

# DARS™ Report

A Drug Abuse Recognition System Newsletter

Winter 2008/2009

## Quick Links

[Our Website](#)

[Past DARS Report Issues](#)

[Request Information](#)



If you do not wish to receive future issues of the DARS Report and/or the MEDTOX Journal, please click the unsubscribe button which can be found at the top or bottom of this email.

If you would like to forward this publication to a friend please click the link "forward email" which can be found at the bottom of this newsletter.

Thank you.



## In This Issue

- Naltrexone for Use in Methamphetamine Dependence
- Innovative Treatment for Heroin Addiction
- Issues in Detoxification from Alcohol
- Marijuana Withdrawal Syndrome

## Innovative Treatment for Heroin Addiction



Heroin (diacetylmorphine) is a powerful opiate that is abused throughout the industrialized world. For many years, heroin was approved for use in the United States to treat severe pain and serious,

uncontrollable cough.

Because heroin use rapidly escalates into abuse and addiction, the drug was banned for medical use by way of the Harrison Act in 1914. Like most intoxicating drugs and tonics that are driven underground by laws designed to control them, heroin emerged as a widely abused

## Naltrexone for Use in Methamphetamine Dependence



One

of the most vexing drug dependencies is that of methamphetamine. Known as "speed," "crank", "ice," "gak" and "crystal"; methamphetamine has emerged as the street drug with the greatest potential for harm and the most stubborn resistance to treatment. Methamphetamine works on sensitive neurotransmitters that regulate the synthesis and release of dopamine and nor-epinephrine. The most powerful of human emotions and feelings are directed and controlled by the activity of these two monoamines. Methamphetamine use, especially when abused chronically, turns the regulatory systems for dopamine and nor-epinephrine upside down. The very powerful direct effects of the drugs use means that withdrawal from it will be equally ferocious and difficult; relapses and reoccurrences in use are common if not predestined. Developing the therapies and pharmaceutical agents that can combat methamphetamine addiction has been difficult and has resulted in only marginally effective results. The search for medications that can soften the withdrawal and mute intense cravings is never ending. Recently a drug that's widely used to treat opiate and alcohol dependencies has been experimented with in treating methamphetamine-addicted patients, the results have been promising.

Because opioids receptors in the brain are co-localized, microscopic neighbors so to speak on dopamine neurons, scientific suspicion brewed that inhibition of opioid receptors next door to those of dopamine, might help reduce the action of methamphetamine as that drug seeks to activate and release stored up dopamine.

illicit drug in communities throughout America. Generations of heroin users have now come and gone, but despite the great passage of time, we have few reliable treatment programs to treat these powerful and gripping addictions. Most opiate dependency treatment programs in America involve the detoxification of addicts via use of a mixed property narcotic called Buprenorphine; if detoxification and subsequent therapy doesn't lead to sobriety, addicts are then most often prescribed methadone for what's called "opiate replacement therapy." In opiate replacement therapy, the narcotic causing a patient's addiction is substituted with a long acting, more stable narcotic such as methadone. Most methadone "maintained" patients end up permanently dependent on the daily administration of the substitute, maintenance drug. What might surprise the reader is that patients on daily replacement therapy with methadone end up holding down good jobs, raising families and leading law-abiding lives. Most of these patients will reach a natural lifespan as long as they adhere to a medically managed regimen. Recently, physicians have taken to the use of buprenorphine (product names of Suboxone or Subutex) as an alternative substitute narcotic to methadone. The FDA does not yet approve this sort of buprenorphine use, but it's likely that it will at some point in the future.

