

DARSTM Report

Is “Smart Pill” a Potential Drug-of-Abuse?

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PROVIGIL (Modafanil) is a prescription drug that tops the list of a new class of medications called wake-promoting drugs. Originally approved by the FDA in 1998, PROVIGIL was designed to treat narcolepsy, and excessive sleepiness associated with a handful of central nervous system disorders. PROVIGIL acts on the areas associated with the regulation of the sleep/wake mechanism in the brain by effecting the reuptake of dopamine and norepinephrine without producing a feeling of euphoria. Central nervous system stimulant drugs like methamphetamine and Ritalin work in a manner very different than PROVIGIL, and these drugs are extremely potent substances that can bring about strong emotional feelings and euphoria. PROVIGIL’s potential for abuse, however, is believed to be relatively low and is therefore regulated under the federal controlled substance act under Schedule IV.

Like many other prescription drugs these days, PROVIGIL is commonly sold for “off-label” applications, drugs used to treat a condition that the FDA did not approve. PROVIGIL is one of several prescription drugs that is used off-label to treat cocaine and methamphetamine addiction. In cocaine addiction specifically, PROVIGIL seems to reduce cravings for the drug and appears to reduce the side-effects in relapsing patients. More importantly, PROVIGIL works in the prefrontal cortex area of the brain to strengthen the brain’s decision making complex so that cocaine and methamphetamine users’ decisions are not inhibited by drug use.

PROVIGIL is not a silver bullet, but for many patients, it’s a potent tool that helps them maintain sobriety. Fortunately, PROVIGIL’s unique pharmacological characteristics render it incapable of causing physical dependency.

In addition to its use in narcolepsy and drug addiction treatment, Provigil is used as a “smart pill” and athleticism enhancer because it regulates the brain’s wakefulness allowing people to think more clearly. You may remember the scandal of the 2003 world competition when world-class sprinter Kelli White won a 200m sprint at the World Track and Field Championships but was suspended from her team when she tested positive for modafanil (the drug in PROVIGIL). Although she’d been prescribed the drug by her personal physician for narcolepsy treatment she was still suspended from her team because under the terms of the anti-doping agreement, modafanil is a banned substance. Interestingly, six other athletes in the 2003 Championships also tested positive for modafanil, but none had been prescribed PROVIGIL for narcolepsy. Narcolepsy rates vary from 0.02%-0.05% of the population in America and elite athletes with narcolepsy are even more rare.

Call for Submissions

The DARSTM Report is currently accepting submissions for upcoming editions. Please send your drug-abuse related articles to:

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MEDTOX reserves the right to edit or omit submissions. Articles will not be returned.

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DAR Newsletter Book Report

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Does a psychostimulant drug like PROVIGIL (modafanil) enhance athletic performance? How about PROVIGIL in the workplace? Is it wrong for someone who is sleep deprived to obtain a prescription for PROVIGIL in order to stay awake at work? Many of us already do something like this when we drink coffee, Red Bull or some other hyper-caffeinated beverage. PROVIGIL has more central nervous system potency than caffeine, but where should the line be drawn between what is an appropriate use of a drug like this and what isn't? The questions do not end with PROVIGIL, because there will probably be other drugs like PROVIGIL that will come to market. And although these drugs don't cause the gross central nervous system stimulation that cocaine and methamphetamine do, they are capable of enhancing executive brain function.

Should recreational use of drugs like PROVIGIL be made illegal? Why? Future editions of the DAR Newsletter will address the growing use of "smart pills", until then you, the Newsletter reader, can decide.

New Drug Available for Smoking Cessation

The value of reducing smoking among recovering substance abusers is currently under discussion by rehabilitation centers. *Chantix* (varenicline), a new drug developed to help smokers quit, now adds a new twist to these discussions. Significantly more effective than *Zyban* (bupropion)—the only other prescription medication approved for use in smoking cessation—*Chantix* works at specific nicotinic receptors in the brain as a partial agonist/activator to reduce nicotine craving by binding to nicotinic receptors, effectively blocking nicotine from binding. The medication is taken orally twice daily.

