

## Module 4: Detoxification

*Duration: 80 minutes*

**Goal:**

- ♦ To describe a generic approach to detoxification and to provide a forum for discussion of specific procedures used in the detoxification of individuals from each of the three relevant categories of drugs (depressants, opiates, and stimulants).

**Objectives:**

Following this module the participant will be able to:

- ♦ Describe the generic process of detoxification.
- ♦ Describe the detoxification treatment of depressant withdrawal.
- ♦ Describe the detoxification treatment of opiate withdrawal.
- ♦ Describe the detoxification treatment of stimulant withdrawal.

**Teaching Activities**

Overview of the detoxification process	15 minutes
Detoxification from depressants	20 minutes
Detoxification from opiates	15 minutes
Detoxification from stimulants	10 minutes
Discussion of treatment	15 minutes
Summary	5 minutes

**Teaching Format**

This training module is designed to be delivered primarily in a classroom / didactic lecture format. The design will incorporate a method which presents accepted data for presentation in a medical school environment. Information will be presented by the instructor for facilitated discussion of some concepts.

***Suggested Literature***

Ball, J., & Ross, A. (1991). The effectiveness of methadone maintenance treatment. New York: Springer-Verlag Publications.

Kosten, T. R. (1990). Current pharmacotherapies for opioid dependence. Psychopharmacology Bulletin, 26, 69-74.

Meyer, R. E. (1992). New pharmacotherapies for cocaine dependence — revisited. Archives of General Psychiatry, 49, 900-904.

Schuckit, M. A. (1995). Drug and alcohol abuse: A clinical guide to diagnosis and treatment (4th ed.). New York: Plenum.

Schuckit, M. A. (1995). Educating yourself about alcohol and drugs. New York: Plenum.

Schuckit, M. A. (1995). The histories of withdrawal convulsions and delirium tremens in 1648 alcohol dependent subjects. Addiction, 90, 1335-1347.

Schuckit, M.A. (1996). Recent developments in the pharmacotherapy of alcohol dependence. Journal of Consulting and Clinical Psychology, 64, 669-676.

Sellers, E. M. (1988). Alcohol, barbiturate and benzodiazepine withdrawal syndromes: Clinical management. Canadian Medical Association Journal, 139, 113-120.

## Teaching Outline

### Module 4. Detoxification

#### **Note to Instructors:**

*Before starting to teach you may want to review the goals and objectives of this module.*

*Deliver the following information.*

*OHD/Slide 4.1 on screen.*

*Refer HO4.1.*

#### **I. Detoxification**

- A. Detoxification is only appropriate for depressants, opiates, and stimulants.
- B. Repeated heavy intake of other classes of drugs may be associated with a relatively mild rebound phenomenon but these states are not usually clinically significant.
- C. For each of the three classes of drugs for which withdrawal can occur, the symptoms observed are relatively unique to that class.

*Emphasize the importance of the next statement.*

The withdrawal or abstinence syndrome generally involves symptoms that are the opposite of the acute effects for that class of drugs.

*Provide a description of the characteristics of withdrawal involved in the three classifications of drugs.*

*OHD/Slide 4.2 on screen.*

*Refer to HO4.2.*

#### **D. Depressants**

- 1. For brain depressants, intoxication involves:
  - ♦ sedation
  - ♦ sleepiness
  - ♦ decrease in vital signs
- 2. Many of the drugs in this class were also useful in treating tremor, convulsions, and muscle spasms (ex. benzodiazepam, Dilantin, etc.).

3. Withdrawal from brain depressants is likely to involve:
  - ♦ anxiety
  - ♦ insomnia
  - ♦ increase in vital signs (increases in pulse, respiratory rate, blood pressure, and body temperature)
  - ♦ tremor, perspiration, and other signs of autonomic nervous system over activity
4. Severe delirium (agitated confusion) or grand mal convulsions are seen in less than 5% of cases of alcohol withdrawal, although the rates are higher for the other brain depressants.

#### B. Opiates

1. Following the guideline that withdrawal symptoms are the opposite of the acute effects of the drugs, the abstinence syndrome from opiates includes:
  - ♦ a cough
  - ♦ runny nose
  - ♦ diarrhea
  - ♦ abdominal pain
  - ♦ pain in muscles and joints
  - ♦ agitation

#### C. Stimulants

1. The withdrawal syndrome from stimulants involves:
  - ♦ fatigue
  - ♦ sleeping too much
  - ♦ eating too much
  - ♦ depression
  - ♦ feelings of guilt and worthlessness
  - ♦ some physiological alterations (e.g., increases in hormones such as prolactin that are likely to be decreased following the acute administration of stimulants).

