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Caroline Fisher, MD, PhD
Editor-in-Chief

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Learning objectives for this issue:
1. Detail some of the new drugs of abuse among adolescents. **2.** Describe pharmacological treatments for substance abuse in adolescents. **3.** Explain recent trends in adolescent substance abuse. **4.** Understand some of the current findings in the literature regarding psychiatric treatment.

New Drugs, Legal Highs, and Big Risks: A Review of Novel Intoxicants

Josh Sonkiss, MD
Co-medical director
Behavioral Health Unit
Fairbanks Memorial Hospital

Dr. Sonkiss has disclosed that he has no relevant relationships or financial interests in any commercial company pertaining to this educational activity.

Get high with no hassles! Try our potent herbal blend! Relax with soothing bath salts! Safe and legal! Popular among individuals seeking to avoid social and legal consequences of drug use, a bewildering array of synthetic intoxicants and formerly obscure ethnobotanicals have surged to prominence in the past decade. A wider variety of intoxicants is available today than ever before, and new ones are being developed faster than scientists can identify them and legislators can outlaw them. Although they are readily available online and even in some convenience stores, media reports and poison control center statistics will attest that these "novel intoxicants" are anything but safe. For the confused clinician, here's the lowdown on some of the products your patients are most likely to try.

Sinister Synthetics

Synthetic cannabinoids. Usually smoked or ingested, some authors refer to these products as "herbal marijuana alternatives" (Rosenbaum CD et al, *J Med. Toxicol* 2012;8:15–32). They may look like herbs, but this is a misnomer because the active ingredients are produced artificially and sprayed onto inert plant material. They are often sold as incense labeled "not for human consumption," but psychedelic artwork betrays their intended use. Hundreds of synthetic cannabinoids exist, enabling manufacturers to evade detection and legislation by changing ingredients (Seely

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Pharmacotherapy for Substance Abuse

Caroline Fisher, MD, PhD
Editor-in-chief

Dr. Fisher has disclosed that she has no relevant relationships or financial interests in any commercial companies pertaining to this educational activity.

Treating substance abuse is difficult whether the patient is young or old. Although one might hope that the shorter period of abuse seen in teens would make the disorder less entrenched, the data shows otherwise: addiction is a stubborn disorder with a long term, relapsing, and remitting course (Simkin DR and Grenoble S, *Child Adolesc Psychiatric Clin North Amer* 2010;19(3):591–608). Treatment needs to address the complex needs of the adolescent patient: identification and treatment of comorbid psychiatric disorders, behavioral interventions, family and environmental supports, individual therapy, and at times, medication.

Adolescents with substance use disorders often struggle with skill deficits (eg, social, academic) that may need to be addressed, as well as other adversities. We need to remember to treat the whole patient, not just the substance abuse. Don't forget to screen for common diseases associated with drug abuse, including hepatitis, HIV, and tuberculosis, and educate your patient on how to avoid the risky behaviors that lead to them.

We should monitor for drug use throughout treatment (urine screens, for example), but don't get frustrated if the tests sometimes come out positive. Relapse is the rule for substance abuse treatment. Instead of the "detox-and-done" approach, plan on a long treatment course with frequent assessments and revisions of the overall treatment plan as the needs of the adolescent

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New Drugs, Legal Highs, and Big Risks: A Review of Novel Intoxicants

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KA et al, *Prog Neuropsychopharmacol Biol Psychiatry* 2012 Apr 26; online ahead of print).

Synthetic cathinones. Known on the street as "bath salts," these substances usually appear as a crystalline powder that can be smoked, snorted, or injected. Cathinones are closely related to methamphetamine and MDMA, so it's no surprise users commonly experience euphoria, dangerously high blood pressures, and psychosis. As with synthetic cannabinoids, unscrupulous chemists make minor molecular changes to stay one step ahead of law enforcement. Bath salts are by far the most dangerous novel intoxicants currently in vogue, and many severe complications have been reported, including renal failure and severe rage (Olives TD et al, *West J Emerg Med* 2012;13(1):58–62).