Clinical trials and early analysis of *Chantix*'s effects suggest that the drug effectively reduces the intense craving that smokers experience while quitting¹. *Chantix* outperformed *Zyban*—a reduced dose version of the well-known antidepressant *Wellbutrin*—and placebos in double blind clinical trials. Over a 9-52 week interval of smoking cessation, 23% of smokers using *Chantix*, 15% of *Zyban*'s smokers, and 10% of the people taking a placebo stayed nicotine free. However the side effects for *Chantix*, namely nausea and insomnia, occurred in 8% more people taking *Chantix* than *Zyban*.

Smoking is a potent delivery system for any type of drug. In particular, nicotine is especially dangerous because it delivers many insidious carcinogens and poisonous gases which cause nearly all cases of lung cancer in America and are involved in heart disease as well. Not only is smoking toxic, but it also prevents people in drug rehabilitation programs from staying clean. Unfortunately, the rate of smoking among people recovering from drug use is very high. If medications like *Chantix* are as effective as clinical trials suggest, then rehabilitation programs and recovery centers should strongly encourage its clients to quit smoking. Past editions of this newsletter have heralded studies that have looked at the impact of smoking cessation programs on people in recovery and detoxification. These studies found that efforts made to help addicts in drug rehabilitation quit smoking early in the drug rehabilitation process do not in fact lead to increased drug use. Hopefully the treatment community will come around to the prospect that lives can be better saved by treating nicotine dependency as aggressively as they do a primary substance addiction.

Ask your primary care physician for more information about *Chantix*. The DAR program has additional information about this drug and its potential for use in the corrections setting. Please email the DAR program at DARprogram@mac.com.



¹ Jorenby DE et al. Efficacy of varenicline an alpha, beta-2 nicotinic acetylcholine receptor partial agonist, vs. placebo or sustained release bupropion for smoking cessation: a randomized controlled trial. *Journal of the American Medical Association* 2006, Jul 5; 296:47-55.

Hairspray as a Drug-of-Abuse?

In the last couple of years the drugs that teenagers abuse have dramatically changed. For some time now, law enforcement groups have been aware of increased inhalant abuse in adolescent drug users, especially those who frequent the rave scene and techno music clubs. Far from being harmless entertainment, inhalant abuse can cause serious injuries and even death, as noted by the media. Part of the danger of inhalant abuse is that the substances are so common-place many can be found in household closets or garages; some of the more popular substances include hairspray, electronic parts cleaner and propane canisters. In extreme cases, parents have found their children dead from asphyxiation just hours after tucking them into bed. Most of these cases involve the inhalation of compressed gas from canisters of electronic parts cleaner, which blocks the uptake of oxygen into the blood causing a lightheaded high that can be addictive. Nitrous oxide, known in the rave and club scene by the name “NOS” (pronounced N-ah-zz) and “NOX,” can knock a person unconscious for several minutes if inhaled very quickly.



The inhalant user may exhibit signs and symptoms similar to someone intoxicated by alcohol; in fact, an inhalant user may actually smell of alcohol. The duration of these effects may last anywhere from 15 minutes to 6 hours. Typically, glues, paints, solvents and ether-based substances can cause extended psycho-physical effects that can persist for up to 12 hours. These types of drugs can often cause contradictory signs and symptoms; although these drugs act as central nervous system depressants, they can also act as stimulants. In younger abusers, the inhalants can cause agitation and delirium and those who inhale gasoline typically display aggressive behavior. The cause of this aggressive behavior comes from the quick absorption of hydrocarbons—found in the gasoline fumes—that target GABA and dopamine nerve cells.

