Pharmacists Role in Treating and Preventing Substance Abuse

By: Divyeshkumar Patel

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Substance abuse is a major societal problem. The term “substance abuse” includes those diseases as described by the American Psychiatric Association’s Diagnostic and Statistic Manual of Mental Disorders (DSM-IV) criteria as “psychoactive substance use disorders.” Psychoactive substances are abused primarily to depress, stimulate or distort brain activity. Examples include alcohol, tobacco, street drugs (e.g. marijuana, cocaine, heroin, methamphetamine, lysergic acid diethylamide [LSD], gammahydroxybutyrate [GHB], inhalants, methylenedioxymethamphetamine [MDMA]) and other prescription and nonprescription drugs (e.g. oxycodone, ketamine, methadone, and dextromethorphan). Substance abuse frequently coexists with and complicates other psychiatric disorders, and it is common and often unrecognized cause of physical morbidity. Collectively, substance abuse contributes significantly to morbidity and mortality in our population and to the cost of health care. Pharmacists have unique, comprehensive knowledge, about the safe and effective use of medications and about the adverse effects of their inappropriate use. By providing clear information on how to take a medication appropriately and describing possible side effects or drug interactions, pharmacists can play a key role in preventing prescription drug abuse. Pharmacists can also help prevent prescription fraud or diversion by looking for false or altered prescription forms. Pharmacists should be actively involved in reducing the negative effects that substance abuse has on society, health systems and the pharmacy profession.

The DSM-IV defines the diagnostic criteria for substance abuse as a maladaptive pattern of substance use leading to clinically significant impairment or distress, as manifested by one or more of the following, occurring within a 12-month period:

- Recurrent substance use resulting in a failure to fulfill major role obligations at work, school, or home (e.g., repeated absences or poor work performance related to substance use; substance-related absences, suspensions, or expulsions from school; neglect of children or household).

- Recurrent substance use in situations in which it is physically hazardous (e.g., driving an automobile or operating a machine when impaired by substance use).

- Recurrent substance-related legal problems (e.g., arrests for substance-related disorderly conduct).

- Continued substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance (e.g., arguments with spouse about consequences of intoxication, physical fights).

Prescription drug abuse is an emerging problem in our country, and one that is showing an increasing trend. What is most disturbing about this trend is that teenagers and young adults are counted among those who use these drugs non-medically which include prescription pain relievers, stimulants, sedatives, and tranquilizers. OxyCon
abuse is a pervasive problem and it needs to be considered in the context of a general pattern of increasing prescription drug abuse. According to the National Institute on Drug Abuse's (NIDA's) 2004 Monitoring the Future survey, 9.3 percent of 12th-graders reported using Vicodin without a prescription in the past year, and 5.0 percent reported using OxyContin. Another recent survey reports that approximately 48 million people—about 20 percent of the U.S. population-aged 12 or older had used prescription drugs for non-medical reasons in their lifetimes. The Drug Abuse Warning Network (DAWN), which monitors drug mentions (medications and drugs of abuse) from emergency departments (EDs) across the nation, recently reported that two of the most frequently mentioned prescription medications in drug abuse-related cases are benzodiazepines (e.g., Valium, Xanax, Klonopin, and Ativan) and opioid pain relievers (e.g., oxycodone, hydrocodone, morphine, methadone, and combinations that include these drugs). In 2002, benzodiazepines accounted for 100,784 ED visits categorized as drug abuse-related cases and opioid pain relievers accounted for more than 119,000. Between 1994 and 2004, ED reports of hydrocodone and oxycodone overdoses increased by 170 percent and 450 percent, respectively.

Several classes of medications that are commonly abused include opiates, central nervous system (CNS) depressants, psychedelics and stimulants. Certain over-the-counter (OTC) medicines can also be abused when not taken as directed. Also, many prescription drugs or OTC medicines can produce dangerous health effects when taken concurrently or taken with alcohol. Any use of drugs in combination with alcohol carries risk; abuse of these substances raises that risk, and multiple drug abuse raises it even further. For example, chronic alcoholics who use even therapeutic doses of acetaminophen may experience severe hepatotoxicity. Alcohol can increase lithium toxicity and enhance central nervous system depression in persons taking tricyclic antidepressants. Higher doses of benzodiazepines used in conjunction with alcohol or barbiturates can be lethal.

