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CURRENT COVERAGE OF TOPICS IN ADDICTION MEDICINE

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IN THIS ISSUE

Focus of the Month:
Cocaine Addiction

Learning objectives for this issue: **1.** Describe the psychosocial interventions used to treat cocaine use disorder (CUD). **2.** Summarize some of the challenges faced in treating cocaine addiction. **3.** Explain the difficulties in treating cocaine addiction in patients with co-occurring attention-deficit/hyperactivity disorder (ADHD). **4.** Understand some current research regarding addiction.

Treatment Interventions for Cocaine Addiction

David A. Gorelick, MD, PhD
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Dr. Gorelick has disclosed that he has no relevant financial or other interests in any commercial companies pertaining to this educational activity.

Summary

- Evidence-based psychosocial interventions to treat cocaine use disorder (CUD) include contingency management and cognitive behavioral therapy
- Generally about one-third of patients improve over the first three months of treatment, regardless of the method
- Intensity and duration of treatment are important factors in improving outcome

About 1.6 million Americans use cocaine every year, and roughly one-quarter of them meet diagnostic criteria for a cocaine use disorder (CUD) under *DSM-5* criteria. Fortunately, CUD responds to many of the same psychosocial interventions as other substance use disorders.

Approximately one out of six users who take cocaine intravenously or smoke

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Q&A With the Expert

Cocaine Addiction: Tough to Overcome

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Dr. Newton has disclosed that he has no relevant financial or other interests in any commercial companies pertaining to this educational activity.

CATR: Dr. Newton, how do patients with cocaine disorder typically come to seek help?

Dr. Newton: Well, most people have had the problem for a very long time. People often don't come in for help until they have been using for about 10 years, and using quite a bit. Most people don't have the resources to continue functioning at a relatively high level when they have been using a lot of drugs. So at some point, things fall apart. They just get sick of it and get treatment. It is typically when the downward slope is obvious and either the patient or the people who care about them decide that it is time to do something about it.

CATR: In terms of presentations, are there any clinical subtleties that providers misinterpret or perhaps overlook?

Dr. Newton: Patients' main complaint is that they are using too much cocaine and they don't have any money left. However, there are changes that can occur to the nose if people are snorting cocaine. People can also report that they had a seizure when they really didn't. It turns out that they experienced what is called "falling out." This is a big response to the cocaine that users think is a seizure. Some people also have panic attacks from having too much cocaine, as well as paranoia.

CATR: Can you describe what happens when a patient has this experience of 'falling out'?

Dr. Newton: It can be difficult to figure out what is going on when people have behaviors that resemble seizures, but may not actually be epileptiform. When someone has a true seizure they obviously don't know what is happening because they are

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Treatment Interventions for Cocaine Addiction

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the drug develop moderate to severe CUD (or what was called "dependence" in *DSM-IV* terminology). Rates of addiction are lower for those who use cocaine intranasally ("snorting") or orally.

Cocaine addiction carries serious consequences for patients, and it is associated with substantial medical and psychiatric morbidity (Degenhardt L & Hall W, *Lancet* 2012;379(9810):55–70) and a four- to eight-fold higher death rate than the general population (Degenhardt L et al, *Drug Alcohol Depend* 2011;113(2–3):88–95).

A person seeking treatment for CUD can choose from a variety of evidence-based psychosocial interventions. In contrast, despite hundreds of millions of dollars spent over three decades on basic research and drug development, we still have no well-established, broadly effective medication to treat cocaine addiction. (For more information about medications used to treat cocaine use disorder see "This Month's Expert" on page 1 and "Some Options, But No Magic Bullet" on page 3.)

Which Psychosocial Interventions Work?

CUD responds to the same types of psychosocial therapies that are used to treat other substance use disorders. These include contingency management (CM), cognitive behavioral therapy (CBT), relapse prevention therapy, and community reinforcement. Although widely used, the role of drug counseling, motivational enhancement therapy, and 12-step facilitation are much less certain.