Abuse of the propellant in hairspray, and to a lesser extent the propellant in the cooking additive PAM, leads to a different sort of action in the brain. These substances are attractive means of getting high because they are common household items; if an abuser cannot find these substances around the house a short trip to a nearby convenience store will solve the problem. To inhale a substance like compressed hairspray or PAM, abusers will spray and then inhale mist quickly. An alternative and more dangerous method of inhalation involves directly spraying the compressed mist in the mouth and airway. Held at a distance of 6-8 inches, a user takes a short direct blast of compressed substance directly into the airway. The gas is then absorbed through the lungs where it disrupts the activity of hemoglobin and oxygen causing a transitory feeling of elation and relaxation. What feels good to the inhalant abuser is in reality an effect of choking the brain's supply of oxygen. Continued application of inhalants can lead to a loss of consciousness and possibly asphyxiation.

Although dangerous, these drugs are not capable of causing physical dependency, with the exception of some hydrocarbons. Regular use of these drugs, however, can lead to the development of liver and lung disease, as well as irritations and chemical burns to the mouth, throat and thoracic tract.

Whereas urinalysis and lab based drug tests cannot detect inhalant use, the Drugs-of-Abuse and Recognition (DAR) 7-step medically based exam is designed to detect use and abuse of these types of substances. Significantly different from the effects of other psychoactive drugs and narcotics, most inhalants cause a very noticeable horizontal nystagmus and lack of convergence. Vertical nystagmus develops with higher and more concentrated doses of inhalants, pulse and the internal clock will also accelerate, sometimes causing stimulant like symptoms. Typically the pupils will be in the near normal range and display a normal reaction to light. Because of the great diversity of effects, all physical changes caused by inhalants should be closely monitored. Evaluation of these symptoms is easy, allows you to screen for hundreds of drugs in just three minutes, and cannot be fooled by adulteration. You can also distinguish between current and recent use as well as the degree of impairment, whereas drug screening devices can only determine whether someone has used a particular drug in the past.

If you are interested in learning more about the inhalant class of abused drugs, call the MEDTOX DAR program at 661-993-2566 for assistance. You can also contact the DAR program via email at darsprogram@mac.com.

Inmates Released from Prison Experience High Rates of Overdose and Death

The title of this article probably doesn't surprise most of this newsletter's readers. Nevertheless, the statistics at the heart of prison inmate mortality rates are alarming. A retrospective study of over 30,000 inmates in Washington State Department of Corrections from July 1999 through December 2003 was conducted by a consortium of doctors and public health officials from Washington and Colorado, and the results of the study were recently published in the *New England Journal of Medicine*.¹

Of the 30,000 inmates studied, the majority was non-Hispanic and had stayed in prison on average between 22 and 37 months. The study followed the lives of the released inmates for a period of between 2 to 3 years. During the course of the surveillance 443 persons died; over half of this number died in the first year following release. Slightly over one percent of the studied population may not seem like a high mortality rate, but that is 3.5 times higher than the mortality rate of other Washington state residents, and death rates in the first two weeks after release were 12.7 times that of other state residents. Interestingly, the gap between inmate and non-inmates was higher between women than between men.

Drug overdose—predominately of smoked cocaine, methamphetamine, heroin, and methadone respectively—was the leading cause of death for the inmates in this study and over 50 percent of overdose deaths involved the use of two psychoactive substances. Significantly involved as the second substance involved in overdose were the benzodiazepines and alcohol, followed by tricyclic antidepressants.

Drug overdose is not the only cause of death among recently released inmates; the second most common cause of death is cardiovascular disease, which is often caused by cocaine use. Homicide is the third leading cause of released inmates' deaths, followed by lung and airway cancers. Although tobacco use has been clearly connected with both cardiovascular and cancer related deaths, little has been done to help inmates quit smoking. Within the treatment community some believe that aggressively pursuing anti-tobacco programs could actually harm inmates by pushing them to abuse illegal drugs in

place of tobacco, while others believe that anti-tobacco programs would benefit inmates by providing them with healthy behaviors to continue outside of the correctional facilities.