Depressant drugs like heroin, barbiturates, benzodiazepines, anesthetics, solvents, and gamma-hydroxybutyrate (GHB) cause sedation. The initial effects of this class of drugs include difficulty in speaking, unsteady gait, and a general unawareness of the surroundings. In a toxic overdose, the person may succumb to the potentially fatal effects of respiratory depression and cardiovascular collapse. These agents produce addiction with concurrent physical dependence. Abrupt discontinuation after prolonged, frequent use of heavy doses could require medical intervention with a dose tapering approach sometimes involving the substitution of an alternative sedating medication, such as a benzodiazepine.

Rohypnol and GHB are predominantly central nervous system depressants. Because they are often colorless, tasteless, and odorless, they can be added to beverages and ingested unknowingly. These substances emerged a few years ago as "drug-assisted assault" drugs. Rohypnol, a trade name for flunitrazepam, belongs to a class of drugs known as benzodiazepines. After ingesting Rohypnol, individuals may experience a slowing of psychomotor performance, muscle relaxation, decreased blood pressure, sleepiness, and/or nightmares. Rohypnol can incapacitate victims and prevent them from resisting sexual assault. It can produce "anterograde amnesia," which means individuals may not remember events they experienced while under the effects of the drug. Also,
Rohypnol may be lethal when mixed with alcohol and/or other depressants. Rohypnol is not approved for use in the United States, and its importation is banned.

GHB (gamma hydroxybutyrate) has been abused in the U.S. for its euphoric, sedative, and anabolic (body building) effects. Street names include "liquid ecstasy," "soap," "easy lay," "vita-G," and "Georgia home boy." Coma and seizures can occur following abuse of GHB. Combining use with other drugs such as alcohol can result in nausea and breathing difficulties. GHB overdose can cause unconsciousness, slowed heart rate, respiratory depression, seizures, hypothermia, nausea, vomiting, and coma. The combination of coma and vomiting or coma and a blocked airway can be deadly. GHB may also produce withdrawal effects, including insomnia, anxiety, tremors, and sweating. GHB and two of its precursors, gamma butyrolactone (GBL) and 1,4 butanediol (BD) have been involved in poisonings, overdoses, date rapes, and deaths.

Stimulants are a class of drugs that enhance brain activity; they cause an increase in alertness, attention, and energy that are accompanied by increases in blood pressure, heart rate, and respiration. Stimulants, including dextroamphetamine (Dexedrine and Adderall) and methylphenidate (Ritalin and Concerta), are used primarily to treat attention deficit hyperactivity disorder (ADHD) and narcolepsy. These stimulants have chemical structures that are similar to brain neurotransmitters called monoamines, which include norepinephrine and dopamine. Stimulants increase the levels of these chemicals in the brain and body. This, in turn, increases blood pressure and heart rate, constricts blood vessels, increases blood glucose, and opens up the pathways of the respiratory system. As with other drugs of abuse, it is possible for individuals to become dependent upon or addicted to many stimulants. Repeated use of some stimulants over a short period can lead to feelings of hostility or paranoia. Further, taking high doses of a stimulant may result in dangerously high body temperature and an irregular heartbeat. There is also the potential for cardiovascular failure or lethal seizures.

The "club drug" MDMA continues to be used by millions of Americans across the country despite growing evidence of its potential harmful effects. 3, 4-Methylenedioxymethamphetamine (MDMA or Ecstasy) has gained a deceptive reputation as a "safe" drug among its users. This illegal drug, which has both stimulant and psychedelic properties, is often taken for the feelings of well-being, stimulation, as well as the distortions in time and sensory perceptions that it produces. MDMA first became popular in the "rave" and all-night party scene, but its use has now spread to a wide range of settings and demographic subgroups. According to the 2002 National Survey on Drug Use and Health, more than 10 million people have tried MDMA at least once. MDMA is a synthetic, psychoactive drug chemically similar to the stimulant methamphetamine and the hallucinogen mescaline. Street names for MDMA include Ecstasy, Adam, XTC, hug, beans, and love drug. MDMA exerts its primary effects in the brain on neurons that use the chemical serotonin to communicate with other neurons. The serotonin system plays an important role in regulating mood, aggression, sexual activity, sleep, and sensitivity to pain. Chronic users of MDMA perform more poorly than nonusers on certain types of cognitive or memory tasks. Some of these effects may be due to the use of other drugs in combination with MDMA. In high doses, MDMA can interfere with the body's ability to regulate temperature. This can lead to a sharp increase in body temperature, resulting in liver, kidney, and cardiovascular system failure. Besides
these, psychological effects such as confusion, depression, sleep problems, drug craving, and severe anxiety. These problems can occur during and sometimes days or weeks after taking MDMA.