Equivocal Ethnobotanicals

Salvia divinorum. Salvia is a Mexican herb used for centuries in religious rituals. When smoked or ingested, it induces short but intense hallucinatory experiences through activity at the kappa opioid receptor (Zawilska JB, *Current Drug Abuse Reviews* 2011;4:122–130). Surprisingly, salvia does not induce respiratory depression, and although media reports have associated salvia use with suicide and violence, there is little support for these claims in the medical literature. However, users may suffer severe anxiety associated with a "bad trip," and there is at least one case report of prolonged psychosis (Rosenbaum CD et al, *J Med Toxicol* 2012;8(1):15–32).

Kratom. Derived from the southeast Asian tree *Mitragyna speciosa,* kratom is an age-old folk remedy for opiate withdrawal, pain, and other ailments (Rosenbaum CD et al, op.cit). It contains alkaloids up to 13 times more potent than morphine. Not surprisingly, high doses produce results similar to opioid intoxication. At low doses kratom has a stimulatory effect that has been compared with cocaine. Though kratom is structurally unrelated to opioids, users can experience a withdrawal syndrome similar to opioid withdrawal.

Emerging Enemies

Piperazine. Developed for treating parasitic infections, piperazine derivatives are gaining popularity as "legal ecstasy" because of their stimulant effects. Piperazine derivatives are serotonin reuptake inhibitors and receptor agonists. They are less potent than amphetamines, but their clinical effects may be indistinguishable. These substances are widely used in Great Britain and seem to be catching on in the US (Rosenbaum CD et al, *J Med Toxicol* 2012;8:15–32).

Methoxetamine. Known as MXE, methoxetamine is a legal analog of the dissociative anesthetic ketamine. Marketed as a "research chemical" in the United Kingdom, it is not yet popular in the United States. Little is known about this compound, but it is expected to induce euphoria, dissociation, illusions, and hallucinations in those who ingest, inhale, or inject it. Cases of sympathomimetic toxicity have been reported (Wood DM, *Eur J Clin Pharmacol* 2012 May;68(5):853–856).

Recognition

It can be very difficult to determine when a patient's clinical presentation is related to novel intoxicant use. The astute psychiatrist will ask patients about novel intoxicants that are common in their geographic area—a call to their local emergency room or poison control center can help identify what those are. Psychiatrists should be aware that some patients are at especially high risk of abusing novel intoxicants. These include adolescents and young adults; patients who are in the military, work in occupations with random urine testing or are on probation or parole; and patients who have signed pain contracts or have known substance use disorder.

Often, unusual clinical presentations provide the best clue to novel intoxicant use. For example, I have seen previously healthy patients with negative toxicology tests present "out of the blue" with suicidal depression, mania, or delusions and hallucinations. Commonly, after the drugs wear off, their symptoms resolve much more quickly than would be expected with a primary mental illness. On the other hand, symptoms may be resistant even to prolonged treatment. In such cases a careful history—occasionally confirmed by synthetic cannabinoid testing—often reveals novel intoxicant use.

Management

Since tests are unavailable and patients are not always forthcoming, psychiatrists often have to base treatment decisions on little more than suspicion. They should be vigilant about the possibility of "agitated delirium syndrome," a condition similar to delirium tremens.

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This CME/CE activity is intended for psychiatrists, psychiatric nurses, psychologists and other health care professionals with an interest in the diagnosis and treatment of psychiatric disorders.

For more information

- **www.drugabuse.gov**
  An official government resource, the NIDA Drug Facts website has a multitude of fact sheets that can be downloaded as PDFs.
- **www.medscape.com/features/slideshow/drug-abuse**
  This informative slide show offers a summary of commonly available intoxicants, complete with pictures of products and packaging.
- **http://bit.ly/WdoXF**
  The Erowid Center is a non-profit educational organization that maintains a vast database of information on psychoactive plants and chemicals.

New Drugs, Legal Highs, and Big Risks: A Review of Novel Intoxicants

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Agitated delirium syndrome is potentially lethal and may require IV fluids, sedation, intubation and aggressive cooling in an emergency or intensive-care setting (Penders TM et al, *Am J Drug Alcohol Abuse.* 2012 Jul 11; online ahead of print).

Psychiatric hospitalization may be indicated even in non-life threatening cases. In inpatient settings, psychiatrists must be alert for withdrawal syndromes that may contribute to psychiatric symptoms or lead to medical complications. Whether inpatient or outpatient, it's important to complete an adequate risk assessment because intoxication and withdrawal increase the risk of violence toward self or others. Once patients are stabilized, referral to structured chemical dependency treatment should be considered.

