FCD UPDATE

FCD Educational Services, Inc. A Nonprofit Organization Alcohol, Tobacco, and Other Drug Education Fall 2001

Prescription for Addiction

Abuse of prescription drugs is on the rise in the United States. According to a recent National Household Survey on Drug Abuse, the number of people taking pain relievers for the first time for *non-medical* purposes rose by 181 percent from 1990 to 1998. First-time users of tranquilizers rose by 132 percent during the same period; those initiating sedative use increased by 90 percent; and the number of new users of stimulants for non-medical purposes grew by 165 percent.

While prescription drug abuse is most common among the elderly (who use prescription medications at a rate three times that of the general population), *the most dramatic increase in first-time use of prescription drugs for non-medical purposes has taken place among adolescents* (ages 12-17) *and young adults* (ages 18-25). For example, from 1992 to 1997, reported non-medical use of Ritalin within the past year by high school seniors rose by a factor of 28.

Additional data collected by the Drug Abuse Warning Network suggests an increase in the number of college students admitted to hospital emergency rooms for the abuse of prescription drugs such as Percodan (oxycodone with aspirin), Vicodin (hydrocodone), and Klonopin (benzodiazepine clonazepam). With the growing use by adolescents of prescription drugs for non-medical purposes, FCD offers this primer on the most commonly abused medications.

OPIOIDS

Opioids are often referred to as *narcotics*. They are the most effective pain relievers available because they act like morphine. Opioids include codeine, propoxyphene (Darvon), hydrocodone (Vicodin), hydromorphone (Dilaudid), meperidine (Demerol), and diphenoxylate (Lomotil). While there are many opioids, one relative newcomer is receiving the lion's share of attention from the media, and public health and law enforcement agencies: Oxycontin.

What is Oxycontin?

Oxycontin, also referred to as "Oxy" or "O.C.'s" on the street, is a trade name for the generic narcotic pain reliever *oxycodone hydrochloride*. It was developed in 1996 by Purdue Pharma by modifying an alkaloid found in opium called *thebaine*. Other pain relievers containing oxycodone include Percodan, Percocet, and Tylox.

How is Oxycontin used?

Oxycontin is legally available by prescription to alleviate chronic or long-lasting pain such as that associated with arthritis, injuries, fractures, dislocations, bursitis, neuralgia, and cancer. It is also used post-operatively, for lower back pain, and for pain relief after childbirth. One of the advantages of Oxycontin is that it is a timed-release oral tablet generally taken only twice a day. Shorter-acting oxycodone products require pain sufferers to take four to six pills daily.

What does Oxycontin look like?

The letters "OC" are imprinted on one side of the pill. The other side displays the number of milligrams, e.g., "10", "20", "40", "80", "160". Color and size vary depending on the pill's strength.

How does Oxycontin work?

Oxycontin is a central nervous system depressant. Like other oxycodone products, it stimulates opioid receptors in the brain and spinal cord, triggering responses ranging from analgesia (pain

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Some of What's Inside...

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From the President

Alex J. Packer

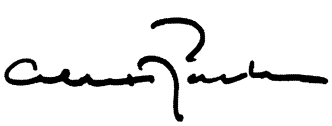
One of FCD's favorite people is Dr. Edward (Ned) Hallowell, the well-known psychiatrist, ADHD expert, and author of such bestsellers as *Driven to Distraction*, *Worry*, and *Connect*. Ned has been coming to FCD's fall teacher training sessions for years. We look forward to seeing him as a child might anticipate the arrival of a beloved, globe-trotting uncle – someone whose wisdom and experience gets us thinking and dreaming about new ideas; someone who makes us feel valued and special.

In Ned's last book, *Connect*, he emphasized the importance of "connectedness" to physical, emotional, and mental health. Such connections include family, friends, work, pets, art, music, faith, nature, history and ritual. This year Ned spoke to us about the subject of his new book, *Human Moments: How to Find Meaning and Love in Your Everyday Life*. Human moments are those funny, joyful, warm, sad, poignant, inspiring, crazy, loving moments that, in the rush and stress of our daily lives, are so easy to overlook. Human moments are the building blocks of connection.

After Ned's talk, FCD teachers and staff discussed this concept in relation to FCD's mission. We realized that the effectiveness of our work is based upon the depth and trustworthiness of the connections we make with hundreds of schools, and thousands of students, across America and around the world. As health educators we strive to create – for every class and student – "human moments" of interaction, enlightenment, and self-discovery that 1) strengthen the resolve of students abstaining from alcohol and other drugs; 2) challenge students engaged in risky behaviors to question their attitudes and actions; and 3) plant seeds of awareness that may ripen years later to pull a former FCD student back from the brink of substance abuse. Teaching based upon connections and human moments, as opposed to facts and inflexible curricula, can be difficult, frustrating, and exhausting. And, like democracy and good parenting, it can be messy. But it is the most effective way to keep kids safe and drug-free.

