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Medications Used in the Treatment of Addiction

Developed by Randall Webber, MPH

Alcohol Withdrawal

MEDICATION	MECHANISM OF ACTION	EFFECTS	SIDE EFFECTS
Long/intermediate-acting benzodiazepines (e.g., chlordiazepoxide/ Librium, diazepam/Valium)	Acts on the GABA benzodiazepine sub-receptor	Suppresses withdrawal symptoms	Not common during short-term use. Sedation occurs if too high a dose is administered.
Barbiturates (e.g., phenobarbital). Rarely used anymore.	Enhance action of GABA	Suppresses withdrawal symptoms	Not common during short-term use. Sedation occurs if too high a dose is administered.

Alcohol Relapse

MEDICATION	PRIMARY USE	MECHANISM OF ACTION	EFFECTS	SIDE EFFECTS
Disulfiram (Antabuse)	Post-withdrawal relapse prevention	Stops metabolism of alcohol at acetaldehyde level	Consumption of alcohol cause facial flushing, nausea, headache, vomiting, elevated blood pressure and pulse rate	Uncommon: mild drowsiness, impotence, headache, acne, rash, metallic or garlic-like aftertaste.
Naltrexone (ReVia/Depade/Vivitrol[1])	Post-withdrawal relapse prevention	Blocks brain opiate receptor sites	Diminishes pleasurable effect of alcohol consumption	Uncommon: nausea, headache, dizziness, fatigue, insomnia, anxiety, sleepiness
Nalmefene (Redex)	Post-withdrawal relapse prevention	1) Blocks brain opiate receptor sites; 2) Some dopamine blocking ability	Diminishes pleasurable effect of alcohol consumption via both mechanisms	Uncommon: nausea, dizziness, fever, headache, chills or muscle aches.
Acamprosate (Campral)	Post-withdrawal relapse prevention	Suppresses alcohol cravings by "rebalancing specific brain chemicals (e.g., GABA and glutamate) thrown out of balance by chronic and excessive alcohol consumption	Diminishes alcohol craving	Dizziness, drowziness, diarrhea, Rare: depression, suicidal ideation

[1] Once a month "depot" injection. Available June 2006.

Alcohol Relapse

MEDICATION	PRIMARY USE	MECHANISM OF ACTION	EFFECTS	SIDE EFFECTS
Ondansetron (Zofran)	Post-withdrawal relapse prevention (most effective with early-onset/male-limited alcoholics)	Rebalances serotonin dysregulation	Appears to decrease relapse rates by reducing the depression, anger and hostility that presumably contribute to problem drinking in the male-limited population	Uncommon: Diarrhea, constipation, headache, lightheadedness, drowsiness, blurred vision
Topiramate (Topamax)	Post-withdrawal relapse prevention	Reduces alcohol craving	Not well understood. Acts on dopamine and glutamate	Occasional dizziness, tingling in the skin, psychomotor slowing, word-naming difficulties, weight loss

Opiate Withdrawal

MEDICATION	PRIMARY USE	MECHANISM OF ACTION	EFFECTS	SIDE EFFECTS
Clonidine (Catapres)	Opiate withdrawal	Reduces selected symptoms of opiate withdrawal by suppressing over activity of the locus coeruleus	Suppresses most opiate withdrawal symptoms, but is less effective than methadone in reducing insomnia, muscle and bone pain, and craving. May be supplemented with prescription or over the counter medications for gastrointestinal distress.	Sedation, dizziness, low blood pressure.
Lofexidine (Britlofex)	Opiate withdrawal	Reduces selected symptoms of opiate withdrawal by suppressing over activity of the locus coeruleus	Same as clonidine.	Sedation, dizziness, low blood pressure. Incidence less common than is the case with clonidine.

Opiate Withdrawal and Substitution Therapy

MEDICATION	PRIMARY USE	MECHANISM OF ACTION	EFFECTS	SIDE EFFECTS
Dolophine (Methadone) Methadone is a *full opiate agonist*	Opiate withdrawal and/or substitution therapy	Preferential opiate agonist. (Occupies brain opiate receptor sites and "binds more readily than heroin and most other opiates).	Suppresses opiate withdrawal symptoms for an average of 24 hours, blocks heroin and most other opiates from producing an effect[2].	Increased sweating, dry mouth, constipation, water retention, weakness, impotence, difficulty achieving orgasm. Sedation, drowsiness and other opiate effects occur when too high a dose is administered. Very rarely, clients will experience anaphylactic shock (hives; difficulty breathing; swelling of your face, lips, tongue, or throat). Methadone must be permanently discontinued if this reaction occurs.

[2] The opiate blocking effect can be overcome, but only with a very high dose of heroin or another opiate.