## **II. *Duration of Withdrawal***

*OHD/Slide 4.3 on screen.*

*Refer to HO4.3.*

- A. The time course of withdrawal is predicted by the half-life of the drug on which the individual is physically dependent.
- B. For most drugs with relatively short half-lives (e.g., alcohol, heroin, cocaine, and short-acting benzodiazepines such as oxazepam (Serax)), withdrawal symptoms:
  - ♦ begin within hours of decreasing the dose of the drug
  - ♦ are likely to peak in intensity on approximately day two
  - ♦ are likely to be greatly improved by day four or five
- C. Symptoms for drugs with very long half-lives (e.g., diazepam [Valium] or methadone)
  - ♦ might not begin for several days to a week
  - ♦ peak in intensity during week two
  - ♦ might not diminish until week three or four
- D. All types of acute withdrawal syndromes are likely to be followed by a much milder residual level of symptoms for two to six months or so.
- E. During this period of time these protracted withdrawal symptoms continue to decrease in intensity.
- F. None the less, they are disturbing to the patient and might partly explain why the highest rates of relapse occur during the first six months of abstinence.

### **III. Treatment in Detoxification**

*OHD 4.4 on screen.*

*Refer to HO4.4.*

- A. The cornerstone of treatment for all withdrawal syndromes is a thorough physical examination.
- B. It is likely that a withdrawal state developing in the context of pre-existing medical problems will tend to be more severe than an abstinence syndrome occurring in the absence of physical pathology.
- C. All medical problems must be addressed as rapidly as possible.
- D. **All** states of withdrawal are likely to respond to education and reassurance.

- E. Teaching patients that the symptoms are temporary, are likely to dramatically improve fairly quickly, and that those delivering care should understand the syndrome, assists patients to begin their recovery period.
- F. Many alcohol treatment programs use a physical examination along with education and reassurance, and do not offer medications to all patients for detoxification.
- G. Education, reassurance, and efforts to optimize physical functioning form the basis of **all** that is offered to individuals undergoing withdrawal from stimulants.
- H. Medications during Detoxification

*OHD/Slide 4.5 on screen.*

1. Medications can be used for depressant and opiate withdrawal.
2. The generic approach is to:
  - ♦ use a drug of the same class to which the patient has become physically addicted
  - ♦ administer enough of that drug on the first day of treatment to markedly diminish symptoms
  - ♦ decrease the medication over a three to five day period for withdrawal from short acting drugs, or over a two to four week period for withdrawal from longer-acting drugs.
3. When there are valid reasons why a drug of the same class to which the individual is physically addicted cannot be administered (e.g., when it is illegal to give opiate medications to opiate addicts in the absence of special certification), alternative medications can be used.
4. These alternative drugs are usually employed to decrease autonomic system over activity (e.g., alpha-adrenergic agonists), or to control other symptoms such as headache, nausea, diarrhea, cough, etc.
5. Efforts to begin rehabilitation for substance dependent individuals can often be instituted at the same time as detoxification for those individuals undergoing mild withdrawal.
6. For those with more severe withdrawal, education, outreach to families, and other efforts to enhance motivation and help individuals to rebuild their lives without substances can be more slowly incorporated into the later stages of detoxification.

#### **IV. Detoxification Procedure Applied to Depressant Withdrawal Syndrome**

*Make the following statement to bridge into the information about the specifics for depressants, opiates, and stimulants.*

- A. The approach to detoxification is very straightforward.
- B. With these general guidelines in mind, it is possible to review some specific examples relative to the three major classifications of drugs.