Many patients think the words "legal" and "natural" mean "safe." This makes psychoeducation a key component of management, but political rhetoric can add extra challenges to counseling about novel intoxicant use. When fact sheets aren't effective, metaphor can be useful. Some patients and their families "get it" when I tell them drinking drain cleaner is perfectly legal, and there's nothing more natural than falling off a cliff.

New Drugs and Legal Highs At-A-Glance

	Synthetic Cannabinoids	Synthetic Cathinones	Salvia Divinorum	Kratom	Piperazine	Methoxetamine
Street Names	Spice, K2	Bath salts, plant food, chicken food additive, research chemical	Salvia, diviner's sage, mystic sage, magic mint	kratom, korth, mytragyna	Legal ecstasy, party pills	Research chemical, legal ketamine
Brand Names	Spice, K2, Spike, Deadman, Gold Herbal, Smoke, and many others	MCAT, Meow, Ivory Wave, Ivory Coast, Cloud 9, Ocean, White Lightning, White Dove, Vanilla Sky, and many others	Sally D, Purple Sticky, Maria Pastora	Krypton	Benzo Fury, MDAI, Head Rush, XXX Strong as Hell, Exotic Super Strong	MXE, MKET
Active Ingredients	JWH-018, JWH-073, JWH-200, CP-47,497, (C8)-CP-47,497, and others	Methylone, mephedrone, MDPV, and others	Salvinorin A	mitragynine, paynantheine, speciogynine, and others	BPZ, DMFPP, cMPP and others	Methoxetamine
Pharmacology	CB1 receptor agonists	Inhibit reuptake of serotonin, norepinephrine, and dopamine	Kappa opioid receptor agonist	Mu- and delta opioid receptor agonists	Serotonin reuptake inhibition and receptor agonism	Unknown; probable NMDA receptor antagonist and dopamine reuptake inhibitor
Effects	Euphoria, anxiety, agitation, psychosis, tachycardia, seizures, myocardial infarction	Euphoria, agitation, severe hypertension, paranoia, hallucinations, rage episodes, agitated delirium syndrome, myocarditis, rhabdomyolysis, renal failure, death	Intense hallucinations lasting less than ten minutes; sedation, analgesia, constipation, and depression	Euphoria, sedation, seizures, depressed consciousness, hypothyroidism, cholestatic liver injury, respiratory failure, death	Euphoria, agitation, anxiety, palpitations, vomiting, seizures, and hyperthermia	Euphoria, agitation, paranoia, nausea, vomiting, diarrhea, paranoia, anxiety, tachycardia, hypertension, respiratory depression
Tolerance and Withdrawal	Yes	Yes	Unknown	Yes	Probably	Probably
Clinical Testing Available	Yes, as a special order	No	No	No	No; may cross-react with amphetamine tests	No; may cross-react with phencyclidine test

Pharmacotherapy for Substance Abuse

Continued from page 1

change. Use the adolescent's need for autonomy and get the patient involved in planning contingencies for relapse and identifying treatment goals. Make small steps into victories, even if the adolescent is not voluntarily seeking treatment. Many people who abuse substances do not tolerate failure, so relapses (and "failures" of any kind) need to be reframed and normalized.

Medications have been helpful in adults and in what few studies of adolescents that have been done. If you think that a medication might help, the table "Medications for Substance Abuse in Adolescents" on page 5 summarizes the available evidence.

There are currently no drugs FDA-approved for treatment of marijuana dependence. There have been small pilot studies of buspirone (Buspar), divalproex (Depakote), the Parkinson's disease drug entacapone (Comtan), gabapentin (Neurontin), mirtazapine (Remeron), and the oral tetrahydrocannabinol Dronabinol. A small randomized controlled trial showed benefit for N-acetylcysteine (Acetadote).

Medications for cocaine dependence have not been well-studied in adolescents. Amphetamine (Adderall), baclofen (Gablofen, Lioresal), desipramine (Norpramin), and methylphenidate (Ritalin, Concerta) have shown some success in treating adults with cocaine dependence.

