Substance Use Disorders

Substance use disorder (SUD): continued use despite significant consequences; seen in 10% to 15% of general population, 20% to 28% of outpatients in primary care practice, and nearly 50% of inpatients in community hospitals

Addiction: primary chronic brain disease with genetic, psychosocial, and environmental components; associated with preoccupation and denial; can manifest daily or periodically; neurobiology — reward pathway final common pathway for all drugs of abuse; addiction to one substance significantly increases risk for addiction to another; use of addictive substances by individuals with brains genetically predisposed to addiction results in increased dopamine in mesolimbic system; sense of pleasure (eg, “I like this stuff”) leads to craving for substance (eg, “I need this stuff”)

Neurotransmitter systems that modulate addiction: dopamine; serotonin; endorphins; γ-aminobutyric acid (GABA); glutamate; addictive drug enters brain, resulting in stimulation of substance-specific neurotransmitters; cocaine stimulates norepinephrine and dopamine in brain, while alcohol stimulates GABA (results in different experience and states of euphoria); dopaminergic release in mesolimbic system occurs with all addictive drugs; “you can’t switch drugs and be safe”

Drug classes associated with addiction: sedative hypnotic drugs; opioids; stimulants; hallucinogens; nicotine — most reinforcing substance

Neurobiology: genetic variations in vulnerability to addiction; vulnerability correlates with hypodopaminergic dysfunctional state within reward system in brain; patients with addiction may metabolize dopamine differently than others, with different effect on mesolimbic system (ie, cravings); brain circuits that mediate pleasurable effects different from those that mediate physical dependence; norepinephrine fibers in locus coeruleus of brainstem mediate opioid and sedative hypnotic withdrawal; dopaminergic neurons in mesolimbic system

Physical dependence: side effect of drug; occurs in different area of brain than addiction; addiction occurs in presence or absence of physical dependence; 30% of alcoholics physically dependent on alcohol; criteria for alcohol dependence in Diagnostic and Statistical Manual of Mental Disorders (Fourth Edition; DSM-IV); can occur in absence of addiction; can occur with drugs that do not cause addiction (eg, fluoxetine [Prozac, Prozac Pulvules, Prozac Weekly, Sarafem, Sarafem Pulvules]); withdrawal syndrome (eg, nausea, dizziness, irritability) occurs with selective serotonin reuptake inhibitors (SSRIs)

Summary: addictive substances have neurochemical properties that cause cravings leading to continued use despite profound negative consequences to health, family and social relationships, and financial and professional well-being

Risk factors for SUD: positive family history (most robust risk factor); SUD more common in men than in women; peer pressure (especially in adolescents); 50% chance for addiction in individuals with first-degree relative with first-degree relative with addiction; other psychologic or psychiatric disorder; addictive substances should not be prescribed without documentation of family history of substance abuse

Signs of addiction: denial (unconscious defense mechanism; inability to see relationship between drug use and consequences); continued drinking despite consequences (strongest evidence of addiction to alcohol); withdrawal symptoms (high specificity, low sensitivity); consequences most important factor in identification of addiction; CAGE questionnaire — questions (about, eg, feeling guilty about drinking, needing drink first thing in morning [“eye-opener”]) do not need to be asked directly; 1 positive answer increases physician’s awareness; 2 positive answers suggests need for full evaluation; screening (not diagnostic) tool

Clinical clues: causes for primary concern about addiction — abnormal liver function testing, elevated mean corpuscular volume, low platelet count; ≥2 driving under influence (DUI) offenses; ≥2 positive answers on CAGE questionnaire; score >5 on Michigan Alcohol Screening Test (MAST); ≥1 blackout; job loss or being sent home from work due to substance use; arrest

Educational Objectives

The goal of this program is to improve management of substance use disorder (SUD) and chronic pain. After hearing and assimilating this program, the clinician will be better able to:

1. Distinguish addiction from physical dependence.
2. Recognize clinical signs of addiction.
3. Approach patients with SUD with an effective, comprehensive management plan.
4. Identify risk factors for opioid abuse in patients who present with complaints about chronic pain.