*OHD/Slide 4.6 on screen.*

*Refer to HO4.5.*

#### **C. Alcohol Withdrawal**

1. An essential first step in treating alcohol withdrawal is to carry out a thorough physical examination, focusing on the existence of any medical problems, including:
  - ♦ arrhythmias
  - ♦ any evidence of a GI bleed
  - ♦ infections
  - ♦ sugar and electrolyte balances, etc.
2. Without evidence of physical pathology, the chance of severe withdrawal (e.g., a convulsion or an agitated delirium (Dts)) for brain depressants falls to close to zero.
3. If such severe withdrawal should develop, in the absence of physical pathology the risk for serious complications or death also falls dramatically and should approach zero.
4. Patients should be educated about:
  - ♦ the symptoms they are likely to experience ...
    - insomnia
    - increased levels of nervousness
    - trembling of the hands
    - slight increase in heart rate, breathing rate, blood pressure, body temperature
  - ♦ the short time course over which the symptoms are likely to develop
  - ♦ reassured that about 90% of alcohol dependent individuals only go through a relatively mild syndrome similar to having the flu

5. Following a good physical examination, this education and reassurance forms the basis for a “social model detoxification program” as practiced in most large municipal treatment programs (e.g., government run detox facilities).
6. Because alcohol interferes with the absorption of vitamins, all alcohol dependent individuals should be administered multiple vitamins.
7. Among these vitamins, thiamine, which is not stored well in the body, is one that is essential for neurologic and blood-producing processes.
8. The vitamins can be given orally, and it is important that thiamine be incorporated into the multiple vitamins.
9. Animal and human studies have, produced no evidence that anticonvulsant medications are necessary or efficacious in treating the alcohol withdrawal syndrome.
10. There is more controversy regarding the administration of magnesium, although most clinicians believe that with a normal diet used during detoxification, no magnesium supplements are required.
11. In the treatment of alcohol withdrawal, medications center on the use of brain depressants.
12. Any brain depressant could theoretically be used (ranging from alcohol itself to barbiturates), but the benzodiazepines carry the greatest safety factor.
13. Benzodiazepines must be prescribed for all individuals with a history of convulsions during withdrawal, or a past history of delirium tremens (severe agitated confusion seen in less than 2% or 3% of withdrawal states). Otherwise, the use of these medications is at the discretion of the clinician.
14. If a long-acting benzodiazepine such as chlordiazepoxide (Librium) or diazepam (Valium) is used, the usual patient might be prescribed 25 mg of Librium by mouth four to six times per day, with the distinction being made based on the intensity of symptoms and whether sleepiness develops (in which case the dose of the benzodiazepine might need to be decreased).
15. Nursing staff can be left instructions for additional 25 mg doses to be used between the usual prescribed procedures if levels of tremor, pulse rate, or blood pressure increase markedly.

16. It is imperative when using these medications, if the patient becomes too sleepy or if the blood pressure drops significantly, to order the dose of the medication be withheld.
17. Whatever dose is needed on day one, that dose becomes the base line. The amount of the benzodiazepine prescribed then decreases by approximately 20% of that first day's dose each day, with a resultant dose of zero by day four or five.
18. If a short-acting benzodiazepine such as oxazepam (Serax) or lorazepam (Ativan) is used, doses equivalent to the levels of Librium noted above should be used.
19. Here, however, the major danger is not over-medication but under-medication.
20. With short half-life drugs it is essential that patients be given their dose on a regular basis.
21. Skipping a dose or a delay in the administration of a dose could, at least theoretically, markedly change the blood levels of the benzodiazepine, thus compounding the effects of the alcohol withdrawal syndrome and potentially precipitating a withdrawal convulsion.
22. There is no proven reason for substituting more expensive benzodiazepines for those just discussed.
23. There are no data to indicate that carbamazepine (Tegretol) adds anything significant to the regimen other than the dangers of Tegretol.
24. While beta blockers and drugs like clonidine (Catapres) will alleviate some autonomic nervous system symptoms and cause some sleepiness, they do nothing to decrease the risk for seizures or to decrease the risk for severe withdrawal delirium.
25. These medications are also likely to cover up some of the warning signs that seizures are likely to develop (e.g. severe autonomic dysfunction).
26. These alternative medications should not be used for withdrawal from brain depressants.
27. It is important to remember that during withdrawal most alcohol dependent individuals have normal levels of body water, or are overhydrated.

28. It is likely that the body conserves water at consistently high or falling blood alcohol levels, the opposite of what is seen during rising blood alcohol levels.
29. If IV fluids are needed because of a severe medical problem, these must be used most carefully to avoid the development of problems such as congestive heart failure.

*This concludes the presentation of alcohol withdrawal.*

*State:*

- ♦ Alcohol has served as the model or example for this section. Treatment for other depressant withdrawals is similar.