Studies have been small and meta-analysis have not detected any effect of medications for smoking cessation in adolescents, however bupropion (Wellbutrin, Zyban); the nicotine replacements, Commit, NicoDerm CQ, Nicorelief, Nicorette, Nicotrol, and Thrive; and varenicline (Chantix) are FDA-approved for adults.

Q&A With the Expert

Expert Interview

Trends in Adolescent Substance Abuse

Yifrah Kaminer, MD, MBA

Professor of Psychiatry & Pediatrics
University of Connecticut School of Medicine

Dr. Kaminer has disclosed that he receives book royalties from Hazelden, APPI, Routledge, and Plenum Press book publishers. Dr. Fisher has reviewed this article and found no evidence of bias in this educational activity.

CCPR: Dr. Kaminer, how did you come to be an expert in substance abuse in adolescence?

Dr. Kaminer: My specialty is child and adolescent psychiatry. I also have a secondary appointment in the Department of Pediatrics at the University of Connecticut Health Center. In the 20-plus years that I have been here, I have found myself becoming more interested in high-risk behaviors in adolescents with a special emphasis on adolescent substance abuse, but also on suicidal behavior, unsafe driving, and other behaviors that, unfortunately, cause a high level of mortality and morbidity.

CCPR: What are the latest trends in adolescent substance abuse?

Dr. Kaminer: We have seen consistent increase in the last four years in the use of marijuana, which is the most commonly used drug. Marijuana use among high school seniors is the highest since the timeframe between 1979 and 1981. We also see continued increase in the use of all kinds of medications: over-the-counter and prescription drugs that are also responsible for a growing number of overdoses among teens and youth. We are seeing increasing use of other substances such as energy or stimulant drinks, and the use of stimulants to allegedly improve cognitive performance.

CCPR: So you are saying that kids are not only using illicit drugs, they are using drugs that are not illegal in an abusive way. And that then is encouraging stronger drugs?

Dr. Kaminer: First of all, any use of those agents is a marker for the potential to use other more abusable or more damaging substances. When you see elementary school kids drinking energy drinks, this should be a reason for concern, not just because energy drinks include very high levels of caffeine, but because kids who use them are at a greater risk of experimenting with more abusable drugs (Arria AM et al, *J Addict Med* 2010;4(2):74–80). Also we are aware that kids tend to mix alcohol and energy drinks, which has led to a lot of highly publicized mortalities. So we see new trends and they start at earlier and earlier ages, and that should be a concern for us and for parents.

CCPR: How do we find out whether our kids are using these kinds of things?

Dr. Kaminer: First of all, if you ask them, they will probably tell you. I don't think kids have any problems walking around with energy drinks. Anybody who can stand on two feet and wave a $5 bill can get a 5-hour energy drink in the supermarket or the gas station. And because they are not aware this is problematic and neither are their parents, they don't even see any reason to hide it.

The earlier that you start to use alcohol, the higher the chances are that you are going to suffer from alcohol-use disorders

Yifrah Kaminer, MD, MBA

CCPR: That is probably true in younger kids, but what about older kids? Do you think if they talk to us about this they would be willing to talk to us about other stuff?

Dr. Kaminer: Yes. I mentioned younger kids because sometimes we don't think about it, but this is the future generation of kids who might be using drugs and alcohol. The earlier they start using stimulating chemicals, the worse the prognosis. With alcohol, the earlier that you start to use it, the higher the chances are that you are going to suffer from alcohol-use disorders (Guttmannova K et al, *J Stud Alcohol Drugs* 2012;73(3):379–390). Now kids usually share information only when there are no legal contingencies. So they may not tell most people, but nevertheless when they come to treatment they are very open about it. And there are several studies conducted by different investigators, including my group, that show there is a very high correlation between the drug urinalysis results and the information that the kids provide about their substance abuse (see for example Kaminer Y et al, *Subst Abus* 2008;29(2):63–69). So they are more than happy to talk about it if we remember to ask. Many physicians don't ask kids about substance abuse or don't do it very well either because they have not been trained to do it or because they are uncomfortable. They may not ask because they don't know how to refer patients for further assessment and intervention.

CCPR: How should clinicians do a better job of training themselves to screen?