5. Describe policies that may help reduce risk for opioid abuse.

Faculty Disclosure

In adherence to ACCME Standards for Commercial Support, Audio-Digest requires all faculty and members of the planning committee to disclose relevant financial relationships within the past 12 months that might create any personal conflicts of interest. Any identified conflicts were resolved to ensure that this educational activity promotes quality in health care and not a proprietary business or commercial interest. For this program, Dr. Mallin and the planning committee reported nothing to disclose.
secondary to alcohol or drugs; addiction to any substance; withdrawal syndrome; myocardial infarction at age <30 yr; blood alcohol level (BAL) >300 mg/dL; BAL >100 mg/dL without impairment; causes for increased suspicion for SUD — estrogen-mediated physical signs associated with alcohol-related liver disease; hepatomegaly; positive urine drug screening test; smoking; ≥1 positive answer on CAGE questionnaire; score ≥4 on MAST; history of DUI or blackout; recreational use of illegal drugs (eg, marijuana); prolonged or excessive use of prescribed controlled substance; aberrant drug-seeking behavior (eg, “my dog ate my prescription,” “I’m allergic to everything except Dilaudid”); HIV infection; tuberculosis; cold injury (ie, hypothermia); more commonly seen with addiction than in general population — depression; anxiety; other mental illnesses; sleep disturbances; eating disorders; ≥1 episode of intoxication; family disputes (especially with violence); divorce or separation; sexual problems; positive family history; mood swings; problems at work; unusual behavior; behaviors of health care providers — excessive prescribing of controlled substances (not supported by most recent data); unplanned absences; intoxication at emergency department visit; defensiveness about questions related to alcohol or drug use; others — spouse depressed or in therapy; elevated blood pressure; elevated glucose; recurrent chest pain

**Management:** if SUD diagnosis questionable — suggest trial of abstinence for eg, 3 to 6 mo; if SUD diagnosis firm — abstinence; evaluate for detoxification; consider treatment; encourage aftercare and 12-step recovery fellowship; changes in brain that occur with addiction permanent; abstinence can quell cravings; rechallenging brain with addictive substance eventually results in return of loss of control; interventions — informal interventions can be performed in office with outpatients (“say it like it is,” and make recommendations); more formal approach usually arranged by addiction professional; success rate in physicians and airline pilots 85% to 90% (in other groups, 30%); detoxification — sedative hypnotic (eg, benzodiazepines, barbiturates) withdrawal life-threatening, and detoxification should be performed under medical supervision; treat with benzodiazepines or anticonvulsants; inpatient detoxification safer than outpatient detoxification; alcohol and drug treatment — effective; linear relationship between time and intensity of treatment and success with abstinence; outpatient treatment (can be intensive); inpatient treatment; residential treatment; aftercare; 12-step recovery — programs (eg, Alcoholics Anonymous, Narcotics Anonymous) effective; medications — effective only in comprehensive approach to management of SUD; ineffective without further treatment

**DSM-IV vs DSM-5:** DSM-IV — substance abuse vs substance dependence (ie, addiction); DSM-5 — mild (abuse), moderate (predominantly abuse, with some signs of addiction), and severe (addiction) SUD; important to determine point at which abuse becomes addiction (ie, when individual continues to drink or use drugs despite severe consequences)

**Management of Chronic Pain: A Clinical Update**

**Introduction:** use of opioids to treat nonmalignant chronic pain controversial; presently, use of opioids rampant (4-fold increase seen from 1999 to 2010); prevalence of chronic pain in United States exceeds that of heart disease, diabetes, and cancer combined; after marijuana, prescription opioids second most commonly abused drugs in United States; approach to management includes Opioids Risk Evaluation and Mitigation Strategies initiative

**Physician behaviors that constitute misconduct:** prescribing controlled substance to self; sexual contact with patients; not seeing patients; no history or physical examination; prescribing for addict without addressing problem; no indication for prescription; incompetence; negligence; inadequate records

**Risk for SUD:** individuals of younger age with psychiatric disorders more likely to have aberrant drug-related behavior

**Benzodiazepine withdrawal:** resembles alcohol withdrawal; stimulation of GABA receptors leads to stimulation of locus coeruleus, tachycardia, tremor, anxiety, nausea, and irritability; symptoms similar to those of SSRI withdrawal

**Risk factors:** history of work-related injury; failed back surgery; reports of allergy to nonsteroidal anti-inflammatory drugs (NSAIDs); positive family history of SUD

**Hydromorphone (Dilaudid, Dilaudid-HP, Palladone):** study saw that heroin addicts could not tell difference between dose of hydromorphone and equal dose of heroin; most reinforcing legal opioid; speaker does not use because of risk for abuse in susceptible patients

**Risks vs benefits:** explain to patients that risk of treating with narcotic analgesics far outweigh benefits, and can cause harm; drug screening test — positive test does not indicate addiction; negative test does not rule out addiction; primary care physicians often pressured by patients (explaining concerns results in better outcomes); morphine, codeine, and sometimes hydrocodone (at high doses) detected on routine urine drug screening test; synthetic opioids not detected on routine drug screening; must specifically request screening for oxycodone (eg, ETH-Oxydose, M-oxy, OxyContin), fentanyl, and hydromorphone