CNS depressants, sometimes referred to as sedatives and tranquilizers, are substances that can slow normal brain function. Because of this property, some CNS depressants are useful in the treatment of anxiety and sleep disorders. Among the medications that are commonly prescribed for these purposes are the barbiturates (such as mephobarbital (Mebaral) and pentobarbital sodium (Nembutal), which are used to treat anxiety, tension, and sleep disorders) and benzodiazepines (such as diazepam (Valium), chlordiazepoxide HCl (Librium), and alprazolam (Xanax), are prescribed to treat anxiety, acute stress reactions, and panic attacks). Despite their many beneficial effects, barbiturates and benzodiazepines have the potential for abuse and should be used only as prescribed. During the first few days of taking a prescribed CNS depressant, a person usually feels sleepy and uncoordinated, but as the body becomes accustomed to the effects of the drug, these feelings begin to disappear. If one uses these drugs long term, the body will develop tolerance for the drugs, and larger doses will be needed to achieve the same initial effects. Continued use can lead to physical dependence and - when use is reduced or stopped – withdrawal is likely to occur. Because all CNS depressants work by slowing the brain's activity, when an individual stops taking them, the brain's activity can rebound and race out of control, potentially leading to seizures and other harmful consequences.

CNS depressants should be used in combination with other medications only under a physician's close supervision. Typically, they should not be combined with any other medication or substance that causes CNS depression, including prescription pain medicines, some OTC cold and allergy medications, and alcohol. Using CNS depressants with these other substances - particularly alcohol - can slow both the heart and respiration and may lead to death.

Hallucinogens are drugs that cause hallucinations - profound distortions in a person's perceptions of reality. Under the influence of hallucinogens, people see images, hear sounds, and feel sensations that seem real but do not exist. Some hallucinogens also produce rapid, intense emotional swings. LSD (lysergic acid diethylamide) is the drug most commonly identified with the term "hallucinogen" and the most widely used in this class of drugs. Hallucinogens cause their effects by disrupting the interaction of nerve cells and the neurotransmitter serotonin. Users of LSD may experience some physiological effects, such as increased blood pressure and heart rate, dizziness, loss of appetite, dry mouth, sweating, nausea, numbness, and tremors; but the drug's major effects are emotional and sensory. The user's emotions may shift rapidly through a range from fear to euphoria, with transitions so rapid that the user may seem to experience several emotions simultaneously. LSD's effects typically begin within 30 to 90 minutes of ingestion and may last as long as 12 hours. Although most of the LSD effects include both pleasant and unpleasant aspects, the drug's effects are unpredictable and may vary with the amount ingested and the user's personality, mood, expectations, and surroundings.

Over-the-counter (OTC) medicines, such as certain cough suppressants (including dextromethorphan); sleep aids (doxylamine) and antihistamines are abused for their
psychoactive effects. OTC medicines can be abused when not taken as directed. Beyond therapeutic use, dextromethorphan as a drug of abuse by teenagers has been increasing. Over-the-counter medications that contain dextromethorphan often contain antihistamine and decongestant ingredients as well, and high doses of these mixtures can seriously increase risks of dextromethorphan abuse. Dextromethorphan is a cough-suppressing ingredient in a variety of over-the-counter cold and cough medications. The most common source of abused dextromethorphan is "extra-strength" cough syrup, which typically contains 3 milligrams of the drug per milliliter of syrup. At the doses recommended for treating coughs (1/6 to 1/3 ounce of medication, containing 15 mg to 30 mg dextromethorphan), the drug is safe and effective. At much higher doses (4 or more ounces), dextromethorphan produces dissociative effects similar to those of PCP and ketamine. The effects vary with dose, and dextromethorphan users describe a set of distinct dose-dependent effects ranging from a mild stimulant effect with distorted visual perceptions at low (approximately 2-ounce) doses to a sense of complete dissociation from one's body at doses of 10 ounces or more.

Cocaine is a powerfully addictive stimulant that directly affects the brain. Cocaine is generally sold on the street as a fine, white, crystalline powder, known as coke, C, snow, flake, or blow. Street dealers generally dilute it with such inert substances as cornstarch, talcum powder, and/or sugar, or with such active drugs as procaine (a chemically related local anesthetic) or with such other stimulants as amphetamines. The duration of cocaine’s immediate euphoric effects depends upon the route of administration. The faster the absorption, the higher the intensity of high. Also, the faster the absorption, the shorter the duration of action. The high from snorting is relatively slow in onset, and may last 15 to 30 minutes, while that from smoking may last 5 to 10 minutes. The short-term physiological effects of cocaine include constricted blood vessels; dilated pupils; and increased temperature, heart rate, and blood pressure. Large amounts (several hundred milligrams or more) intensify the user’s high, but may also lead to bizarre, erratic, and violent behavior. These users may experience tremors, vertigo, muscle twitches, paranoia, or, with repeated doses, a toxic reaction closely resembling amphetamine poisoning. Some users of cocaine report feelings of restlessness, irritability, and anxiety. In rare instances, sudden death can occur on the first use of cocaine or unexpectedly thereafter. Cocaine-related deaths are often a result of cardiac arrest or seizures followed by respiratory arrest.