Dr. Kaminer: Screening is very simple. There is a very common screener that is actually in the public domain free of charge: the CRAFFT. If people understand how to use CRAFFT, they will be able to conduct an effective screening. With CRAFFT, the "C" stands for car. Have you have ever ridden in a car driven by someone, including yourself, who was high or using alcohol and/or drugs? The "R" stands for relax. Do you use alcohol or other drugs to relax, change your mood or feel better about yourself? The "A" stands for alone. Do you ever use alcohol or other drugs by yourself? The first "F" is for friend and family. Is there any friend of family member or other person who has ever thought you had a problem with alcohol or drugs? The other "F" stands for forget. Do you ever forget or regret things you did while using alcohol or drugs? And the "T" stands for trouble. Have you ever gotten into trouble while using alcohol or other drugs? If two of the answers are positive, it means we should either conduct a more comprehensive assessment of the severity of dysfunction or refer the child to someone else who can do so.

CCPR: Not everybody lives in an area where substance abuse treatment is plentiful. How would we best address substance abuse with the patient in such areas?

Dr. Kaminer: We need to learn how to screen, how to conduct assessments, and how to intervene. Substance abuse should be treated with respect and with similar resources as any other disorder.

CCPR: What treatment is best for substance abuse in adolescents?

Dr. Kaminer: There have been several studies of specific medications done in adolescents with similar results to those done in adults. [Eds note: See the table below for more on medication to treat substance abuse.] However, most of the interventions are psychosocial, like cognitive behavioral therapy and different versions of family and community interventions. The results are very similar among interventions. The Cannabis Youth Treatment (CYT) Study was a multicenter study of 600 adolescents with cannabis use disorders that we participated in here at the University of Connecticut. This study did not find a difference among various interventions. It found that treatment works, but continuity of care is a very important element, because 60% of adolescents relapse within the first three months after the completion of treatment (Dennis M et al, *J Subst Abuse Treat* 2004;27(3):197–213).

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Medications for Treating Substance Abuse in Adolescents

Medication	Brand Name	Dosing	Mechanism	Notes	Evidence
FOR ALCOHOL ABUSE					
Acamprosate	Campral	666 mg three times a day (start 333 mg three times a day for 1 week)	Reduces craving	No difference in side effects from placebo	1 RCT in adolescents showed increase in abstinence, time to relaspe; FDA-approved in adults
Disulfuram	Antabuse	250 mg daily	Aversive	Effects can be serious: use in healthy individuals. Doesn't work if you don't take it. Assure compliance	2 RCT studies in adolescents showed benefit; FDA-approved in adults
Naltrexone	ReVia	initial 25 mg, then 50 mg daily	Reduces craving	Patient must be opioid free for at least a week prior to initiation	2 case reports, 1 open label study in adolescents
Naltrexone injection	Vivitrol	380 mg every 4 weeks	Reduces craving	Lasts 4 weeks	1 case report in adolescents; FDA approved in adults
Ondansetron	Zofran, Zuplenz	4 microg/kg twice a day	Reduces craving		1 study in adolescents, a few small studies in young adults?
FOR OPTIATE ABUSE					
Buprenorphine	Burprenex, Butrans, Subutex	Requires separate licensing and training	Substitution	Begin treatment at least 4 hours afer last use of opioids, preferably first sign of withdrawal	Comparatively large number of studies in adolescents show good effect of all compounds used for treating opioid dependence
Buprenorphine/ Naloxone combination	Suboxone	Requires separate licensing and training	Substitution		See Above
LAAM (Levo-alpha-acetylmethadol)		Requires DEA designation to initiate treatment for substance abuse	Substitution		See Above
Naltrexone	ReVia	initial 25 mg, then 50 mg daily	Aversive	Patient must be opioid free for at least one week prior to initiation	See Above
Naltrexone injection	Vivitrol	380 mg every 4 weeks	Aversive	Lasts 4 weeks	See Above
Methadone	Methadose, Dolophine	Requires DEA designation to initiate treatment for substance abuse	Substitution	Accumulates with repeated doses, may need dosage reduction after 3–5 days to prevent CNS depressant effects	See Above

Research Updates IN PSYCHIATRY

ADHD

Hoarding and ADHD Linked

There is evidence suggesting that hoarding may be associated with symptoms of ADHD. But until now there have been few studies examining that relationship in children, despite the fact hoarding symptoms commonly start in childhood.