As a broad generalization, about one-third of patients improve over the first three months of treatment, regardless of the treatment method (Dutra L et al, *Am J Psychiatry* 2008;165(2):179–187; Penberthy JK et al, *Curr Drug Abuse Rev* 2010;3(1):49–62), although most interventions have never been rigorously evaluated in randomized controlled trials.

A systematic review of 27 treatment studies involving 3,663 patients found that CM was more effective than other psychosocial interventions in keeping patients in treatment and reducing cocaine use, and was even more effective when combined with CBT (Knapp WP et al, *Cochrane Database Syst Rev* 2007;3:CD003023).

Factors Affecting Outcomes

Intensity and duration of treatment are important factors in improving outcome, regardless of the specific therapy. More intensive treatment, such as more frequent or longer visits (generally at least weekly visits for at least three months), is associated with better outcomes, especially during early abstinence (Simpson DD et al, *Arch Gen Psychiatry* 2002;59(6):538–544; Zhang Z et al, *Addiction* 2003;98(5):673–684).

A minimum treatment duration of three months is also associated with better outcomes. However, the benefits of increasing treatment intensity may hit a ceiling after four to six months (Schneider R et al, *J Ment Health Adm* 1996;23(2):234–245; Coviello DM et al, *Drug Alcohol Depend* 2001;61(2):145–154).

The likelihood of a favorable treatment outcome is also increased by adhering to the following general principles:

- Nonjudgmental empathy with the patient, along with avoiding argument or unnecessary confrontation
- Getting the patient addiction treatment as promptly as possible (ideally, within 24 hours of his or her decision to seek help) in an office-based setting or formal substance abuse treatment program
- Clear and realistic orientation of the patient to treatment goals and behavioral expectations (eg, treatment engagement and honest reporting of struggles, including ongoing substance use)
- Strict monitoring for all psychoactive substances, not just cocaine (eg, by frequent urine testing)
- Prompt and explicit feedback to the patient regarding violations of treatment expectations, with consistently applied consequences for such violations (eg, a reduction in clinic privileges)
- Involvement of the patient's social network (to the extent possible)
- Attention to any concurrent medical, psychiatric, vocational, legal, or social problems

Let's take a look at some of the psychosocial interventions used to treat CUD and what the research shows about their effectiveness.

Contingency Management

CM provides the patient something of value (typically a gift card, voucher, or chance to win a prize) to reward a specific and measurable desired behavior. Extensively studied in controlled clinical trials, CM is also effective in the community, outside research settings. CM can be used to reinforce either treatment adherence or treatment outcome (eg, providing a drug-negative or "clean" urine sample).

A recent systematic review of 19 studies involving 1,664 patients found that CM, when combined with CBT or other psychological interventions, significantly improved treatment retention,

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reduced cocaine use, and had an additive benefit when combined with pharmacological treatment (Schierenberg A et al, *Curr Drug Abuse Rev* 2012;5(4):320–331). CM can be combined with medication to keep the patient in treatment until the therapeutic benefits of medication are experienced.

CM is effective in a broad range of patients, including those with serious psychiatric comorbidity or other substance use disorders, older patients (Weiss L & Petry NM, *Am J Addict* 2013;22:119–126), and those at a variety of socioeconomic levels (Secades-Villa R et al, *J Subst Abuse Treat* 2013;44(3):349–354).

Cognitive Behavioral Therapy

CBT, also called relapse prevention or coping skills training, aims to change how patients think about their drug use so they can unlearn ineffective behaviors and acquire new cognitive and behavioral techniques to avoid drug use. For example, patients may learn relaxation techniques to deal with stress.

The focus is on high-risk contexts for drug use, including emotional states such as depression, anxiety, or stress; low self-confidence; exposure to drug-associated cues; or acute withdrawal (Hendershot CS et al, *Subst Abuse Treat Prev Policy* 2011;6:17). A slip or lapse is not considered failure, but an opportunity to implement the skills learned to prevent it from becoming a full-blown relapse. CBT tends to be more effective than drug counseling or psychotherapy (Knapp et al, *op cit*; Penberthy JK et al, *op.cit*).