Europeans have been dealing with heroin addicts for many years longer than America has. In the 20th Century a number of European countries espoused liberal regulation of society's drug use and did so to their own detriment. Lax regulation of dangerous drug use led to legions of addicts roaming major cities in the countries involved; with unusually high unemployment rates, the ranks of addicts quickly swelled. This didn't go over too well with those who had to dodge and otherwise tolerate the behaviors of roaming addicts. Laws were then passed to tighten up the regulations that had been loosened; in fact, the Swiss decided to overwhelmingly resist decriminalization of marijuana when that topic came to a vote. This latter development in supposedly drug-enlightened Switzerland stunned many drug legalizationists here in America who believe that further decriminalization of marijuana is prudent public policy. The Swiss later voted overwhelmingly to approve the use of government supplied heroin for the maintenance type treatment of heroin addicts though. What is up with the Swiss you say? The nationwide vote to approve the heroin legislation has been hailed by experts as progressive, effective and just plain necessary.

Methadone is a powerful synthetic opiate that developed out of the demands of warfare. Nazi Germany brought about the development of the drug as the Third Reich hurried to develop a synthetic narcotic

In a Swedish study, naltrexone was studied for its role in reducing the cravings and direct effects of methamphetamine[1]. Methamphetamine using patients using naltrexone reported substantial reductions in the impact of methamphetamine's central effects; they also reported that in abstinence, their cravings for methamphetamine were markedly reduced.

Naltrexone is a drug that has been in use since the late 60's. The drug is a powerful antagonist at all three major opiate receptor sites. By locking up the opiate receptor sites in the brain, naltrexone prevents powerful agonists like heroin, morphine and oxycodone from getting to them. The drug is approved for use in the treatment of opiate and alcohol dependency. The sustained release form of naltrexone (Revia) has garnered high marks for its ability to reduce cravings in the treatment of alcoholics. In the case of Revia, a dose of the drug is injected intramuscularly and is slowly absorbed into the circulatory system over a period of 4 weeks. With structural chemistry similar to the powerful opiate oxymorphone and that of a like-acting cousin called naloxone (Narcan), naltrexone is a well-tolerated drug with few side effects. Naltrexone users must understand however that when taking the drug, their opiate receptors are blocked and that should an opiate need to be administered to them for severe pain, opiate receptors would be locked up and unusable for analgesia. Physicians have several medications as options to use in situations like that, but it is important that naltrexone patients understand the change in brain chemistry that's occurred with the use of the drug.

The study undertaken by the Swedish government clearly points out naltrexone's abilities in reducing and muting the effects of methamphetamine on dopamine nerve cells in the brain. By diluting the intensity of craving for the drug, methamphetamine addicts find it easier to maintain their sobriety and to participate in activities and therapies that support a sober lifestyle. What remains to be seen, what wasn't evaluated in this study is the direct effects that naltrexone has on rates of relapse in methamphetamine addiction. Perhaps this will be the next area of study in the use of this drug. In

before they were cut off from opium growing countries controlled by the Allies and the Japanese. Without opium, the Germans would have been unable to synthesize and produce the morphine needed to treat battlefield wounds. Methadone worked and it worked well. The drug had several advantages over morphine and other morphine-like drugs, its span of action was longer and the traditional opiate caused side effects seemed to be fewer. Following the conclusion of the war, the drug made its way into the pharmacies of most industrialized societies. Although it is not a widely popular pain reliever, the drug is a critical tool to treat chronic and intractable pain; methadone is also an important alternative for patients who are allergic to morphine and codeine products and who need relief from moderate to severe pain. In post-World War II America, heroin abuse finally took a firm grip in many major American cities. Heroin addiction spurred the emergence of a variety of different types of crime, crimes that funded addicts' nearly \$100 a day tab that's required to sustain a heroin dependency. Addiction specialists at that time realized that traditional alcoholic styled detoxification programs didn't work all that well when applied to heroin addicts. In recovery from heroin dependency, relapse was frequent. Out of the necessity to find something that worked to treat heroin addiction, methadone has emerged as a chemical substitute.