The atrocities of September 11 have triggered an avalanche of human moments that have erased boundaries, dissolved cynicism, and united individuals, groups, and nations. In the days since those horrific events, we have seen in many young people an appreciation for the fragility and preciousness of life that contrasts with the aura of invincibility typically projected by adolescents. This instant maturation can reinforce factors that protect kids from drug use and other risky behaviors. But we have also seen some teens pushed towards reckless despair by the random savageness of September 11th. When your country is under a death sentence, when you may have to go off to war, when you could be blown to bits tomorrow, what is the point of caring or investing in life? Live for the moment. Get wasted. Escape. Feelings such as these can lead teens towards rash decisions and self-destructive behavior.

As a travel-based organization, we wondered if any of our teachers would leave their jobs as a result of the events of September 11. Not a single teacher has done so. When asked about it, they say the work is too important. Now, more than ever, young people need to talk about their lives, their fears, and the issues they face in relation to alcohol and other drug use. Now, more than ever, they need the human moments FCD has been providing for over 25 years.



Alex J. Packer, Ph.D.

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relief), to respiratory depression to euphoria. Individuals who use Oxycontin or other opioids for prolonged periods can develop a tolerance to the drug, and require higher doses to achieve the same effect. While most patients who take these drugs do not become addicted, they may become physically dependent and need to go through a program of withdrawal under the supervision of a qualified physician.[1]

What's the difference between physical dependence and addiction?

Physical dependence is defined as the body's state of adaptation to, and reliance upon, a substance. Patients who rely on opioids for pain relief may develop tolerance and physical dependence during treatment. Absence of the substance leads to withdrawal symptoms in which those functions previously suppressed by the drug are stimulated, and those functions previously stimulated by the drug are suppressed. Since opioids can cause drowsiness, calmness, and constipation, signs of withdrawal can include sleeplessness, anxiety, and diarrhea. A gradual decrease in dosage over time will, with a minimum of withdrawal symptoms, restore the patient to a drug-free state. Opiate-addicted individuals generally take higher doses than are needed to manage their pain, seek a rush or high from the medication, and, in the absence of the drug, experience uncontrollable cravings to reproduce the feeling.

Why are pharmacies being held up for Ocycontin? Why don't we hear of Percodan robberies?

Because of Oxycontin's potency. One dose of Percodan has 2.25 milligrams of oxycodone; Percocet and Tylox contain five milligrams. Oxycontin is available in 12-hour timed-release tablets ranging from 10 to 160 milligrams of oxycodone. The euphoric effects of Oxycontin abuse are similar to those experienced by heroin users, making the pill attractive to the same abuser population. In addition, Oxycontin commands a high price on the street, generally between 50 cents and $1 per milligram. Thus, a bottle of 100 40 mg pills that would cost $400 in a pharmacy could be resold for $2,000 to $4,000 on the black market.

Many police and health departments around the country are finding that Oxycontin has surpassed cocaine, methamphetamines, and heroin as the leading drug of abuse in their area. Oxycontin-related thefts, burglaries, and health-care fraud incidents are being reported in ever-increasing numbers. Numerous deaths have resulted from Oxycontin overdoses.

How is Oxycontin abused?

Some Oxycontin abusers chew the drug. Others crush the tablet and snort it, or dilute it with water and inject it. Snorting and/or injecting the drug cancel out the timed-release function, causing the rapid release and absorption of oxycodone and a quick, powerful, euphoric high. Abusers obtain the drug in a variety of ways. Many acquire pills by "doctor shopping," i.e., visiting several doctors, often in more than one state, to obtain multiple quantities of the drug which they then use themselves or sell to others. Physicians have been charged with writing fraudulent prescriptions in exchange for money or sexual favors. Pharmacists have also been arrested for diverting Oxycontin from pharmacy shelves. And, as the media have noted, some abusers acquire the drug by burglary or armed robbery.

How widespread and dangerous is Oxycontin abuse?

Studies indicate a significant increase in Oxycontin abuse. Many police and health departments around the country are finding that Oxycontin has surpassed cocaine, methamphetamines, and heroin as the leading drug of abuse in their area. Oxycontin-related thefts, burglaries, and health-care fraud incidents are being reported in ever-increasing numbers. Numerous deaths have resulted from Oxycontin overdoses.