Community Reinforcement Approach

The community reinforcement approach (CRA) broadens the behavioral approach to treatment beyond drug use to include the patient's total environment and activities, including skills training to enhance drug refusal and problem solving, family relations, social network, employment, and recreation. CRA is often combined with CM and CBT as an integrated treatment package, making it often impossible to evaluate the separate contribution of CRA. CRA plus CM is more effective than CRA alone or drug counseling (Knapp et al, *op.cit*).

Drug Counseling

Drug counseling is a nonspecific, supportive form of psychotherapy focusing on recovery issues, which is popular with community clinics because of its low cost. Some form of drug counseling is often the standard treatment or "treatment as usual" against which other treatments are compared. Drug counseling is not as effective as CM or CBT (Knapp et al, *op.cit*).

Motivational Enhancement Therapy

Motivational enhancement therapy (MET) or motivational interviewing (MI) uses a supportive, directive approach to enhance motivation for change. MET is widely used in primary care settings and addiction treatment. Although it is effective for treating alcohol use disorders (Miller WR & Wilbourne PL, *Addiction* 2002;97(3):265–277), the evidence is far less compelling for cocaine. One controlled study demonstrated that MI increased abstinence by one-third over the control condition (Bernstein J et al, *Drug Alcohol Depend* 2005;77(1):49–59).

However, two other controlled studies found that MET and MI offered no benefit, although the latter study found decreased cocaine use in the heaviest using patients (Marsden J et al, *Addiction* 2006;101(7):1014–1026; Stein MD et al, *J Subst Abuse Treat* 2009;36(1):118–125).

Psychodynamic Psychotherapy

Psychodynamic psychotherapy focuses on the patient's intrapsychic conflicts and psychological defense mechanisms. The therapist uses interpretations of psychological processes and behaviors to improve the patient's understanding of the presumed underlying causes of his or her addiction. There is no evidence that this therapy approach is more effective than CBT or drug counseling (Knapp et al, *op.cit*).

Other Psychosocial Treatments

Several other approaches are described in the treatment literature including twelve-step facilitation (TSF); web-based self-help; and Cocaine Anonymous, a self-help organization modeled on Alcoholics Anonymous. Although TSF is still widely used, few high-quality studies have been conducted with cocaine abusers. TSF was inferior to CBT in a 12-week randomized trial (Maude-Griffin PM et al, *J Consult Clin Psychol* 1998;66(5):832–837).

CATR'S TAKE: Various psychosocial therapies are available for treating cocaine addiction. Longer, more intense treatments; concrete treatment goals and expectations; explicit and consistently enforced contingencies; and the proverbial "unconditional positive regard" are associated with better outcomes. Although broadly used, the evidence is thin for motivational enhancement therapy, 12-step facilitation, and supportive drug counseling.

Some Options, But No Magic Bullet

Many medications have been investigated as possible treatments for cocaine addiction. While some have shown promise, a panacea seems unlikely in the near future.

These free review articles provide nice summaries on the state-of-the-art when it comes to using medications to treat cocaine use disorder. Keep in mind that no medication has received formal approval from the FDA, so all prescribing to our patients is strictly off label.

- Psychostimulants to treat cocaine addiction (Mariani JJ & Levin FR, *Psychiatr Clin North Am* 2012;35(2):425–439) http://1.usa.gov/1gWmQQE
- Agonist therapies (Rush CR & Stoops WW, *Future Med Chem* 2012;4(2):245–265) http://1.usa.gov/1gmfMPT
- Novel pharmacotherapies (Shorter D & Kosten TR, *BMC Med* 2011;9:119) http://1.usa.gov/1f4lHoZ
- Cognitive enhancers (Sofuoglu M, *Addiction* 2010;105(1):38–48) http://1.usa.gov/1bAaxse

Expert Interview

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unconscious and friends and family don't have the faintest idea of what to look for. With cocaine users, people will report that they thought they had a seizure, but they didn't lose consciousness and they weren't unable to control their extremities. Although they may have been moving, they felt like they couldn't control the movements.

CATR: So there is a disturbance of consciousness without paralysis?