Methadone as opiate replacement therapy works for a good number of those patients who are heroin dependent. For some types of heroin addicts though, methadone is merely a chemical speed bump and may actually fuel expanded use of illicit opiates; some intrepid heroin addicts combine or inject heroin "on top" of methadone. Others on methadone turn to the combinant use of benzodiazepine dugs like Xanax and Valium, these drugs are taken with methadone and in combination they create a heroin-like euphoria. Intravenous injection (IV) of heroin is a powerful intoxicant in and of itself. Heroin addicts frequently remark that IV use and all the preparations leading up to an injection of the drug are responsible for "needle addiction." Efforts to transition addicts from IV administered heroin to orally administered methadone often fails, sometimes the failure is due to the craving for heroin that an addict feels because of the "needle addiction." The addiction and dependency associated with heroin use is complicated and must be viewed in a most circumspect way. This is how the Swiss saw their heroin problem and it spurred their selection of a unique but questionable solution.

The Swiss public voted on and passed legislation that enables and empowers public health authorities to administer pure heroin to addicts who've demonstrated an inability to be detoxified and/or be maintained on methadone. These "failed" addicts are assessed and examined by physicians and enrolled in a strictly managed program.

any case, the Swedish study points out the value that naltrexone has in aiding the methamphetamine addict through recovery.

[1] Jayaram-Lindstrom N et al. Naltrexone for the treatment of amphetamine dependence: a randomized, placebo-controlled trial. *Am J Psychiatry* 2008 Nov; 165:1442

## Issues in Detoxification from Alcohol



Just about anyone who regularly, or even periodically consumes alcohol will develop some

level of tolerance to it. For many alcoholics, consumption of the drug becomes a round the clock endeavor and significant tolerance to it occurs. The body becomes accustomed to the maintenance of a certain level of the drug in the system, when the concentration of alcohol dips below a so-called "alcohol maintained baseline", a 24 hour average so to speak, an alcoholic will begin to experience the ill-effects of alcohol withdrawal. Withdrawals typically begin within a few hours of the last drink. Depending on the severity and the length of a person's drinking career, the extent of alcohol withdrawals will vary. For some drinkers, withdrawal is little more than a feeling of unease and a set of disturbances to sleep patterns. For a chronic drinker and alcoholic, withdrawal may pose a set of serious symptoms and conditions that are life threatening. Seizures associated with alcohol withdrawal can be fatal and requires aggressive medical intervention. For alcoholic patients who present with extensive histories of alcohol abuse, physicians are likely to prescribe an array of medications designed to mitigate withdrawals and reduce the severity of cravings that persist in sobriety.

Gross classified alcohol withdrawal[1] as being

Twice a day, heroin addicts stop by an assigned treatment clinic and are provided with an appropriate dose of heroin, a clean needle and a syringe. The addicts are required to use antiseptic procedures in their preparation of an administered dose. The addicts themselves prepare the heroin containing solution and administer the drug by IV themselves. All of this is witnessed and supervised by registered nurses or physician assistants who are on hand. Following the administration of the heroin, the addicts are free to return to work, go home or to do whatever it was that they were doing beforehand. Because of a physiological tolerance to heroin, these patients will exhibit very little if no signs of opiate intoxication.

Programs similar to what the Swiss have embarked on have been undertaken in Germany and the United Kingdom. Results indicate that this sort of program is effective for the most inveterate of addicts who meet criteria to enter it. The principal reason for the efficacy of this program is that it allows addicts to continue intravenous injection of an opiate and to do so with antiseptic procedures and protections, clean needles and syringes are the centerpieces of the process. Of obvious importance is that the heroin is provided to addicts for free. No longer does an addict have to steal and scam in order to get money needed to buy the drug, the government subsidizes it. The addict doesn't have to descend into the black market drug-dealing world in order to buy or barter for drugs. In this sort of system, a variety of services can be organized and directed towards the addict with the goal of taking the next step towards detoxification or long-term management on an orally administered drug such as methadone or buprenorphine. To date, the program has worked well; few problems have emerged. The patient population has been kept small and it is very carefully managed. At this point in time statistics tend to indicate that program compliance is high and relapse or dropout rates are low.

