored on a daily basis by someone who calls the counselor if a dose is missed. Another choice is for the counselor to monitor it when the patient comes in for sessions. It is not unusual to see patients who have learned that they can tolerate drinking alcohol when they are receiving the lower dose. If this is the case, the physician may discuss potential adverse effects with the patient (and document the discussion), then increase the dose of disulfiram to achieve the intended effect.

LONG-TERM TREATMENT

The long-term management of drug abuse is critical. Although reversal of an acute overdose may be lifesaving, or treating withdrawal may reduce discomfort or seizures, it obviously does not ensure a long-term positive outcome. Definitive treatment is a long process taking months or years. A return to drug use should not be considered a treatment failure, but rather a time to intensify treatment efforts.

There are several levels of care for addiction as for other diseases.41 There was a time when all patients were believed to require inpatient treatment for 28 to 30 days. However, current thinking is that patients need a level of treatment based on severity of illness. The current levels of treatment are (1) inpatient acute hospitalization, which is reserved for the most severely impaired patients who require complicated withdrawals or have medical and/or psychiatric comorbidity; (2) nonhospital residential, which is for patients who need to be removed from their environment but do not require 24-hour medical coverage; (3) partial hospital, intensive outpatient, which is for patients who can remain in their environment but require intensive supervision and close monitoring during the early stages of treatment; and (4) outpatient, which is for patients who are stable and require minimal monitoring.

The duration of stay in each of the treatment levels is based on progress in treatment, and patients often move between levels depending on the course of their illness. The most common treatment for substance-abusing patients is drug-free outpatient counseling. The patient meets with a counselor, either individually or in a group, once a week to discuss problems. These can be supplemented with more intensive (group or individual) psychotherapy. The length of time a patient remains in formal treatment will vary depending on progress.

Most programs are supplemented by self-help groups. These groups are often modeled after Alcoholics Anonymous and can be an important part of the rehabilitation process. Narcotics Anonymous, Cocaine Anonymous, Pills Anonymous, and Family Anonymous are some of the many groups currently functioning. In recent years, increased importance has been placed on the family in the substance-abusing patient’s rehabilitation. If the patient is living with an intact family, they should be included in the treatment process. Employers should also be included, so that the workplace becomes a supportive environment for maintaining a drug-free lifestyle.

Inpatient treatment is available for patients who cannot maintain drug-free status as outpatients. The length of stay is dependent on the patient’s progress in treatment. Short-term inpatient care usually takes place in special treatment units in general hospitals or in free-standing facilities. These programs offer intensive medical supervision, counseling, and education to patients who need to be removed from their environment for a period of time. Inpatient treatment should always be followed by outpatient treatment to assist the patient in returning to the outpatient environment.

The longer-term residential treatment settings (therapeutic communities) are usually free-standing facilities where patients work toward increased levels of responsibility in the community over several months to years. These programs usually offer group therapy, education, and vocational training.

For patients who need more intensive treatment than can be offered in an ambulatory setting yet cannot take the time off from work or cannot afford residential care, day or evening and weekend programs have been developed. Evening programs offer intensive treatment 4 or 5 nights a week for 3 weeks or longer, depending on need. Weekend programs offer intensive treatment experiences from Friday night until Sunday night. These programs should always be followed up with outpatient care.

Methadone maintenance is a treatment for opioid dependence that can only be performed in a licensed methadone clinic. Methadone is given in sufficiently high doses so that additional doses of narcotic do not cause euphoria and so that the reinforcing effects for the drug are lost. Some patients have been weaned from methadone, but others continue receiving methadone maintenance for many years. This enables them to return to a productive lifestyle with employment and a good family life, since they no longer have to spend time searching for illicit heroin or attempting to obtain prescription narcotics for abuse. Although these
patients remain dependent on methadone, many refrain from abusing other drugs. Methadone maintenance clinics also provide ongoing counseling and referral for primary medical services.40 A long-acting narcotic, l-alpha-acetylmethadone, has recently been given approval by the Food and Drug Administration for use in treatment of opioid dependence. This drug is similar to methadone but effective for several days, reducing the need for daily visits to the clinic. L-alpha-acetylmethadone, like methadone, requires a special license if it is to be used in the treatment of opioid dependence.

Primary care physicians should be familiar with the types of programs available for referral for substance abuse treatment in the local community. A site visit to these facilities can often be helpful when determining which programs to refer patients. It is also beneficial to know which types of treatment programs are covered under the various third-party payer programs (insurance companies, health maintenance organizations, or preferred provider organization) for the patient. Health plans have different restrictions on the types and length of treatment available to their clients. These factors may affect choices for the most appropriate treatment.

Addiction is a difficult disorder to treat, yet recent studies41 have shown that remissions can be achieved in 33% to 60% of patients. This variation is based on level of functioning at entry into treatment and the support systems available to the patient. Treating the substance-abusing patient is not a hopeless process, but is a long and difficult one, as is the treatment of any chronic disorder. The reward of seeing a patient who was impaired by substance abuse return to normal functioning in society is what makes the effort worthwhile.

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Reprints: Michael Weaver, MD, Division of Addiction Medicine, Medical College of Virginia, PO Box 980109, Richmond, VA 23298-0109 (e-mail: mfweaver@hsc.vcu.edu).

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