In a new study, Florida researchers looked at the association between hoarding and ADHD in 99 children and adolescents diagnosed with ADHD. All of the participants, who ranged in age from eight to 17 years, were patients in a general outpatient psychiatry clinic.

The participating children and adolescents completed three rating scales that assessed obsessive-compulsive behaviors, anxiety and depression, and overall self-esteem. Their parents completed two scales: one that assessed child-hoarding behaviors and the other that measured ADHD symptoms and included a subscale to assess oppositional behavior.

In all, 29 of the participants (29%) reported clinical levels of hoarding. Compared to the participants who did not have a problem with hoarding, the hoarding group exhibited higher scores on measures of inattention, hyperactivity/impulsivity, and oppositional symptoms, the researchers said. The incidence of hoarding in the general population is estimated to be between 2% and 5% (Iervolino AC et al, *Am J Psychiatry* 2009;166(10):1156–1161; Timpano KR et al, *J Clin Psychiatry* 2011;72(6):780–786). Symptoms of obsessive-compulsive disorder (except hoarding) did not significantly predict hoarding.

The study was not without limitations, including the fact that researchers did not include clinician-rated measures for hoarding, symptom severity, diagnostic status, and neuropsychological functioning. The sample also consisted of primarily Caucasian participants, making it unclear how the findings would generalize to other groups.

The link between hoarding and ADHD symptoms may provide insight into the etiology of hoarding behaviors, the researchers said. The study results support the theory that information-processing deficits play a role in hoarding, they said, and also suggest that hoarding may emerge in childhood in association with executive function deficits, eg, difficulty with organization, sustained attention, and long-term planning. Researchers speculated that children with ADHD are unable to organize their environment and/or discard unneeded items leading to excessive clutter. Early intervention among youth who hoard may provide an opportunity to break the pattern before symptoms are ingrained in their behavior, the researchers said (Hacker LE et al, *J Atten Disord;* 2012, August 24; online ahead of print).

CCPR's Take: This study not only suggests we should ask our hoarders about ADHD and our ADHD patients about hoarding, but also questions the concept that hoarding is a form of OCD.

PSYCHOSIS

Study of Cortisol Looks at Youths at Risk for Psychosis

Could the presence of a stress hormone in an adolescent's saliva predict a risk for psychosis? Recent research suggests that it can.

In an observational cohort study, researchers assessed salivary cortisol secretion in 33 patients, ages 12 to 25, at clinical high risk (CHR) for psychosis. Of the patients, 21 were medication free and 12 were taking an SSRI and/or atypical antipsychotic. The 33 patients were compared with 13 healthy controls.

One theory is that stress contributes to the development of psychosis in schizophrenics through the effects of the hypothalamic pituitary adrenal (HPA) axis, and interaction of cortisol with dopaminergic neurotransmission and hippocampal circuitry.

This study backed up that theory.

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Expert interview

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CCPR: Is that relapse rate worse than adults? Are adolescents harder to treat than adults?

Dr. Kaminer: The outcomes are very similar. Adolescents are harder to treat to some degree because they are not motivated to be treated. Adolescents don't usually come in like adults and ask for help. They are usually coerced into treatment either mildly or more forcefully. Usually they are brought in by their parents, or because of suspension from school or because the judge sent them for treatment.

CCPR: How do you enhance motivation in adolescents?

Dr. Kaminer: There is a very useful intervention called Motivational Interviewing. Other people call it MET (motivational enhancement therapy) because of a certain study that used that term. It is a patient-oriented approach. Instead of telling patients what to do, you ask patients to express what they want and what they need, and you point out the discrepancies between what people want and how their drug use affects them. There are some manuals teaching MET that are free of charge, including the one we used in the CYT study I mentioned before.

CCPR: Why is it so difficult to get treatment for kids with substance abuse disorders?

Dr. Kaminer: There is a deafening silence by parents of kids who have substance abuse, and that is really sad. It seems that for every disease in the world, even if only 0.25% of people suffer from it, there is some kind of a support group, a walk, a run, a drive, you name it. But there is a stigma associated with substance abuse, and parents often don't want to advertise their children's

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CME Post-Test

CME Notice: The test below is intended to be for **practice only.** All subscribers must take their tests online at www.thecarlatchildreport.com. If you cannot take your test online, please call 866-348-9279 or email info@thecarlatreport.com.