Although divided on the subject of the benefit of anti-tobacco programs, this study makes clear the importance of re-entry programs from institutional life to a life on the street as a free man or woman. The statistics offer sobering evidence that substance abuse problems dominate the lives of many if not most inmates. For these offenders, a stay in a state prison is a prime opportunity for intervention and treatment of substance abuse disorders. Unfortunately, drug treatment services are very limited in the corrections setting because some states prefer to relegate drug treatment services to



parole offices. The problem with sending parolees into rehabilitation programs is that they are already out of the prisons and are less likely to attend the programs. Needless to say, parole instigated substance abuse treatment is a process that is prone to failure and relapse. Rather than waiting until an inmate is released from prison to address their drug problems, why not initiate a drug rehabilitation program when the inmate has time to devote to the program?

Planning for release into the community goes beyond assessment and treatment of drug use problems. Mental illness is another health matter that deserves professional intervention as well as education, vocational training and life skill development, all critical elements in successful preparation for transition to the streets. Because it's hard for inmates to find and maintain stable jobs in the community if they relapse into drug use, drug treatment in the institutional setting is one of the most profound ways that corrections can affect public safety.

Cognitive Behavioral Intervention Versus Medical Management in the Treatment of Alcohol Dependence

For generations, there has been an intense and oftentimes emotional debate within the treatment community over the role that medical management should play in the treatment of recovering alcoholics. Alcoholics Anonymous (AA) and similar programs eschew the use of medications in the treatment of the alcoholism except in cases of acute alcohol withdrawal in which medical management is discontinued once the alcoholic patient has been stabilized. In place of medical treatments, AA relies on cognitive behavioral intervention (CBI), a method of treatment that encourages members to be aware of their actions, which patients can do by staying closely connected to a network of recovering alcoholics to draw strength from the collective will to stay sober. Treatment groups such as AA have established a remarkable rate of recovery and sobriety for those men and women who have undergone programs that use CBI. CBI must work, because many people in recovery continue attending AA meetings for many, many years.

Physicians and psychologists, unlike AA programs, use a variety of pharmaceutical products to bring about recovery and to suppress cravings for alcohol that might lead to a relapse. Oftentimes these medical management treatment professionals work in conjunction with 12-step based programs so that patients diagnosed with psychiatric and substance abuse problems might receive appropriate treatment for their conditions. Medical management (MM) has made some significant advances in the way alcoholism is treated. Physicians now draw upon a cocktail of medications to help stabilize the topsy-turvy brain chemistry that results from chronic alcohol use. The brain of an alcoholic doesn't return to normal the instant that he/she becomes sober; however receptor sites and uptake mechanisms for transmitters like dopamine, serotonin and GABA do reverse themselves over a period of several months. An alcoholic who regains sobriety can return to a normal life, but may face a lifetime of craving for alcohol. Controlling these cravings is essential to reducing alcoholic relapse.

A four arm study of alcohol dependence treatments directly compared the effectiveness of medical management to CBI. One group of patients receive medical management either naltrexone (Vivitrol), acamprosate (Campral), or a combination of both drugs along with a placebo; another group received both MM and CBI; some received CBI only; and the last group received

medical management only. The medical management process involved abstinence support in the form of support group attendance, healthcare services and medication adherence. The CBI process emphasized cognitive behavioral therapy, 12-step facilitation, motivational interviewing and support systems.

The final results demonstrated that medical management with naltrexone was significantly better than the other treatments which were not statistically different from one another. The amount of time before relapse was significantly longer with the use of medical management and naltrexone than with medical management and placebo accompanied by CBI. Surprisingly, medical management with acamprosate worked no better than medical management with placebo. Another surprise is that CBI by itself performed rather poorly. When combined with MM, CBI worked significantly better than it did as a solo therapy; however CBI in combination with MM did not do better than medical management alone. Clearly medical management should be a part of alcohol dependence treatment.