*Ask if there are any questions.*

#### D.Opiate Withdrawal

*Deliver the following information.*

*OHD/Slide 4.7 on screen.*

*Refer to HO4.6.*

1. Withdrawal symptoms from opiate dependence include:
  - ♦ Runny Nose
  - ♦ Cough
  - ♦ Diarrhea
  - ♦ Pain
2. In treating opiate withdrawal the first step, as always, is an excellent physical examination.
3. When IV drug use has been noted by history, special care must be taken regarding hepatitis, bacterial endocarditis, and AIDS.
4. Recognizing that street heroin is frequently only 5% pure, and that the withdrawal syndrome can often be very mild, education and reassurance can assist patients to adjust to the withdrawal syndrome.
5. If medications are required, the use of an opiate, usually methadone, is preferable.

6. One paradigm is to give 20 mg of methadone orally, and to repeat the dose if symptoms are not alleviated in order to determine the minimal dose required to control symptoms.
7. In general, one mg of methadone is roughly equivalent to 2 mg of heroin or 20 mg of meperidine (Demerol).
8. The dose required on day one is then divided into twice daily doses, with a decrease of the original day's dose by approximately 20% per day.

*The instructor can expand upon the modification of this approach for the withdrawal of an individual physically addicted to methadone.*

9. Remember, methadone is only used for a week or so at decreasing doses to wean the patient off opiates.
10. Methadone maintenance uses the drug at persistently high doses to substitute a physical dependence to a longer-acting oral opiate for a more difficult to control IV dependence to a short-acting drug.
11. In situations where an opiate cannot be administered, most clinicians develop “cocktails” of non-opiate medications aimed at decreasing symptoms.

Examples:

- ♦ Clonidine (Catapres)
  - doses of approximately 0.3 mg four times a day for the usual adult can be used to improve symptoms related to autonomic nervous system dysfunction
- ♦ Non-opiate analgesics (e.g. phenacetin or ibuprofen) can be used to control pain
- ♦ Non-opiate antidiarrheal agents can be used, etc.

*The instructor might also want to discuss the potential use of clonidine skin patches.*

*An additional potential topic of interest would be opiate withdrawal in the neonate, this is described in the text (Schuckit, 1995).*

E. Stimulant Withdrawal

*Provide the following information about stimulant withdrawal.*

*OHD/Slide 4.8 on screen.*

*Refer to HO4.7.*

1. Withdrawal symptoms from stimulant dependence include:
  - ♦ Sadness
  - ♦ Fatigue
  - ♦ Hunger
  - ♦ Pain
2. Just as is the case with depressant withdrawal and opiate withdrawal, a complete physical examination is essential, and the first recommended order of business.
3. As is true of all states of withdrawal, education and reassurance are essential.
4. In this instance, because no appropriate medications for detoxification have been identified, it is actually education and reassurance that form the cornerstone of treatment.
5. Because signs of depression can be prominent during the initial stages of stimulant withdrawal, the patient should be carefully evaluated for any suicidal ideas and plans.
6. Suicide precautions should be instituted if necessary, although these will probably only be required for several days, if at all.
7. Various medications have been tested for stimulant withdrawal:
  - ♦ Dopamine-boosting drugs such as bromocriptine (Parodyl) are costly, have very prominent side effects, and have not been shown to be useful.
8. In contrast to the other types of withdrawal seen with depressants and opiates, the administration of stimulants and subsequent weaning-off of an effective dose does not work with stimulants.

## **V. Summary**

*Provide the following summary of the module.*

*Refer to HO4.8.*

1. Clinically relevant withdrawal syndromes are only likely to be observed with depressants, stimulants, and opiates.
2. Most withdrawal syndromes can be characterized by symptoms that are the opposite of the acute effects of the drugs.
3. Non-pharmacological approaches are very important in carrying out appropriate detoxification. These include optimizing physical functioning, offering education, and reassuring the individual that the symptoms are temporary.
4. For depressants and opiates, the optimal treatment of withdrawal involves administering a drug of the same class to which the individual is physically dependent, and then weaning the individual off the medication at an appropriate rate.
5. Detoxification is only the first stage of treatment for individuals with specific types of substance use disorders.
6. The full importance of treatment in detoxification will not be appreciated unless the clinician is:
  - ♦ knowledgeable about establishing the appropriate diagnosis
  - ♦ willing to share the information regarding the need for future abstinence with the patient (forms of confrontation)
  - ♦ of the belief that detoxification is but one step on the road to rehabilitation