It is unlikely that a program such as this would survive the gauntlet of public opinion here in the United States. In America, we have some very effective treatment protocols for IV heroin users in America; our biggest challenge is increasing access for addicts to treatment opportunities. The emergence of buprenorphine as a means of narcotic detoxification has been a profound step beyond the standard application of methadone maintenance (opiate replacement) for opiate addicts.

*(Questions that readers have about the applications of methadone and Buprenorphine in the treatment of opiate dependency can be directed to the physicians and DAR experts at MEDTOX. Our personnel can be reached 365 days a year by emailing us at [DARSProgram@mac.com](mailto:DARSProgram@mac.com))*

comprised of a series of factors. Factor One is associated with hallucinogenic symptoms that included but were not limited to visual disturbances, ringing in the ears, numbness in extremities, muscle pain, sleep disturbances, agitation and auditory hallucinations. Factor Two involves affective and physiological expressions of withdrawal such as depression, anxiety, excessive sweating, muscle tremors and spasm. Factor Three is associated with a delirium state consisting of an impaired sense of consciousness, a disconnection from surroundings and degradation in the ability to communicate and comprehend in the microenvironment. Factors One and Two are usually experienced and exhibited at various stages of withdrawal; Factor Three is expressed in stages, drinking and withdrawal from drinking. Factor Three comprises several disease progression landmarks that often are components of end-stage alcohol abuse.

For many patients, if not a majority of alcoholic patients, withdrawal is very manageable and treatment has few complications. For others though, withdrawal is wrought full of medical and psychological challenges that necessitates the skillful use of medications and therapies. Many MEDTOX government customers are personnel who are working in drug rehabilitation programs, drug courts and rehabilitation units of the legal system, family and child welfare and/or community corrections agencies (pretrial, probation and parole). Dealing with clients who are being treated for alcohol abuse can be tricky for our customers, especially if alcoholic clients are being regularly tested for drugs of abuse. Clients in treatment may be prescribed a wide array of medications to assist them in managing the uncomfortable and sometimes disabling effects of withdrawal and abstinence. The DAR Hotline system receives a steady stream of inquiries from callers who have questions about medications that their clients may be taking as part of their medical treatment. Being familiar with some of the medications and therapies used in treatment of the alcoholic will make the job of supervising them easier.

For MEDTOX customers, their alcoholic clients who

## Marijuana Withdrawal Syndrome



For many years now, addiction professionals have claimed of a noticeable syndrome developing with users who suddenly stop smoking marijuana. A hallmark phenomenon that occurs with the use of powerful stimulant and depressant drugs, withdrawal syndrome is

an uncomfortable and often painful experience that results from extended, chronic administration of a drug. Typically withdrawal syndrome presents with symptoms that appear to be the exact opposite of an abused drug's direct effects. Until now, DSM-IV failed to include marijuana withdrawal as a syndrome worthy of diagnosis and treatment. But the National Epidemiologic Survey on Alcohol and Related Conditions examined a group of over 1100 regular marijuana users who didn't binge drink or regularly use other drugs or narcotics. The respondents in the survey pointed to a marked set of symptoms that were experienced when they suddenly stopped the consumption of marijuana, the symptoms immediately resolved when marijuana use was restarted[1]. Withdrawal and abstinence syndrome symptoms are attributed to the action that THC and other cannabinoids have on sensitive receptors in the mid-brain. Cannabinoid receptors and relevant transmitters are not entirely understood but are known to influence serotonin, dopamine, acetylcholine and GABA in the brain. Respondents to the marijuana withdrawal syndromes survey represented 44% of all those who admitted to regular use of marijuana. Those who responded to the survey reported three or more symptoms of cannabis withdrawal syndrome. Two types of withdrawal symptoms emerged in the survey, somatic and psychological. Somatic related symptoms of withdrawal included weakness, psychomotor retardation and sleep disturbances. Psychological symptoms included depression, hyper anxiety and panic disorder. Respondents who experienced personality disorders concurrent to the use of cannabis, found that the underlying personality problem was exacerbated and more pronounced upon withdrawal from marijuana.