CENTRAL NERVOUS SYSTEM DEPRESSANTS

CNS depressants slow normal brain function. As such, they are useful for treating anxiety, stress, and sleep disorders.

What are some common CNS depressants?

CNS depressants fall into two categories: barbiturates and benzodiazepines. Barbiturates include mephobarbital (Mebaral), and pentobarbital sodium (Nembutal), which are used to treat anxiety, tension, and sleep disorders. Benzodiazepines are generally prescribed for more acute anxiety, stress, and panic attacks. These include diazepam (Valium), chlordiazepoxide HCI (Librium), and alprazolam (Xanax). Other benzodiazepines, such as triazolam (Halcion) and estazolam (ProSom), have a sedating effect, and are used to treat sleep disorders.

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1. In one NIDA-sponsored study, only four out of 12,000+ patients taking opioids for severe pain became addicted to the drugs. In another study of 38 individuals who had taken opioids for four to seven years for chronic pain, only two (both with a history of drug abuse), actually became addicted.

Some Commonly Prescribed – and Abused – Medications

OPIOIDS	CENTRAL NERVOUS SYSTEM DEPRESSANTS	STIMULANTS
• Oxycodone (Oxycontin) • Propoxyphene (Darvon) • Hydrocodone (Vicodin) • Hydromorphone (Dilaudid) • Meperidine (Demerol) • Diphenoxylate (Lomotil)	**Barbiturates** • Mephobarbital (Mebaral) • Pentobarbital sodium (Nembutal) **Benzodiazepines** • Diazepam (Valium) • Chlordiazepoxide hydrochloride (Librium) • Alprazolam (Xanax) • Triazolam (Halcion) • Estazolam (ProSom)	• Dextroamphetamine (Dexedrine) • Methylphenidate (Ritalin) • Sibutramine hydrochloride monohydrate (Meridia)
PRESCRIBED FOR…	**PRESCRIBED FOR…**	**PRESCRIBED FOR…**
• Postsurgical pain relief • Management of acute or chronic pain • Relief of coughs and diarrhea	• Anxiety • Tension • Panic attacks • Acute stress reactions • Sleep disorders • Anesthesia (at high doses)	• Narcolepsy • Attention-deficit hyperactivity disorder (ADHD) • Depression that does not respond to other treatment • Short-term treatment of obesity • Asthma
HOW IT WORKS	**HOW IT WORKS**	**HOW IT WORKS**
• Opioids attach to opioid receptors in the brain and spinal cord, blocking the transmission of pain messages to the brain.	• Central nervous system depressants slow brain activity through actions on the GABA system and, therefore, produce a calming effect.	• Stimulants enhance brain activity, causing an increase in alertness, attention, and energy.

EFFECTS OF SHORT-TERM USE	EFFECTS OF SHORT-TERM USE	EFFECTS OF SHORT-TERM USE
• Blocked pain messages • Drowsiness • Constipation • Depressed respiration (depending on dose)	• A "sleepy" and uncoordinated feeling during the first few days; as the body becomes accustomed (tolerant) to the effects, these feelings diminish.	• Elevated blood pressure • Increased heart rate • Increased respiration • Suppressed appetite • Sleep deprivation
EFFECTS OF LONG-TERM USE	**EFFECTS OF LONG-TERM USE**	**EFFECTS OF LONG-TERM USE**
• Potential for tolerance, physical dependence, withdrawal, and/or addiction	• Potential for tolerance, physical dependence, withdrawal, and/or addiction	• Potential for addiction
POSSIBLE NEGATIVE EFFECTS	**POSSIBLE NEGATIVE EFFECTS**	**POSSIBLE NEGATIVE EFFECTS**
• Severe respiratory depression or death following a large single dose	• Seizures following a rebound in brain activity after reducing or discontinuing use	• Dangerously high body temperatures or an irregular heartbeat after taking high doses • Cardiovascular failures or lethal seizures • For some stimulants, hostility or feelings of paranoia after taking high doses repeatedly over a short period of time
SHOULD NOT BE USED WITH	**SHOULD NOT BE USED WITH**	**SHOULD NOT BE USED WITH**
• Other substances that cause CNS depression, including: — Alcohol — Antihistamines — Barbiturates — Benzodiazepines — General anesthetics	• Other substances that cause CNS depression, including: — Alcohol — Prescription opioid pain medicines — Some over-the-counter cold and allergy medications	• Over-the-counter cold medicines containing decongestants • Antidepressants, unless supervised by a physician • Some asthma medications

The information in this table is derived from a National Institute on Drug Abuse Research Report entitled *Prescription Drugs: Abuse and Addiction*.

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How do CNS depressants work?