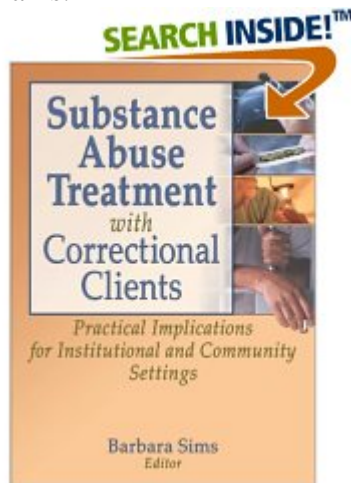
Prior DAR newsletter journals evaluate the use of acamprosate (Campral) and naltrexone (Vivitrol) in the treatment of alcohol and cocaine dependence.

DAR Newsletter Book Report: Substance Abuse Treatment with Correctional Clients: Practical Implications for Institutional and Community Settings by Barbara Sims, PhD.

Once in awhile a good book comes along that speaks to the parochial field of drug treatment within the corrections setting, this is one of those books. In *Substance Abuse Treatment with Correctional Clients: Practical Implications for Institutional and Community Settings* by Barbara Sims, the reader is given a non-technical overview of the critical issues involved with treatment of substance abusers in the corrections setting. A teacher at Penn State University-Harrisburg, Dr. Sims has cobbled together a primer on the important issues in treating substance abusers and assembled them in a logical and easy-reading order. This book doesn't deal much with psychopharmacology or biology of addiction; nevertheless it is well worth the read for any Newsletter reader or DAR student.

Because corrections has become the last resort drug treatment setting, professionals working

in this environment need to understand important aspects of psychiatry that intersect with the legal system. And because of the overwhelming impact of drugs and drug abuse on the American corrections scene, there needs to be a more sophisticated understanding of what substance abuse disorders are all about. To accurately and succinctly communicate the various concepts contained within each of the book's chapters, Dr. Sims has collected an interesting group of contributing writers; twenty one different contributors can be found advancing their ideas and suggestions in this textbook. The observations and theories are evidence based and are up-to-date. Complicated and vexing topics such as dual diagnosis disorders are dealt with in clear and concise way. The book also puts forth interesting ideas and suggestions that should be considered by managers, policy makers and politicians who have responsibilities for the operation of county, state and federal corrections programs.



This 257 page textbook is broken up into coherent and sensible sections. Part I deals with the *Nature of the Problem*. This section deals with the underlying concepts and theories that make up current substance abuse treatment programs. Indicators for success and failure in institutional treatment are also discussed in this section of the book. Part II of the book deals with experiences of current and past prison substance abuse treatment programs. Analysis of experiences to date and discussions about the expectations of inmates is found in this section. Part III of the book deals with drug diversion and drug court experiences. Practical advice for starting a court based treatment program is put forth.

Suggestions for insuring accountability and treatment success are discussed by the various contributors to this section of the book. Part IV of the book deals with special treatment populations. The matter of juvenile substance abuse treatment is one that is not well settled and it becomes a more turbulent topic when professionals discuss the differences between male and female adolescent treatment therapies. The effectiveness of counseling with female substance abusing offenders is thoroughly discussed by the various authors who contribute to that part of the book.

This book is a valuable read for anyone who is working in the corrections profession today. Professionals working in probation, parole, jails and prisons, drug courts, diversion programs and drug treatment will benefit from a read of this book. Counselors, social workers and health care workers who work with substance abusers will also come away informed and up to date at the conclusion of the book.

Substance Abuse Treatment with Correctional Clients: Practical Implications for Institutional and Community Settings by Barbara Sims, PhD. Haworth Press, 2005. ISBN 0-7890-2127-7 (paperback), \$24.95.

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