There can be severe medical complications associated with cocaine use. Some of the most frequent complications are cardiovascular effects, including disturbances in heart rhythm and heart attacks; respiratory effects such as chest pain and respiratory failure; neurological effects, including strokes, seizures, and headaches; and gastrointestinal complications, including abdominal pain and nausea. Physical symptoms may include chest pain, nausea, blurred vision, fever, muscle spasms, convulsions, coma, and death. Different routes of cocaine administration can produce different adverse effects. Regularly snorting cocaine, for example, can lead to loss of sense of smell, nosebleeds, problems with swallowing, hoarseness, and an overall irritation of the nasal septum, which can lead to a chronically inflamed, runny nose. Ingested cocaine can cause severe bowel gangrene, due to reduced blood flow. And, persons who inject cocaine have puncture marks and "tracks,” most commonly in their forearms. Intravenous cocaine users may also experience an allergic reaction, either to the drug, or to some additive in
street cocaine, which can result, in severe cases, in death. Because cocaine has a tendency to decrease food intake, many chronic cocaine users lose their appetites and can experience significant weight loss and malnourishment.

Pharmacists should screen patients for substance abuse and addiction. Routine urine drug screening provides additional accountability and monitoring. The weekly drug screen should include assays for alcohol, benzodiazepines, cocaine, and opiates. Monthly, the screens should be extended to include amphetamines, marijuana, and barbiturates. Pharmacists must acquire a complete drug history for all patients under their care. Asking about the use of illegal drugs and screening for dependence on these chemicals is a daunting task. One must first establish a professional belief that these questions are driven by therapeutic concerns. Therefore, the pharmacist must proceed with sensitivity, respect, and confidentiality. Patients should understand that the questions are routine and that honest answers are critical to the safe and effective use of their prescription medication.

Substance abuse is a brain disease that can, like other chronic diseases, be effectively treated. But no single type of treatment is appropriate for all individuals addicted to prescription drugs. Treatment must take into account the type of drug used and the needs of the individual. To be successful, treatment may need to incorporate several components, such as pharmacist counseling in conjunction with a prescribed medication, and multiple courses of treatment may be needed for the patient to make a full recovery. The two main categories of substance abuse treatment are behavioral and pharmacological. Behavioral treatments teach people how to function without drugs, how to handle cravings, how to avoid drugs and situations that could lead to drug use, how to prevent relapse, and how to handle relapse should it occur. When delivered effectively, behavioral treatments – such as individual counseling, group or family counseling, contingency management, and cognitive-behavioral therapies – also can help patients improve their personal relationships and ability to function at work and in the community.

Parents have a legitimate fear that drug abuse can disrupt their child's healthy development. Alcohol, tobacco, and marijuana in that order appear year after year in surveys of school-aged populations as the drugs most often experimented with and used frequently. Pharmacists can advice parents of drug abusing teens on matters of substance abuse and addiction. Also, pharmacists can provide counseling; give brochures, credible on-line resources and other supplemental information that is necessary to prevent substance abuse.

Patients rarely succeed on their first attempt at change regarding substance abuse. Pharmacists should anticipate that counseling given once needs to be reinforced with reminders over time. The individual should re-engage the behavior modification with a renewed commitment to change, a greater level of understanding about themselves and their problem, and an increased intensity of resolve to improve his or her life. Since successful outcomes often depend upon retaining the person long enough to gain the full benefits of treatment, strategies for keeping an individual in the program are critical. Whether a patient stays in treatment depends on factors associated with both the individual and the compliance. Individual factors related to engagement and retention include motivation to change drug-using behavior, degree of support from family and
friends, and whether there is pressure to stay in treatment from the criminal justice system, child protection services, employers, or the family. The pharmacist can help the patient recognize that in order to "relapse" one has to have succeeded in initiating the change in the first place. The pharmacist can periodically instill optimism by pointing out the benefits associated with avoiding substance abuse.