This study points to the difficulties that a substantial number of marijuana users have in trying to stop using the drug and/or in maintaining periods of sobriety or non-use. Not all marijuana users

are being regularly drug tested will frequently produce positive screens and confirmations for the presence of benzodiazepines. The majority of alcohol related Hotline calls involve inquiries about client drug test results that indicate the use of drugs such as Valium (diazepam), Ativan (lorazepam), oxazepam and Librium (chlorodiazepoxide). These drugs are all principal members of a class of sedative-hypnotic substances called the benzodiazepines. MEDTOX onsite drug screens refer and mark these drugs as, "BZO." These medications all act on core sets of receptors and chemical messenger systems in the brain. Used regularly to treat acute withdrawal (alcohol and other abused substances), this class of drugs is also warranted for use in treating post-withdrawal anxiety, sleep disorders and agitation. At some point following the end of physical withdrawal, physicians will taper the use of a benzodiazepine until a patient is drug free.

This class of drugs are typically used for up to six weeks following cessation of drug withdrawal. Librium (chlorodiazepoxide) seems to be the drug of choice in most alcohol withdrawal cases; it's viewed as the most effective, it is longer acting than other drugs of the same class. Librium's sedative effects produce less euphoria than Valium and Ativan. Each of these drugs each have a distinct profile that makes them suited to deal with specific situations that a patient may present with. In some cases, patients who have stopped taking benzodiazepines for weeks, still produce positive drug test results. This situation occurs most commonly with extended use of Librium or oxazepam; these two benzodiazepines can take 2-3 weeks, sometimes longer to be fully eliminated from the body. Liver disease complicates this situation and can extend detection periods for nearly all of these drugs.

Following detoxification and the acute period of distress experienced in withdrawal, physicians may reach for other (non-benzodiazepine) drugs that may help ease drug cravings that are experienced once detoxification has been achieved. A variety of non-habit forming medications have emerged as potent

experience this syndrome when they try to quit, but this survey reveals that a very substantial minority does have to weather the symptoms and discomfort. Motivated addicts may find it very difficult to stop marijuana use and may need pharmacologic assistance in completing the task. Additionally, the research indicates that people seeking to stop marijuana abuse may switch to other drugs of abuse to ease the discomfort and pain of withdrawal. Authors and experts associated with this study argue for cannabis withdrawal syndrome inclusion in DSM-V. For addiction, community corrections and rehabilitation professionals, marijuana abuse is no laughing matter. Ignoring use and abuse of marijuana as nothing more than a harmless vice is unwise, especially in light of still increasing purity in THC concentration of commercial grade marijuana sold on the street. Prior essays in the DARS Newsletter have cast light on the profound effects that cannabis use has on the anatomy of the brain and the functioning of the limbic system. Marijuana abuse should be taken seriously by all professionals who work with those who smoke it. Efforts should be made to guide marijuana users to programs and experts who specialize in the treatment of that type of addiction and dependency.

[1] Hasin DS et al. Cannabis withdrawal in the United States: Results from NESARC. J Clin Psychiatry 2008 Sep; 69:1354.

## MEDTOX DARSTM



The DAR Hotline is a special feature of MEDTOX's Clear

Course Program. This uniquely designed protocol was developed for use by our probation, parole, drug rehabilitation and public safety clients. The Drug Abuse Recognition (DAR) program is central to the services that we provide through Clear Course. Please Lisa Mize at: [lmize@medtox.com](mailto:lmize@medtox.com) if you are interested in more information about this highly effective approach for the management of substance abuse problems.

Want to contribute to the DARSTM Report? Please send your article(s) to the address below. Keep in mind MEDTOX reserves the right to omit or edit submissions. Articles will not be returned.