Dr. Newton: Yes, often they will describe that they fell down and couldn't control what was happening to them; it was very frightening and they felt that they had a seizure. Even if a cocaine user has a real seizure, they probably don't need anti-seizure medication because it occurred in the context of cocaine use and sleep deprivation.

CATR: Are there any particular populations that are more affected by cocaine addiction?

Dr. Newton: Inner city African Americans and Hispanics continue to be most affected. Why is that? Is it just that this is where the drugs are delivered? In other words, you are going to shop at Macy's if there is a Macy's in your neighborhood. Interestingly, the opposite is true for methamphetamine use. About 90% of meth users are Caucasian and 10% at most African American. People who use cocaine will tell you that methamphetamine is a horrible drug; it lasts forever and it makes you paranoid. Then people who use methamphetamine will say that cocaine is a huge waste of money because it only lasts 30 minutes and you have to buy more right away.

CATR: Given the opportunity, will users cross over based on availability?

Dr. Newton: Some people do. These are more often people who are generalized polysubstance users who use whatever they can get their hands on. Most people will have a very definite opinion about which one is better and really don't like the other one.

CATR: How often is cocaine involved with the use of other substances?

Dr. Newton: It is relatively rare that you will see somebody, at least in my experience, who is *only* a cocaine user. They are typically polysubstance users, and the number one additional substance is alcohol, and the number two substance is marijuana, in addition to cigarettes of course.

CATR: In what ways is cocaine addiction different than other substance use disorders?

Dr. Newton: I think cocaine is built into the community in a way that is different than other drugs. You buy cocaine and use it in a certain environment. When you are out of that environment, the odds are you are not going to seek it and you won't use it.

CATR: So cocaine use disorder is highly context dependent?

Dr. Newton: I think so. The typical person who has problems with cocaine is relatively poor and living in the inner city and that is going to feed into their problem. There are different societal forces maintaining addiction for cocaine than there are for other drugs.

CATR: Do cocaine use disorders respond differently to treatment than, say, alcohol or opioid use disorders?

Dr. Newton: The best answer to that is that all addictions are chronic, including nicotine, alcohol, cocaine, amphetamines, and heroin. So when you see somebody for the first time, you know at some point they are probably going to have had enough and they will be able to quit. It may not be successful on the first try or even the third try. However, each time the likelihood of success increases, which is the opposite of what people think (Chapman S & MacKenzie R, *PloS Med* 2010;7(2):e1000216; Prochaska JO et al, *Am Psychol* 1992;47(9):1102–1114). They think: this person has tried to quit five times so obviously he is never going to quit, but that is not how it works. It is actually the other way around: the more times people have tried, the more likely they are to be able to quit. But that is extremely hard to communicate to patients, families, and payers. They see people as willfully misbehaving and the fact that they continually misbehave is good reason to cut them off.

CATR: Is psychiatric comorbidity common with cocaine use disorders?

Dr. Newton: Most people with cocaine use disorder don't have a psychiatric comorbidity, but many people with psychiatric comorbidities have cocaine or other substance use disorders. For instance, 90% of people with schizophrenia smoke cigarettes, and many use cocaine and alcohol (Hughes JR et al, *Am J Psychiatry* 1986;143(8):993–997). Psychiatric disorders such as major depression, posttraumatic stress disorder, and personality disorders, in some ways mark impairments in coping skills, which leads to drug and alcohol abuse.

CATR: We know that psychosocial interventions are useful for cocaine addiction. What about medications?

Dr. Newton: There is something that will surprise people. The single most studied drug for cocaine dependence is disulfiram (Antabuse), which has been used in almost 1,000 people in clinical trials. Beyond that, things get a lot sketchier. By far, the most effective medication in the small number of trials that have been done is sustained-release methamphetamine (Mooney ME et al, *Drug Alcohol Depend* 2009;101(1–2):34–41). Some studies also show that modafinil (Provigil), which is a wakefulness-enhancing drug, seems to be helpful (Anderson AL et al, *Drug Alcohol Depend* 2009;104(1–2):133–139; Dackis CA et al, *Neuropsychopharmacology* 2005;30(1):205–211). More recently, some studies suggest that drugs that block the alpha-1 receptor might be useful (Shorter D et al, *Drug Alcohol Depend* 2013;131(1–2):66–70). Prazosin (Minipress) can block reinstatement to cocaine self-administration [relapse] in rats (Zhang XY & Kosten TA, *Biol Psychiatry* 2005; 57(10):1202–1204), and doxazosin (Cardura), which is the long-acting version of that, seems to block the effects of cocaine in people as well (Newton TF et al, *PLoS One* 2012;7(2):e30854).

