Recognizing Prescription Drug Abuse and Addiction in Patients, Part II

Rhea Faye D. Felicilda-Reynaldo

Drug abuse is a reality for people from all walks of life. Most nurses have met someone who is struggling with substance abuse problems. As advocates for health and wellness, nurses have the responsibility to recognize signs and symptoms of ongoing health care problems, including drug abuse, so these may be addressed with early treatment. Prescription drug abuse is an epidemic that has been labeled the nation’s fastest growing drug problem (Schreiner, 2012). Deaths from drug overdose surpass those of homicides, gunshots, and suicides (Office of National Drug Control Policy, n.d.). Most drug overdose deaths are linked to nonmedical prescription drug use (Schreiner, 2012). According to a University of Michigan study, after marijuana, prescription and over-the-counter medications are the most commonly abused drugs by high school students (National Institute on Drug Abuse [NIDA], 2014a).

In part I of this series, information was presented on how to recognize signs and symptoms of abuse, overdose, and withdrawal of prescription analgesics (Felicilda-Reynaldo, 2014). While opioids are the most abused prescription drugs (Shepherd, 2014), two other prescription medication categories also are misused and abused rampanty: stimulants and depressants (NIDA, 2014b). In this article, facts are presented to help nurses identify patients who may be misusing or abusing prescription stimulants and depressants.

Prescription Stimulants

Stimulants, as the name implies, can help increase a person’s alertness, attention, and energy. Historically, stimulants were used to treat cardiovascular and respiratory problems, but became limited in this use as the potential for abuse was identified (NIDA, 2014a). Currently, chemical variations of methylphenidate and amphetamines are prescribed as first-line pharmacotherapy for attention-deficit hyperactivity disorder (ADHD) (Sweeney, Sembower, Ertischek, Shiffman, & Schnoll, 2013). Almost 10% of children ages 4 to 17 in the United States are diagnosed with ADHD. Furthermore, 4% of the adult population are afflicted with ADHD (Sweeney et al., 2013). A large number of people thus have access to drugs with high potential for abuse and addiction. Aside from treatment of ADHD, stimulants also may be prescribed for treatment of narcolepsy, obesity, and depression unresponsive to antidepressants (NIDA, 2014a).

An alarming trend of abuse of prescription stimulants for nonmedical use exists among college students. Past rates of nonmedical use were estimated at 5%-35% (Sweeney et al., 2013). Garnier and colleagues (2012) found at least 60% of students had been offered prescription stimulants for nonmedical use over the study’s 4-year period. The students’ primary motive for use of prescription stimulants was to help them stay up to study (70%-90% annually). Almost 90% were administered orally, and students’ main source for acquiring the prescription medication was from their friends (74%). In another study, Sweeney and co-authors (2013) found the majority of people who engaged in nonmedical use of prescription stimulants already had patterns of drug abuse and misuse of other illicit drugs (e.g., marijuana, heroin) or another prescription drug (e.g., analgesics or depressants). A recent systematic review evaluating the efficacy of prescription stimulants for treating ADHD also found individuals taking stimu-
lants for ADHD treatment were more likely to misuse the medication than individuals who did not have ADHD (Weyandt et al., 2014).  

Mechanism of Action, Schedule, Effects, and Contraindications

The exact mechanism of action of stimulants is unknown. Methylphenidate (Ritalin®, Concerta®) increases the release of biogenic amines, primarily norepinephrine and dopamine in the cerebral cortex to the reticular activating system (Lilley, Rainforth-Collins, & Snyder, 2014; Skidmore-Roth, 2015). Dextroamphetamine (Dexedrine®) has a similar mechanism of action to methylphenidate (Skidmore-Roth, 2015).

With the release of the biogenic amines, the central nervous system (CNS) becomes stimulated, including the sympathetic autonomic nervous system. This results in increased blood pressure and heart rate. Dysrhythmias of the heart may develop. Other autonomic nervous system effects include contraction of the smooth muscles (e.g., as in the urinary bladder) (Lilley et al., 2014). Patients who use stimulants will experience intended effects of alertness, decreased fatigue, improved self-confidence, ability to concentrate, and increased initiative (Lilley et al., 2014; Weyandt et al., 2014). Increased release of dopamine into the CNS also activates the brain reward system, resulting in mood elevation and a sense of euphoria (NIDA, 2014b). Activation of the brain reward system results in the medications’ potential for abuse and misuse.