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

1. Synthetic cathinones pharmacologically work in which of the following ways (Learning objective #1)?
   [ ] a) Inhibits of reuptake of serotonin, norepinephrine, and dopamine
   [ ] b) CB1 receptor agonists
   [ ] c) Kappa opioid receptor agonist
   [ ] d) Mu- and delta opioid receptor agonists

2. Salvia divinorum has been associated with which of the following (Learning ojective #1)?
   [ ] a) Respiratory depression, suicide, and violence
   [ ] b) Euphoria and increased blood pressure
   [ ] c) Intense hallucinations and anxiety
   [ ] d) Depressed consciousness, cholestatic liver injury, and respiratory failure

3. Two RCTs of Antabuse in adolescents showed benefit (LO #2).
   [ ] a) True [ ] b) False

4. According to Dr. Yifrah Kaminer, the use of energy drinks among kids is marker of future experimentation with more abusable drugs (LO #3).
   [ ] a) True [ ] b) False

5. In the Hacker et al study of ADHD and hoarding, what percentage of children with ADHD reported clinical levels of hoarding (LO #4)?
   [ ] a) 2% [ ] b) 5% [ ] c) 22% [ ] d) 29%

PLEASE NOTE: WE CAN AWARD CME CREDIT ONLY TO PAID SUBSCRIBERS

Expert interview

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problems. It is extraordinarily sad because substance abuse is treatable. The problem is that resources are not being devoted to a highly prevalent disorder: it is more prevalent than depression, and many of these kids are dually diagnosed. Comorbidity is the rule rather than the exception. But somehow the people who provide resources don't get it. We need to educate the public and educate the parents to demand more. We need to make the medical establishment more responsive to the problem. In adolescents with substance abuse disorders, 70% or 80% of them have at least one psychiatric disorder and about 50% have about three comorbid psychiatric disorders. If somebody is depressed and is a substance abuser, it increases their probability of attempting suicide (McManama O'Brien KH & Berzin SC, *Suicide Life Threat Behav* 2012;42(4):437–444).

CCPR: Does that mean clinicians should be looking harder for substance abuse in psychiatric patients, or looking harder for psychiatric disorders in substance abusing patients, or both?

Dr. Kaminer: Both. When you don't ask a patient about a psychiatric disorder, the patient doesn't tell and you don't know what to do. Likewise, with kids who come for psychiatric treatment we train people to ask them about substance abuse.

CCPR: Any suggestions on how to do that?

Dr. Kaminer: Ken Winters from the University of Minnesota and I edited a recent book. It is entitled, *Clinical Manual of Adolescent Substance Abuse Treatment.* It includes information about various types of drugs, prevention, assessment, treatment, and pharmacotherapy. It also includes information about different psychosocial interventions, about assessment and treatment of suicidal behavior, and about substance abuse in the juvenile justice system.

CCPR: Thank you, Dr. Kaminer.

Dr. Kaminer is the co-editor of the Clinical Manual of Adolescent Substance Abuse Treatment, *published by American Psychiatric Publishing.*

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Researchers concluded that their finding of elevated cortisol secretion levels in CHR patients supports the premise that excess activation of the HPA axis and/or neuroendocrine abnormalities characterize the psychosis risk state for at least a subset of patients. The study also shed light into the role that medications can play in helping prevent psychosis. Researchers found that basal salivary cortisol secretion was significantly higher in CHR patients who were not taking medication, compared to CHR patients taking medications and to healthy controls. That finding suggests that psychotropic medications may have a normalizing effect on HPA-axis dysfunction in CHR patients, which could potentially influence intervention strategies.

Researchers noted several study limitations including its small sample size, a predominantly male sample, and single measure cortisol sampling (Sugranyes G et al, *J Psychiatr Res* 2012; online ahead of print).

CCPR's Take: This study demonstrates correlation of cortisol and risk of psychosis, but what that means remains to be seen: what's chicken, what's egg, and what is just stuff that happens to be in the same coop? If high stress levels can precipitate psychosis in vulnerable individuals, though, then perhaps there is an opportunity for prevention.

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Substance Abuse

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