CATR: Clinicians are familiar with disulfiram in the context of alcohol treatment, but how do you dose it for cocaine?

Dr. Newton: People originally tried disulfiram as a treatment for cocaine dependence because a lot of cocaine users drank alcohol. In further studies, it worked just as well in people with cocaine dependence who didn't use alcohol. The recommended dose is 250 mg a day, as it is for chronic treatment for alcohol dependence. However, we have some data suggesting that we really need a higher dose in order for it to work. In one human study, patients had to be taking above 350 mg a day in order for the effects of

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Treating Cocaine Addiction and ADHD

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Cocaine addiction involves a host of maddening issues related to psychiatric comorbidity. Perhaps none is more vexing than co-occurring attention-deficit/hyperactivity disorder (ADHD), whether real, misdiagnosed, or malingered.

In this article, I'll parse through three recurring questions that clinicians confront when treating addiction and ADHD.

ADHD and Addiction

Children and adolescents frequently receive psychostimulants to treat ADHD. Parents and caregivers are often appropriately concerned that these Schedule II (CII) controlled substances are a set-up for addiction later in life. After all, according to the U.S. Drug Enforcement Administration, CIIs are substances that "have a high potential for abuse which may lead to severe psychological or physical dependence" (http://1.usa.gov/1ilYdhS).

Before addressing the risk associated with these medications, we need to consider problems caused by ADHD itself. Various studies have demonstrated that untreated ADHD substantially increases the risk of addiction, even after controlling for other factors. For example, children with ADHD are twice as likely to develop cocaine use disorders during adolescence and adulthood compared to children without ADHD (Lee SS et al, *Clin Psychol Rev* 2011;31(3):328–341).

Although psychostimulants have considerable abuse potential, a number of studies have found that they actually *protect* children with ADHD from developing addiction during adolescence (Faraone SV & Wilens TE, *J Clin Psychiatry* 2007;68(Suppl 11):15–22). In fact, children treated with psychostimulants have about the same risk of abusing substances as those without ADHD. For reasons that aren't entirely clear, this protective effect burns off when patients age into adulthood.

Clinical Bottom Line: Psychostimulants don't place children with ADHD at risk for later cocaine use and provide some short-term protection from addiction during adolescence.

Addiction as Self-Medication

Edward Khantzian, a psychiatrist at Harvard Medical School, is credited with developing the self-medication hypothesis: that cocaine users are self-medicating to treat another mental disorder (Khantzian EJ, *Am J Psychiatry* 1985;142(11):1259–1264). He noted that, "cocaine has its appeal because of its ability to relieve distress associated with depression, hypomania, and hyperactivity." He further observed that cocaine "improve[s] attention leading to improved interpersonal relations, more purposeful, focused activity, and improved capacity for work."

Khantzian's argument was light on evidence, relying mainly on case reports and clinical inferences. Nonetheless, his hypothesis gained traction in the professional literature and is still embraced by the lay public today.

In the decades that followed, some suggestive studies emerged. Data obtained from large government surveys found that those who struggled to access mental health services were about twice as likely to use illicit drugs compared to controls (Harris KM & Edlund MJ, *Health Serv Res* 2005;40(1):117–134). This association seemed to support the idea that people turn to drugs of abuse to cope with unmet service needs.

Mostly, however, the self-medication hypothesis hasn't panned out (Lembke A, *Am J Drug Alcohol Abuse* 2012;38(6):524–529). For example, one study followed people with and without ADHD for 10 years. Although those with ADHD had a higher rate of substance use than controls, there were no differences in their motivations for using. Thirty-four percent of people with ADHD reported that they were trying to address psychiatric symptoms, such as problems with mood or sleep, compared to 33% of control subjects (Wilens TE et al, *Am J Addict* 2007;16(Suppl 1):14–21).