Both methylphenidate and dextroamphetamine are schedule II drugs. Schedule II medications can be prescribed for clinical therapeutic use, but are controlled strictly during dispensation to prevent diversion for nonmedical use (U.S. Drug Enforcement Administration, n.d.). With prolonged use, tolerance for these medications may develop, resulting in a patient’s need for increased doses for the expected effects to occur (Skidmore-Roth, 2015).

Stimulants are contraindicated in persons with hypersensitivity to biogenic amines such as norepinephrine. These medications also are contraindicated for individuals diagnosed with glaucoma, hypertension, hyperthyroidism, and severe arteriosclerosis (Skidmore-Roth, 2015). Precaution is necessary when administering the medication to women who are pregnant or breastfeeding (Vallerand, Sanoski, & Deglin, 2014). The U.S. Food and Drug Administration (FDA) has determined stimulants fall under pregnancy category C, which indicates animal studies have shown adverse effects on the fetus, but limited evidence from human studies exists on the teratogenic effects of the medication (Drugs.com, n.d.). Precaution also should be taken when these medications are given to patients who have been diagnosed with acute myocardial infarction, cardiomyopathy, seizure disorder, and psychosis (Vallerand et al., 2014). Patients should be warned not to discontinue a stimulant abruptly, as this could result in depression, increased sleeping, and lethargy. Discontinuation of medication should be tapered over several weeks (Skidmore-Roth, 2015).

Signs of Intoxication, Tolerance, and Withdrawal

Because prescription stimulants are chemical variations of amphetamines, signs and symptoms of abuse will be similar to those associated with abuse of the illicit drug methamphetamine. Behavioral changes include excessive talkativeness and increased self-confidence. Mood is uplifted, and a sense of increased physical and mental capabilities is experienced. Appetite decreases, resulting in significant weight loss. Patients will not feel the need for sleep (Lehne, 2013). Prolonged use of stimulants, especially in large doses, contributes to a flat affect and puts the person at risk for psychotic symptoms, such as delusions, hallucinations, and paranoia (Lakhan & Kirchgessner, 2012; Lehne, 2013). Patients also may be at risk for cardiovascular consequences, such as hypertension and tachycardia. More severe cardiovascular events may occur, including angina and cardiomyopathy (Lakhan & Kirchgessner, 2012). Habel and colleagues (2011) found no significant relationship between use of ADHD medications and severe cardiovascular events. However, the FDA has called for more research regarding the link between misuse of medications for ADHD and development of cardiovascular events (Lakhan & Kirchgessner, 2012).

Patients taking a prescription stimulant are at increased risk for psychological dependence on the drug due to its effects of mood elevation and euphoria. Physical tolerance for the drug will occur in three areas: mood elevation, appetite suppression, and cardiovascular events (Lehne, 2013). To receive the same euphoric effects, patients may take larger doses of the drug, which also increases their risk for more severe cardiovascular events. Overdose of a prescription stimulant will be expressed through a combination of general body pains, a high fever, signs and symptoms of dehydration, insomnia, and hyperactivity (Skidmore-Roth, 2015). Some people may combine a stimulant with over-the-counter cold medications such as decongestants. This drug combination could result in dangerously high blood pressure or cardiac dysrhythmias (NIDA, 2014a).

Patients diagnosed with stimulant overdose will be treated by increasing fluids to flush the medications from the body. If necessary, peritoneal or hemodialysis will be initiated. Administration of ammonium chloride also will assist with rapid excretion of overdose medications. Antihypertensive drugs may be given to stabilize stimulant-induced hypertension (Skidmore-Roth, 2015). Patients will feel the worst effects of stimulant withdrawal during the first 3 days, but symptoms may last up to a week (Lilley et al., 2014). Signs and symptoms of withdrawal include a voracious appetite, increased sleeping, lethargy, fatigue, social withdrawal, and psychosis (Lehne, 2013; Lilley et al., 2014). Treatment for stimulant withdrawal...
is supportive and symptomatic in nature (Lehne, 2013). Cognitive behavioral therapy can be useful for patients seeking help for stimulant addiction (Wilens & Morrison, 2011).

**Prescription CNS Depressants**

Central nervous system depressants often are prescribed to patients with anxiety or sleep disorders (NIDA, 2014a). They are known more commonly as sedatives and tranquilizers due to their desired effects as a sleep aid. Two classes of CNS depressants have the potential for misuse, abuse, and addiction: benzodiazepines and barbiturates.