The ultimate goal of all drug abuse treatment is to enable the patient to achieve lasting abstinence, but the immediate goals are to reduce drug use, improve the patient's ability to function, and minimize the medical and social complications of drug abuse. Treatment resources can be divided into several categories in line with the continuum of care concept applied to addiction therapy. The continuum of care concept is to initiate treatment with the least intrusive intervention that will succeed for the patient. Accordingly, treatment options range from outpatient counseling and education programs to intensive inpatient experiences. The most urgent and severe treatment needs occur when a chemically dependent person initiates abstinence and begins to experience withdrawal distress. This is most likely to occur among those addicted to depressant drugs such as alcohol, opioids, anti-anxiety agents, and benzodiazepines. These agents produce a state of physical dependence and abrupt discontinuation is physically painful, and in the case of alcohol and sedative drugs, potentially fatal.

Pharmacists play an important role in treatment of addiction to prescription opioids. Pharmacists can review profile of the patients who are chronically taking controlled substances and accordingly will take actions regarding the treatment. If they are abusing opioids continuously, then treatment will include medications, such as methadone and LAAM (levo-alpha-acetyl-methadol), and behavioral counseling approaches. A useful precursor to long-term treatment of opioid addiction is detoxification. Detoxification in itself is not a treatment for opioid addiction. Rather, its primary objective is to relieve withdrawal symptoms while the patient adjusts to being drug free. To be effective, detoxification must precede long-term treatment that either requires complete abstinence or incorporates a medication, such as methadone, into the treatment plan.

One of the ways that pharmacist can prevent substance abuse is via counseling. Individualized drug counseling focuses directly on reducing or stopping the addict's illicit drug use. It also addresses related areas of impaired functioning such as employment status, illegal activity, family and social relations. Through its emphasis on short-term behavioral goals, individualized drug counseling helps the patient develop coping strategies and tools for abstaining from drug use and then maintaining abstinence. In a study that compared opiate addicts receiving only methadone to those receiving methadone coupled with counseling, individuals who received only methadone showed minimal improvement in reducing opiate use. The addition of counseling produced significantly more improvement. In another study with cocaine addicts, individualized drug counseling, together with group drug counseling, was quite effective in reducing cocaine use. Thus, it appears that this approach has great utility with both heroin and cocaine addicts in outpatient treatment.

Pharmacists should emphasize that medication alone is insufficient for the long-term successful treatment of substance dependence. For addiction pharmacotherapy, the medication is an adjunct in an overall treatment program. The goals of addiction
pharmacotherapy are to achieve or sustain abstinence from the patient's drug of choice. Pharmacists should tell patients that their active participation in a comprehensive program of recovery is expected of them. Thus, in addition to abstinence from their drug of choice, patients should make adjustments in their lives that promote abstinence and reduce their exposure to situations associated with their drug abuse. These kinds of lifestyle changes are best achieved with a program of counseling and by building relationships with others who have dedicated themselves to a life of sobriety.

Pharmacists can prevent drug abuse by identifying forged prescriptions and taking appropriate steps to correct it. The dispensing pharmacist must maintain constant vigilance against forged or altered prescriptions. Pharmacists should be aware of the various kinds of fraudulent prescriptions which may be presented for dispensing. Legitimate prescription pads are stolen from physicians' offices and some patients, in an effort to obtain additional amounts of legitimately prescribed drugs, alter the physician's prescription. Besides these, there are other characteristics that make a prescription forged. They include: Prescription looks too good, prescription appears to be photocopied, directions written in full with no abbreviations, prescription does not comply with the acceptable standard abbreviations or appear to be textbook presentations, and prescription written in different color inks or written in different handwriting. Proper controls against fraudulent prescriptions can best be accomplished by following common sense, sound professional practice, and using proper dispensing procedures and controls.

It is a challenge for pharmacists to be vigilant in trying to prevent drug abuse. Pharmacists can play an active role in treating and preventing substance abuse by making appropriate recommendations to the prescriber when appropriate. Pharmacist can prevent prescription fraud by carefully reviewing the prescription. If there is anything that looks suspicious, the pharmacists should call the prescriber for verification. Individualized drug counseling helps the patient develop coping strategies and tools for abstaining from drug use and then maintaining abstinence. Pharmacists can participate in substance abuse education and prevention programs (e.g., in primary and secondary schools, colleges, churches, and civic organizations) and stressing the potential adverse health consequences of the misuse of legal and use of illegal drugs. Overall, Pharmacists can play a major role in reducing the negative effects that substance abuse has on society, health systems and the pharmacy profession.

References