These substances stimulate neurotransmitters in the brain. Neurotransmitters are chemicals that facilitate communication between brain cells. Most CNS depressants act on the neurotransmitter gamma-aminobutyric acid (GABA). Increased amounts of GABA slow brain activity, causing sensations of calm and drowsiness. Side effects include light-headedness or poor coordination.

How prone to abuse are CNS depressants?

Barbiturates and benzodiazepines have a high potential for abuse. The body develops tolerance over time, requiring larger doses to achieve the same effect. This can lead to physical dependence and withdrawal symptoms if use is reduced or stopped. If an individual abruptly stops taking the drug, the brain, having become accustomed to sedated activity, can race out of control. This can lead to seizures and other serious or life-threatening consequences. Close monitoring by a qualified physician is critical to the safe use of, and withdrawal from, these medications.

Can CNS depressants be used safely with other medications?

CNS depressants should not be combined with other drugs or substances that slow CNS functions (e.g., over-the-counter cold and allergy medications, pain relievers), without the strict supervision of a physician. The combination of alcohol and CNS depressants can lead to death by slowing heart and respiratory functions.

STIMULANTS

As the name suggests, stimulants speed up brain activity. This leads to elevated blood pressure, increased heart and respiratory rates, and enhanced feelings of alertness, focus, and energy.

What are some common stimulants?

The best known stimulants are dextroamphetamine (Dexedrine) and methylphenidate (Ritalin).

Stimulants were originally used to treat asthma, obesity, respiratory problems, and neurological disorders. Use of stimulants to treat these ailments has diminished as their potential for abuse and addiction has become more evident. Today, stimulants are used primarily for the treatment of narcolepsy, ADHD, and depression.

How do stimulants work?

Stimulants increase levels of a family of neurotransmitters called *monoamines*. Among these are norepinephrine and dopamine. Increased production of these chemicals constricts blood vessels, increases blood glucose, enhances respiratory functions, and creates a sense of euphoria.

In Boston, [Ritalin] abuse is especially noted among middle- and upper-income communities. In addition, Ritalin-related calls to poison centers and emergency rooms are being reported with increasing frequency.

How prone to abuse are stimulants?

While most people who take stimulants do not abuse them or become addicted, these drugs should be taken with caution. Use can create physical dependence and resultant withdrawal symptoms. High doses can cause irregular heartbeats and high body temperatures, leading to lethal seizures and/or cardiovascular failure. Long-term use can trigger anxiety, hallucinations, and severe depression. Even short-term use can cause feelings of hostility and paranoia. Young people who use these medications to lose weight, stay alert, or experience euphoria are placing themselves at considerable risk.

How widespread is Ritalin abuse?

Ritalin is a valuable medication when taken as prescribed for attention-deficit hyperactivity disorder (ADHD). In fact, a recent study found that boys with ADHD who take stimulants such as Ritalin are significantly less likely to abuse alcohol and other drugs when they are older than are boys with ADHD who receive no treatment.[2] Because of its stimulant effects, however, some individuals – often adolescents – abuse Ritalin to suppress appetite, improve focus and wakefulness, and/or experience a euphoric feeling. Abusers take the pills orally or crush and snort them. Some users dissolve the tablets in water and inject the mixture, sometimes in combination with heroin and/or cocaine for a more powerful effect. Insoluble fillers in Ritalin tablets can block small blood vessels when injected into the bloodstream. From FCD's work with tens of thousands of young people every year, and reports from NIDA's Community Epidemiology Work Group, it seems clear that Ritalin abuse is a growing concern within the prevention field. Such abuse has been reported in cities all across America, particularly among middle and high school students. In Boston, abuse is especially noted among middle- and upper-income communities. In addition, Ritalin-related calls to poison centers and emergency rooms are being reported with increasing frequency.

Can stimulants be used safely with other medications?

Stimulants should only be taken by those under strict medical supervision. The combination of stimulants and over-the-counter cold medicines containing decongestants can lead to dangerously high blood pressure and irregular heart rhythms. Since antidepressants enhance the effects of stimulants, any combination of the two must be carefully monitored.

2. Joseph Biederman, et al., Pharmacotherapy of Attention-Deficit Hyperactivity Disorder Reduces Risk for Substance Use Disorder, *Pediatrics*, 1999, 104:e20.

Did you know?