Barbiturates and benzodiazepines are controlled substances prescribed for use as a sedative-hypnotic, an anxiolytic, or an anticonvulsant. Barbiturates may be short-acting or long-acting (Wilson, Shannon, & Shields, 2014). Short-acting barbiturates, such as secobarbital sodium (Seconal®), often are used as a preoperative sedative-hypnotic adjunct to anesthesia (Wilson et al., 2014). Secobarbital is categorized as a schedule II controlled substance. Intended therapeutic effects include drowsiness, sedation, hypnosis, and muscle relaxation (Skidmore-Roth, 2015). These effects are elicited by “depressing the sensory cortex, altering cerebellar function, and decreasing motor activity” (Wilson et al., 2014, p. 1387).

Phenobarbital (Solfoton®), a long-acting barbiturate, produces an anticonvulsant effect as well as sedation and hypnosis by “inhibiting the reticular activating system, thereby increasing the threshold for motor cortex stimulation” (Wilson et al., 2014, p. 1207). The anticonvulsant effects of barbiturates do not elicit a concurrent analgesic effect. Barbiturates no longer are prescribed commonly for treatment of insomnia because other medications are available that do not pose a risk for overdose (NIDA, 2014a). Phenobarbital is categorized as a schedule IV medication (Wilson et al., 2014).

Barbiturates are contraindicated in patients with known hypersensitivity to barbiturates, severe respiratory or kidney diseases, or a history of addiction to sedative-hypnotics (Wilson et al., 2014). Similar to long-acting barbiturates, benzodiazepines also are categorized as schedule IV controlled substances (Skidmore-Roth, 2015). Barbiturates also should not be given to patients with known alcohol intoxication (Skidmore-Roth, 2015). Because of positive evidence of risk to the fetus with administration of barbiturates, pregnant women should not receive medications from this class (pregnancy category D) (Drugs.com, n.d.). Extra caution is necessary when barbiturates are administered to persons with impaired liver, kidney, cardiac, or respiratory function, hyperthyroidism, diabetes mellitus, or seizure disorders (Wilson et al., 2014).

Examples of benzodiazepines include diazepam (Valium®) and alprazolam (Xanax®). Diazepam is a long-acting benzodiazepine that increases secretion of the neurotransmitter gamma-aminobutyric acid (GABA) in the CNS (NIDA, 2014a). GABA slows brain activity by blocking impulses between nerve cells (WebMD, 2013). Benzodiazepines potentiate the action of GABA in the limbic, thalamic, and hypothalamic regions of the brain (Skidmore-Roth, 2015; Wilson et al., 2014), resulting in sedation, hypnosis, and muscle relaxation (Wilson et al., 2014). Diazepam is the drug of choice for managing status epilepticus (Wilson et al., 2014). It also can be administered for management of anxiety disorders. Diazepam can elicit short-term relief of anxiety symptoms as well, such as in preoperative situations (Skidmore-Roth, 2015). Alprazolam has the same mechanism of action as diazepam. In addition to its ability to elicit short-term relief of anxiety, it can be prescribed as an adjunct therapy for the management of anxiety disorders, depression, and panic, or phobic disorders (Wilson et al., 2014).

Benzodiazepines are contraindicated in pregnant women (Skidmore-Roth, 2015). Benzodiazepines are categorized under pregnancy category D or X, indicating positive evidence of teratogenic effects in the fetus have been found in human drug research (Drugs.com, n.d.). These medications also are contraindicated in patients with myasthenia gravis, alcohol intoxication, closed-angle glaucoma, coma, hepatic disease, and sleep apnea (Skidmore-Roth, 2015). Caution should be used when benzodiazepines are administered to patients with known liver or kidney impairment, history of alcoholism or of sedative-hypnotic dependence, and signs and symptoms of CNS depression (Wilson et al., 2014).

**Potential for Abuse, Tolerance, and Withdrawal**

Barbiturates have the potential to be abused as they produce CNS depressant effects similar to alcohol intoxication. Depressant effects of barbiturates are based on the dose taken by the patient. Overdose of barbiturates could lead to coma, even death. Prolonged use could lead to tolerance and psychological dependence (Skidmore-Roth, 2015).