Other studies have looked specifically at patients with dual disorders (both mental illness and addiction). One representative investigation found that cocaine universally *worsened* primary psychiatric symptoms (Castaneda R et al, *Compr Psychiatry* 1989;30(1):80–83).

Clinical Bottom Line: There's little support for the popular notion that cocaine users are self-medicating another mental disorder with cocaine.

ADHD Treatment and Addiction Outcomes

A final challenge is the patient with a *bona fide* ADHD diagnosis who enters addiction treatment to discontinue cocaine but would like to leave with a prescription for a psychostimulant.

Studies suggest this isn't the greatest idea. One demonstrated that methylphenidate (such as Ritalin, Concerta, Methylin, Metadate, and Daytrana) improved ADHD symptoms compared to placebo but didn't reduce cocaine cravings or cocaine use (Schubiner H et al, *Exp Clin Psychopharmacol* 2002;10(3):286–294).

A similar trial found that methylphenidate neither improved ADHD symptoms nor reduced cocaine use compared to placebo (Levin FR et al, *Drug Alcohol Depend* 2007;87(1):20–29). A drill down found that patients whose ADHD responded to methylphenidate used less cocaine, however, the reduction in the latter probably wasn't clinically significant.

Clinical Bottom Line: Psychostimulants might improve ADHD symptoms in some cocaine abusers but don't meaningfully alter the trajectory of their addiction.

Research Updates

ALCOHOL USE

Family-School Intervention Can Reduce Adolescent Alcohol Use

Australian researchers recently reported data on the impact of a program called Resilient Families—an intervention aimed at preventing early use of alcohol, as well as frequent and heavy alcohol use, among adolescents in secondary schools in Melbourne.

The study included 24 secondary schools, with 12 randomly assigned to the intervention and 12 as controls. Students in the schools in the experimental arm received a "social relationship" curriculum.

Teacher-led sessions covered relationship problem solving, family rules and responsibilities, communication, emotional awareness, peer resistance skills, and conflict resolution. Parents received educational handbooks and invitations to events outlining strategies to encourage healthy adolescent development and reduce adolescent alcohol misuse.

At the start of the study in 2004, the students were in seventh grade, with a mean age of 12.3 years. The study ended in 2006, when the students were in ninth grade and the mean age was 14.5 years. Some 2,354 students, or 93% of the recruited sample, were included in the final analysis. The survey asked students to describe their alcohol use as "any," "frequent" (at least monthly), or "heavy" (five or more drinks in a session at least once in the prior two weeks).

The prevalence of alcohol use increased from seventh to ninth grade in both groups. However, students assigned to Resilient Families had less frequent and heavy alcohol use compared to controls (adjusted odds ratio 0.69 [CI 0.56–0.86] and 0.75 [CI 0.60–94], respectively). This effect was probably secondary to the school-based component as parental participation in the program was low (Toumbourou JW et al, *J Adolesc Health* 2013;53(6):778–784).

CATR'S Take: Addiction has long lagged behind other diseases in terms of primary prevention. This population-based intervention meaningfully reduced age-related escalation in alcohol use in adolescents. Resilient Families (or adaptations thereof) could likely be implemented in other western countries where unhealthy alcohol use is endemic.

EPIDEMIOLOGY

Addiction in Sexual Minorities

Women and minorities are often underrepresented in addiction studies. This has led to many unanswered questions about disease prevalence and treatment outcomes.

An important new study examined addiction across three dimensions of sexuality—identity, attraction, and behavior. Researchers looked at data from a large national sample of adults in the US collected from the 2004–2005 National Epidemiologic Survey on Alcohol and Related Conditions. The sample consisted of 34,653 adults 20 years and older, with an estimated 2% self-identified as lesbian, gay, or bisexual; 6% reporting same-sex sexual attraction; and 4% reporting same-sex sexual behavior.