**Department of Health and Environmental Control (DEHEC) in South Carolina:** provides online information (eg, source, frequency) about patients’ filled prescriptions for controlled substances; aberrant drug behavior suggested in patients who have many prescribers and medications with overlap of times; listings by pharmacies voluntary

**Risk factors for chronic opioid use:** low risk — patients have verifiable diagnosis that benefits from use of controlled substances; history of failed treatment with noncontrolled substances (eg, NSAIDs); no personal or family history of SUD; high risk — patients have poorly defined problem (eg, history of 3 back surgeries with lack of evidence and imaging studies); no history of back surgery or abnormalities; nonlocalizing physical examination; normal findings on imaging studies; limited or no medical records; positive personal or family history of
SUD; history of discharge from practices (due to inability to follow contract)

**Policies to help reduce abuse:** do not prescribe controlled substances over telephone; do not provide addictive medications on first visit; use contract for addictive substances (some suggest that contracts interfere with physician-patient relationship; standard operating procedure; now expected by regulatory agencies); informed consent for controlled substances; do not provide long-term addictive substances to patients with history of SUD; patients recovering from addiction need spouse or other responsible individual to control short-term use of addictive medications; addiction may “run” pain, and treating addiction may make pain go away; random drug screening for all patients on long-term addictive substances

**Measures to protect medical license:** form appropriate physician-patient relationship; do not prescribe controlled substances to friends or nurses in practice; obtain complete history and perform thorough physical examination on every patient to whom controlled substance prescribed; use controlled substances agreement and obtain informed consent; random drug screening; schedule frequent visits (eg, at least every 3 mo); use of high-dose opioids (eg, 100 mg/day of morphine [or equivalent]) should be reserved for pain specialists; do not use benzodiazepines in combination with narcotics

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**Suggested Reading**


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**Estimated time to complete the educational process:**

- Review Educational Objectives on page 1: 5 minutes
- Take pretest: 10 minutes
- Listen to audio program: 60 minutes
- Review written summary and suggested readings: 35 minutes
- Take posttest: 10 minutes
1. Choose the correct statement(s) about addiction.
   (A) Primary chronic brain disease with genetic, psychosocial, and environmental components
   (B) Can manifest daily or periodically
   (C) Addiction to one substance significantly increases risk for addiction to another
   (D) All the above

2. Choose the correct statement about physical dependence.
   (A) Mediated by circuits in area of brain different from that responsible for addiction
   (B) Always occurs in presence of addiction
   (C) Occurs only with highly addictive substances
   (D) All the above

3. Which of the following appears to be the most robust risk factor for substance use disorder (SUD)?
   (A) Peer pressure
   (B) Positive family history
   (C) Depression
   (D) Chronic pain

4. Which of the following is a cause for primary concern about addiction?
   (A) Positive urine drug screening test
   (B) ≥2 “driving under the influence” offenses
   (C) Recreational use of illegal drugs (e.g., marijuana)
   (D) ≥1 positive answer on CAGE questionnaire

5. Interventions for SUD have the highest success rate in which of the following groups of patients?
   (A) Teachers
   (B) Attorneys
   (C) Physicians and airline pilots
   (D) Day care workers

6. Medications alone can effectively treat patients with SUD.
   (A) True
   (B) False

7. Which of the following opioids are typically detected on routine urine drug screening tests?
   (A) Morphine and oxycodone
   (B) Oxycodone and hydromorphone
   (C) Morphine and codeine
   (D) Codeine and oxycodone

8. Which of the following places a patient who complains of back pain at lowest risk for long-term opioid use?
   (A) History of failed treatment with noncontrolled substances
   (B) History of multiple back surgeries with limited imaging studies
   (C) Normal findings on imaging studies
   (D) Nonlocalizing physical examination

9. Which of the following is recommended to help reduce substance abuse?
   (A) Prescribing controlled substances over telephone
   (B) Providing addictive medications on first visit
   (C) Random drug screening for all patients on long-term addictive substances
   (D) Prescribing controlled substances to friends and family

10. Opioids should be used in combination with benzodiazepines in patients at risk for SUD.
    (A) True
    (B) False

Answers to Audio-Digest Family Practice Volume 62, Issue 16: 1-D, 2-B, 3-C, 4-D, 5-A, 6-C, 7-A, 8-C, 9-B, 10-A