Benzodiazepines have less potential for abuse compared to barbiturates (Lilley et al., 2014). Because benzodiazepines can lead to moderate dependence in patients, providers should limit patients’ prescriptions to shorter terms of 2-4 weeks (Ibañez, Levi-Minzi, Rigg, & Mooss, 2013). However, prescription benzodiazepines continue to be prescribed for long-term use, potentially exposing patients to dependency on the medication (Mehdi, 2011). Benzodiazepines pose a danger for patients if taken in combination with alcohol (Lilley et al., 2014). The Centers for Disease Control and Prevention (2014) reported 408,021 emergency department visits in 2010 attributed to benzodiazepine abuse. Of those, 27.2% (n=111,165) involved a combination of alcohol and benzodiazepine intake. Furthermore, 324 of the 1,152 benzodiazepine-related deaths were linked to concurrent alcohol use or abuse.

People who take CNS depressants for a prolonged period of time
will start adjusting to the side effects of the medication (e.g., sleepiness and uncoordination) (Lehne, 2013). Prolonged use also increases the potential for tolerance (NIDA, 2014a). The larger doses and continued prolonged use could lead to physical dependence on the drug (Lilley et al., 2014).

When CNS depressants are stopped abruptly, rebound effects may occur (NIDA, 2014a). Withdrawal signs and symptoms for CNS depressants include severe headache, nausea and vomiting, muscle pain, and generalized weakness (Skidmore-Roth, 2015). A rebound seizure effect also may occur (NIDA, 2014a). Other signs and symptoms of CNS depressant withdrawal may include episodes of hallucinations, depression, disorientation, and suicidal thoughts. The peak period and duration of withdrawal depends on if the CNS depressant taken was long-acting or short-acting. Withdrawal symptoms peak at 2-4 days for patients taking short-acting CNS depressants, with a maximum duration of 7 days; patients who took long-acting CNS depressants will experience peak withdrawal symptoms at 4-7 days and withdrawal period could last up to 12 days (Lilley et al., 2014). Withdrawal from barbiturates includes risk for more life-threatening complications than benzodiazepine withdrawal, although the latter still could result in problematic signs and symptoms (e.g., tremors and agitation) (Lilley et al., 2014; NIDA, 2014a).

Barbiturate withdrawal is treated by tapering drug dosages until the patient is medication-free. Knowing the original prescription dosage can help providers determine proper tapering dosages, which should begin by giving 50% of the original prescribed dosage. A 7-10 day drug taper is a common protocol, but withdrawal treatment may last up to 14 days. Benzodiazepine withdrawal is managed by giving oral diazepam 10-20 mg four times on the first day. On the last day, the diazepam should have been tapered to a dosage of 5-10 mg. If the patient was taking a short-acting benzodiazepine, a 7-10 day drug tapering will be done. This will be extended to 14 days if the patient was taking a long-acting benzodiazepine (Lilley et al., 2014).

Patients should be reminded to provide their health care providers a list of current medications if they are to be prescribed a CNS depressant (Skidmore-Roth, 2015). If patients concurrently take medications with CNS depressant effects (e.g., over-the-counter cold and allergy medications) with barbiturates or benzodiazepines, they are at risk for developing life-threatening adverse effects, including dysrhythmia, respiratory depression, coma, or even death (NIDA, 2014a).

**Implications for Medical-Surgical Nursing Practice**

Medical-surgical nurses should not expect patients to have only a physiological health problem. Some patients may be treated for psychological conditions along with their medical-surgical health care needs. They may find it difficult to discuss their psychological problems due to the stigma of having a mental health illness, their inability to accept their mental health problem, or fear of potential legal consequences to their actions. With health and wellness advocacy as a part of their role, medical-surgical nurses should do their best to address patients’ hidden health care concerns such as drug misuse and abuse, and lead them to treatment resources. By gaining knowledge of prescription drug abuse and misuse, nurses will be more prepared to recognize these problems in their patients.

**REFERENCES**


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**Objectives**

This continuing nursing educational (CNE) activity is designed for nurses and other health care professionals who are interested in recognizing signs of prescription drug abuse and addiction. After studying the information presented in this article, the nurse will be able to:

1. Describe the mechanism of action, schedule, effects, and contraindications of prescription stimulants.
2. Explain signs of intoxication, tolerance, and withdrawal associated with prescription stimulants.
3. Discuss the potential for abuse, tolerance, and withdrawal associated with prescription depressants.

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