Opiate Withdrawal and Substitution Therapy

MEDICATION	PRIMARY USE	MECHANISM OF ACTION	EFFECTS	SIDE EFFECTS
1) Buprenorphine (Subutex) 2) Buprenorphine with naloxone (Suboxone)[3] Buprenorphine is a *partial opiate agonist*	Opiate withdrawal and/or substitution therapy	Buprenorphine: Opiate agonist (Occupies brain opiate receptor sites.) Naloxone: Opiate antagonist (Blocks brain opiate sites).	Suppresses opiate withdrawal symptoms for an average of 24 hours. Has a "ceiling" effect (after a certain dose has been reached, will no longer produce opiate agonist/morphine-like actions, but instead acts as an antagonist, precipitating opiate withdrawal. Suboxone: Produces the same effect as above, but if injected, the naloxone acts as an opiate antagonist. Produces less sedation and respiratory depression than methadone.	Same as methadone, but anaphylactic shock seems even less common.

[3] Both of these medications are administered sublingually (under the tongue).

Post-Withdrawal Opiate Dependence Treatment

MEDICATION	PRIMARY USE	MECHANISM OF ACTION	EFFECTS	SIDE EFFECTS
Naltrexone	Post-withdrawal opiate relapse	Generally administered by mouth, but using any means of administration, acts as an opiate antagonist, occupying and blocking brain opiate receptor sites.	Blocks the action of any opiate agonist.	Nausea, headache, dizziness, fatigue, insomnia, anxiety, sleepiness. None of these side effects occurred in more than 10% of users.

MEDICATIONS USED IN THE TREATMENT OF COCAINE DEPENDENCE

No medications are normally needed in the treatment of cocaine withdrawal.

The use of only one medication (disulfiram/Antabuse) has shown consistently positive results in reducing cocaine relapse. This success, more pronounced in men than women, is tied to two of disulfiram's actions:

1. Production of the acetaldehyde effect if the client consumes alcohol (alcohol use is a major antecedent of cocaine relapse).
2. Increase in the unpleasant aspects of cocaine intoxication. Disulfiram is believed to facilitate massive increases in brain levels of dopamine. Normally, increases in brain dopamine are tied to pleasurable reactions, but the rise in dopamine produced by the combination of cocaine and disulfiram appears to override such rewarding effects by increasing the incidence of such cocaine-associated effects as paranoia and anxiety.

These medications are currently being tested as possible pharmacologic adjuncts to cocaine dependence treatment:

- SR141716 (Rimonabant). This is a cannabis antagonist that has been shown to reduce cocaine self-administration in mice. This medication is still undergoing clinical trials and is not available to the general medical community.
- Modafinil (Provigil). This medication is currently used to treat narcolepsy. Human research has shown that using this drug in combination with cognitive behavioral therapy may decrease relapse rates in cocaine dependent clients. Modafinil works through the glutamate neurotransmitter system.
- Topiramate (Topamax). This medication is currently used to treat seizure disorders. At least one short term (13 weeks) human study has shown that by affecting levels of the

neurotransmitters GABA and glutamate, topiramate may reduce cocaine relapse rates among a specific population: male African-Americans who have been assessed as having a “milder” form of cocaine dependence.

MEDICATIONS USED IN THE TREATMENT OF BENZODIAZEPINE AND SEDATIVE-HYPNOTIC DEPENDENCE

Pharmacological treatment of benzodiazepine and sedative-hypnotic dependence is confined to the management of withdrawal. Long-acting members of both drug classes are first substituted for the substance on which the client is dependent, then the dosage of the new drug is gradually reduced. Librium is usually used to treat benzodiazepine withdrawal and phenobarbital to treatment dependence on both barbiturates and non-barbiturate hypnotics.

GLOSSARY

Agonist: A drug that occupies (binds to) a neurotransmitter's receptor site and causes an action to occur.

Antagonist: A drug that occupies (binds to) a neurotransmitter's receptor site, but does not produce an action. Will block neurotransmitters and drugs from occupying the receptor site.

Full Agonist: A drug with no antagonist effect.

Opiate Substitution Therapy: The replacement of one opiate (e.g., heroin) with another opiate (e.g., methadone, buprenorphine) that has a lower abuse potential and more therapeutic benefits.

Partial Angonist: A drug with weak antagonist effects. In some cases, acts as an agonist at lower doses and an antagonist at higher doses.

Consumer Guide to Medication-Assisted Recovery

There is growing recognition of the potential role of medications in helping initiate and sustain recovery from severe and persistent substance use disorders. Growing numbers of recovery advocacy organizations are helping educate those seeking recovery about the potential advantages and pitfalls of medications in the treatment of addiction. One of the most notable of such efforts is *PRO-ACT's Consumer Guide to Medication-Assisted Recovery* developed by the Pennsylvania Recovery Organization—Achieving Community Together. The Guide addresses such topics as *What is medication-assisted recovery?* and discusses such medications used in the treatment of alcohol and opioid dependence as antabuse®, naltrexone, methadone, buprenorphine (Suboxone®), and Campral®.

Information on how to get copies of *PRO-ACT's Consumer Guide to Medication-Assisted Recovery* can be obtained by contacting PRO-ACT at 444 North 3rd Street, Suite 307, Philadelphia, PA 19123, (215)279-8694 Email: info@proact.org.