Send your articles, questions and/or comments to:

adjuncts in the blunting of alcohol cravings, the principle cause of alcoholic relapse. Researchers have found that a class of medications that reduce blood pressure work well in the tempering of drug cravings; they also seem to lessen the extent of other withdrawal related symptoms. Known as calcium channel blockers, these medications slow the rate of hyper chemical messenger activity that is spurred when an addict withdraws from drugs.

In the case of alcohol withdrawal, calcium channel blockers temper the firing of excitatory neurotransmitters in the brain. When this happens, a patient typically feels less anxious and less needy for the drug they've withdrawn from. More commonly used drugs in this class are metoprolol (Lopressor and Toprol); other related medications such as clonidine (Catapres) also find their way into the treatment plan for an alcoholic. These drugs are also used to treat cocaine and opiate addicts in withdrawal and post-withdrawal phases of treatment as well. These medications will not interact with onsite devices to cause a false positive test result.

Naltrexone (Revia) is the latest pharmaceutical agent to be FDA approved and utilized in the treatment of alcohol abuse disorders. This drug is a unique substance in that it is a chemical cousin, a near-clone to the potent narcotic, oxymorphone. Unlike its chemical cousin, naltrexone does not activate (non-agonist) the opiate receptors that it binds to. Naltrexone conforms to and binds at opiate receptors and blocks them from accepting other exogenous types of opiates such as heroin, oxycodone, hydrocodone and methadone.

In the form of Revia, naltrexone is administered intramuscularly. The drug is absorbed into the bloodstream on a continuous basis for up to 30 days. Patients who are prescribed Revia have to be careful of the medical complications that can arise. The most serious concern is that a patient who takes Revia will be unable to receive narcotic pain relief from other opiates. Should a patient break a leg for instance and be in need of an opiate to relieve the pain, standard

Lisa Mize  
[lmize@medtox.com](mailto:lmize@medtox.com)

or

Don MacNeil [DARSProgram@mac.com](mailto:DARSProgram@mac.com)

The information in this publication is not intended to replace the services of a trained legal or health professional. Neither the contributors nor MEDTOX Laboratories, Inc. is engaged in rendering legal, psychological, health or other professional services. The contributors and MEDTOX Laboratories, Inc. specifically disclaim any liability, loss or risk, personal or otherwise, which is incurred as a consequence, directly or indirectly, of the use and application of any of the contents of this publication.

**Don MacNeil**



Don MacNeil, M.S. is a retired lieutenant of the Glendale Police Department, a former chairman of the California Narcotics Office Association (CNOA) Region III, CNOA executive board member and training conference chairman. He was the 1990 CNOA Al Stewart Award winner. He led the NHTSA/OTS grant program that developed the original Drug Abuse Recognition program. Mr. MacNeil is the Director of Criminalistics and Addiction Medicine Services for MEDTOX Scientific, Inc.

narcotics would not be able to overcome the receptor blockade caused by naltrexone. Naltrexone's ability to reduce alcohol craving is very interesting because its occupancy and blockage of opiate (narcotic) receptors in the brain ultimately leads to reductions in the craving for alcohol, a drug that's very different than a narcotic. There is much to learn about the interaction of opiate receptors and alcohol activity in the brain.

Another drug worthy of comment is Campral (acamprosate). Available in instant and controlled release forms, it's believed that Campral works similarly to metoprolol and clonidine in slowing down excitatory messages in the brain, excitatory messages associated with craving and the chemical disruptions caused by alcohol abuse. There's a great deal of debate in the medical community whether or not Campral has any meaningful effectiveness beyond that of a placebo effect, but given it's few side effects, the drug seems to be frequently prescribed to alcoholics. It is likely that the addiction medicine community will do more research and analysis of Campral. Campral will not cross react with assays used in MEDTOX onsite drug kits.