Researchers found that sexual minorities had a higher lifetime incidence of substance use disorders. This was especially true in women. Sixty-one percent of lesbian and bisexual women met criteria for a substance use disorder on a lifetime basis compared to 24% of heterosexual women. Non-heterosexual women also began drinking alcohol at a significantly earlier age and had more severe alcohol-related problems.

Similar findings were found in men. For example, 65% of homosexual males met criteria for a substance use disorder on a lifetime basis compared to 50% of heterosexual men. Both lesbians and gay men were about twice as likely as heterosexuals to access services for substance abuse treatment.

The study also found that sexual minorities had more extensive family histories of addiction (McCabe SE et al, *J Subst Abuse Treat* 2013; 44(1):4–12).

CATR's Take: This study demonstrated that substance use disorders are highly prevalent among sexual minorities and that addiction, when present, is more severe. Sexual minorities should be carefully screened for addiction in primary care clinics and psychiatric settings. Those entering substance abuse treatment may require a higher level of care than demographically similar heterosexuals.

CAFFEINE

Coffee Consumption and Suicide Risk

Suicide is the 10th leading cause of death in the United States. Could something as simple as drinking caffeinated coffee, which might have a positive effect on mood, prevent it?

Researchers assessed data from three studies: 43,599 men enrolled in the Health Professionals Follow-Up Study, 73,820 women in the Nurses' Health Study (NHS), and 91,005 women in the NHS II. All three studies asked participants about their consumption of caffeine, coffee, and decaffeinated coffee every four years as part of a food-frequency questionnaire. Researchers documented 277 deaths from suicide, which were determined by physician review of death certificates.

Suicide risk decreased in a dose-dependent manner with increasing caffeinated coffee consumption. As compared with non-coffee drinkers, the rate of suicide was 45% lower among those who consumed two to three cups of coffee per day, and 53% lower among those who consumed four or more cups of coffee per day.

There was no such association with decaffeinated coffee, suggesting caffeine is the contributing factor. There was also no association between tea drinking and suicide, but the researchers noted that caffeine intake from tea may have been too low to effect suicide risk (Lucas M et al, *World J Biol Psychiatry* 2013; online head of print).

CATR'S Take: This large epidemiological study, while not establishing causality, suggests that coffee drinkers have a lower rate of suicide compared to controls. Although the mechanism for this is pure conjecture, caffeine is known to increase dopamine and serotonin, some of the monoamines involved in depression. While it's probably a stretch to call caffeine an antidepressant, that coffee pot at Alcoholics Anonymous meetings may be doing more for our patients than keeping them awake and fostering fellowship.

CE/CME Post-Test

To earn CE or CME credit, you must read the articles and log on to www.CarletAddictionTreatment.com to take the post-test. You must answer at least four questions correctly to earn credit. You will be given two attempts to pass the test. Tests must be taken by December 31, 2014. As a subscriber to *CATR,* you already have a username and password to log on www.CarlatAddictionTreatment.com. To obtain your username and password or if you cannot take the test online, please email info@thecarlatreport.com or call 978-499-0583.

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Below are the questions for this month's CE/CME post-test. This page is intended as a study guide. Please complete the test online at www.carlataddictiontreatment.com. Note: Learning objectives are listed on page 1.

1. Of those people who take cocaine intravenously or smoke the drug, about how many of them will develop moderate or severe cocaine use disorder (CUD) (Learning Objective #1)?
   [ ] a) One out of two [ ] b) One out of three [ ] c) One out of six [ ] d) One out of 10

2. According to Thomas F. Newton, MD, typically most patients with cocaine use disorder have been using the drug for about how long before they come in for treatment (LO #2)?
   [ ] a) One year [ ] b) Five years [ ] c) Seven years [ ] d) 10 years

3. Based on the latest studies, prescription psychostimulants don't place children with ADHD at risk for later cocaine use and provide some short-term protection from addiction during adolescence (LO #3)?
   [ ] a) True [ ] b) False