A High Bet

Gambling and snorting cocaine affect the same region of the brain. According to Dr. Hans Breiter, a neuroscientist at Massachusetts General Hospital, the brain patterns of someone using cocaine are indistinguishable from those of someone gambling. In fact, even the *hope* of winning big activates the same regions of the brain as snorting cocaine. Breiter, who has previously studied the brains of cocaine users, mapped the brain activity of 12 men between the ages of 20 and 35 while they engaged in a game of chance. The subjects, who had no prior history of gambling problems, were given $50 and shown computer images of a spinner that predicted either a "good," "bad," or "mixed" result for their next turn. Simply anticipating a "good," i.e. "winning," result produced an intense reaction even before the pointer came to rest on the actual amount. The reaction became even more pronounced once the subjects knew the extent of the "big win." The brain scans also indicated that participants who anticipated a "bad" result interpreted it as "a gain" if they lost less than they had feared. Thus, even losing money can produce a "winning" sensation in the pleasure and reward circuitry of the brain. Further research in this area may lead to breakthroughs in our understanding of addictive behavior.[1]

Munchies

Smoking marijuana can lead to a food craving known to users as "the munchies." Scientists now believe they know why. The brain naturally produces marijuana-like substances that stimulate appetite. Researchers believe that these endocannabinoids – which, while chemically similar to the active ingredient in marijuana, do not get people high – are part of a complex system in the brain for controlling food consumption. In a study conducted by the National Institute on Alcohol Abuse and Alcoholism at the National Institutes of Health, researchers found that mice with artificially blocked endocannabinoid receptors ate less than normal mice. Conversely, when the receptors were stimulated, appetite increased. Since smoking marijuana activates these receptors, users can become ravenously hungry. Scientists do not yet know how the body manufactures endocannabinoids, or the exact way in which they work. But the study did indicate that the process is independent of the action of other appetite-triggering or -suppressing substances. This suggests that weight gain or loss is the result of many factors, and is unlikely to be controlled by a single chemical or drug.[2]

Normative beliefs at work: Peer influence on smoking

Yet another study shows that teen drug use is highly influenced by the behavior of one's peers. Researchers from Johns Hopkins University School of Medicine and the Pan American Health Organization asked 3,573 public and private school students in Buenos Aires about their attitudes and behaviors – and those of their parents, siblings, and classmates – with regard to smoking. Thirty-two percent of the girls and 29 percent of the boys reported that they were current smokers. One of the most interesting findings reiterated the powerful role of *normative beliefs* in influencing student alcohol and other drug use. A vast majority of the teens – *especially those who smoked* – overestimated the percentage of their peers and adults who smoked. Whereas roughly 30 percent of the teens surveyed smoked (and an estimated 35 to 40 percent of adults), 86 percent of current smokers and 72 percent of nonsmokers said that *over 50 percent of their peers, and over 50 percent of adults, smoked*. The more teens believe that "everybody smokes" (or drinks, or takes drugs), the more likely they are to do so as well. Among the sample of boys, 53 percent of *current smokers* reported that their best friend smoked. Only 13.1 percent of *nonsmokers* identified a smoker as their best friend. The study also suggests an association between smoking and alcohol use among boys. Of the boys who smoked, eighty-three percent said they used alcohol; of the non-smokers, only 36.6 percent reported drinking.[3]

Poll Position

In the light of the above study showing the influence of peer behavior on youth smoking, it is interesting to examine the results of a recent Gallup Poll in which parents of K-12 students were asked to rate the seriousness of various social pressures their children face at school (i.e., "very serious"; "somewhat serious"; "not too serious"; "not at all serious").[4] Here, in random order, are the pressures listed in the survey:

- drink alcohol
- wear a specific type or brand of clothes
- use drugs
- achieve a specific body image
- be popular
- have sexual relations
- smoke cigarettes

Now, here is the same list as ranked by parents in terms of the seriousness of the social pressure their children face with regard to that issue:

most serious

1. be popular
2. achieve a specific body image
3. wear a specific type or brand of clothes
4. have sexual relations
5. use drugs
6. drink alcohol
7. smoke cigarettes

least serious

Research shows that teens tend to *overestimate* the use of alcohol, tobacco, and other drugs by their peers. And adults tend to *underestimate* teen use of these substances. It is ambiguous from the wording of the survey whether the parents' dead-last ranking of alcohol, tobacco and other drug use refers to the seriousness of the *pressure* or the *issue*.

1. *Neuron*, May 2001, as reported by Patricia Wen in The Boston Globe, May 24, 2001.
2. *Nature,* April 2001, as reported by Mark Evans in The Boston Globe, April 12, 2001.
3. Morello, P., Duggan, A., Adger, H., et al: Tobacco use among high school students in Buenos Aires, Argentina. *American Journal of Public Health* 2001; 91:1-6.
4. The Gallup Organization; Poll Analyses, Sept. 4, 2001; http://www.gallup.com/poll/releases/pr010904.asp.

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ADDRESS CORRECTION REQUESTED

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