The last meaningful medication used in the treatment of alcoholism is the its oldest one. Antabuse (disulfiram) is a unique substance that works in the role of aversion therapy. This drug does nothing to quell alcohol cravings or mitigate withdrawal, it has no impact excitatory messenger systems in the brain, and it's certainly not an opiate. Antabuse is a drug that disrupts the metabolism of alcohol in the bloodstream. The drug blocks an essential step in the breakdown and elimination of alcohol, as a consequence of this inhibition, a noxious alcohol byproduct quickly builds up in the bloodstream to a point where nausea and vomiting are triggered. Antabuse essentially causes an alcohol allergic reaction when a patient taking it decides to drink. Because its effects are well known and well understood, patients taking it are strongly motivated to avoid consumption of alcohol. The drug is not sedating, it has no long-term side effects, although some patients claim that their sense of taste is changed, some have reported ringing in the ears

## DARS Courses

MEDTOX provides clients with the following training opportunities. MEDTOX training programs are California POST, BBS and STC, CAADAC and OASAS certified and approved.

- \*Standard Drug Abuse Recognition (DAR)
- \*Rapid Eye Drug Abuse Recognition (DAR)
- \*Street Development
- \*Club Drugs and Trends in Adolescent Drug Abuse
- \*Managing Methamphetamine
- \*Understanding Dual Diagnosis: The Crossroads of Substance Abuse Disorders and Mental Illness
- \*Ethics and Professional Standards for Community Corrections
- \*Current Issues in Leadership and Supervision
- \*Pharmacology of Drug Abuse
- \*The Essentials of Search Warrant Development
- \*The Essentials for Social Workers and Family Counselors I-IV
- \*Grant Writing and Non-Traditional Fund Raising for Public Organizations

If your organization is interested in hosting one of the above training courses, would like to know where/when a course is available or would like further information, please contact Lisa Mize at: [lmize@medtox.com](mailto:lmize@medtox.com)

## Training Schedule

January 29 - Los Angeles (CA): Trends in Drug Use (short course format)

February 5-6 - Milwaukee (WI): Standard DAR (Includes Rapid Eye Technique)

February 9-12 - Dallas (TX): Rapid Eye DAR, Street Development & additional TBA topics

March 2 - Los Angeles (CA): Rapid Eye DAR

April 29-30 - Honolulu (HI): Street Development & Rapid Eye DAR

For more information regarding the upcoming trainings and to

(tinnitus); liver enzymes need to be periodically assessed while taking this drug. Antabuse will not interact with assays found in MEDTOX's onsite devices.

In managing your cases involving alcoholics in recovery, readers are likely to encounter one or more of the drugs mentioned above. Alcoholism is a chronic disease that patients don't ever recover from. Instead, patients find themselves in a perpetual state of recovery, an on-going process of treatment and personal effort. Various support networks exist to aid in recovery. Alcoholics Anonymous is just one example the support networks that exists for alcoholics. Some of these support groups ban or look down upon member's use of drugs prescribed to help their recovery. But the reality of recovery is that there are a variety of medications that have proven themselves to be worthy aids in the journey down the road of substance abuse disorder recovery.

[1] Gross, M. M. (1977) Psychobiological contributions to the Alcohol dependence syndrome: a selective review of recent research. In Alcohol Related Disabilities (eds G. Edwards, M. M. Gross, M. Keller, et al). WHO Offset Publication No. 32. Geneva: World Health Organization.

check availability please contact Lisa Mize at: [lmize@medtox.com](mailto:lmize@medtox.com) or Don MacNeil at: [darsprogram@mac.com](mailto:darsprogram@mac.com) or [dmacneil@medtox.com](mailto:dmacneil@medtox.com)



MEDTOX Scientific, Inc. ~ 402 West County Road D  
Saint Paul ~ Minnesota ~ 55112 ~ 800-832-3244  
[www.medtox.com](http://www.medtox.com)

Email Marketing by