4. A study that looked at the prevalence of addiction in sexual minorities found which of the following is NOT true (LO #4)?
   [ ] a) Sexual minorities, especially women, had a higher lifetime incidence of substance use disorders
   [ ] b) More than 60% of lesbian and bisexual women met criteria for a substance use disorder
   [ ] c) Non-heterosexual women began drinking alcohol at a significantly earlier age
   [ ] d) Heterosexuals and sexual minorities had similar family histories of addiction

5. Researchers found that when compared to non-coffee drinkers, the rate of suicide was what percentage lower among those who consumed two to three cups of coffee per day (LO #4).
   [ ] a) 12% [ ] b) 45% [ ] c) 66% [ ] d) 78%

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News of Note

Work Program Pays in Beer

Amsterdam is putting alcoholics back to work—paying them in part with cans of beer to clean litter from the city's streets, according to a December report in the *New York Times* (http://nyti.ms/1e0rAma).

The workers are paid mostly in alcohol and are given two cans of beer to start their work day each morning, two more cans at lunch, and then another can or two to end the day, the newspaper reported.

"I'm not proud of being an alcoholic, but I am proud to have a job again," one of the workers told the *Times*, after he was out of work for more than a decade because of a back injury and chronic alcoholism.

There's a long waiting list of alcoholics hoping to take advantage of the unusual government-funded program that pays them—in beer, rolling tobacco, free lunch, and 10 euros a day or about $13.55—to pick up trash, the *Times* reported. The Rainbow Foundation, a private but mostly government-funded organization that helps the homeless and people with addiction, started the program in 2012. The organization pays for the beer out of its own funds.

One supporter of the program, the district mayor of eastern Amsterdam, told the *Times* it is better to give the workers something to do and restrict their drinking to a limited amount of beer with no hard alcohol. Opponents criticize the project as a waste of government money. Amsterdam is not the first to try such a program, as the idea was borrowed from Canada, the *Times* said. Three districts in Amsterdam are running beer-for-work programs and a fourth is considering the idea, as well as some other Dutch cities.

Ecstasy-Related ED Visits Up 128%

The street drug commonly known as Ecstasy or Molly is landing more young people in the emergency department (ED), according to a report from the Substance Abuse and Mental Health Services Administration (SAMHSA).

ED visits involving Ecstasy increased 128% among patients under age 21 between 2005 and 2011, to more than 10,000 hospital visits a year, according to a December Drug Abuse Warning Network (DAWN) Report. The report also highlighted concerns about using Ecstasy with alcohol, noting an average of 33% of ED visits among those under 21 involved co-ingestion of both substances.

Recently, several young people died after taking Molly at concerts or "raves." "The increase in ED visits involving Ecstasy in this population is a cause for concern due to the serious health risks involved with Ecstasy use and the higher potential for abuse when Ecstasy is mixed with alcohol," the report said. To learn more about prevention of Ecstasy abuse, go to: http://1.usa.gov/1e0r73g.

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cocaine to be significantly blunted (Haile CN et al, *PLoS One* 2012;7(11):e47702).

CATR: So would a clinician expect to see a higher rate of abstinence or less heavy use in patients taking disulfiram?

Dr. Newton: Most of your patients won't look that much better, but some are able to take advantage of the benefit of the reduced effects of cocaine in order to quit. The way you are going to tell they are quitting, of course, is that their lives start to come back together again. Is their marriage better? Have they kept a job longer than they did last time? Are they paying their bills? Are they not being evicted? All the things that go with not doing drugs.

CATR: Any mistakes that you see clinicians making?

Dr. Newton: Just the mindset. Try to think of cocaine addicts like you think of smokers. For instance, people will try to quit seven times and might still be sneaking cigarettes every now and then. But eventually if they really stick to it, they will probably be able to quit. And nobody feels like they are failures because it took several times to quit smoking. People see them as kind of heroes for sticking with it so long. So that is what you have to remind yourself when you come up with a cocaine user who is on his seventh rehab. You have to prevent yourself from thinking that this guy is obviously never going to quit because it is taking so much time.

CATR: Thank you, Dr. Newton.

Next month in *The Carlat Addiction Treatment Report*: Motivating Change

This Month's Focus: **Cocaine Addiction**