Vol. 1 No. 2 December 1994

CURRENT VIEWS

A Detoxification Protocol for Treatment of Withdrawal Manifestations

Abdel-Mawgoud M.

Abstract

The paper sets the guidelines for treatment of withdrawal mainfestations in addicts. The questions: why we detoxify?, who is to be detoxified?, where ? and which protocol to follow? are answered. The three main stages to follow in detoxification protocols are applied. These are: **first** to establish the intial daily dose (the safest starting dose of the suitable detoxifying agent), the **second** to recommend a schedule for gradual withdrawal and the **third** the special adjunctive treatment that helps in easing the suffering during the detoxification period. The paper then describes five protocols for detoxification from alcohol, sedative-hypnotics, opioids, polydrugs as well as stimulants, cannabis and volatile substance.

Introduction Chemical dependence is a chronic, progressive and eventually fatal disease with a tendency towards relapse. It is a prime example of a primary, chronic and life style related illness due to complex interaction of biological, psychological and social factors. The treatment approaches have not been fixed or static, but they all start with the provision of an effective and safe management of withdrawal manifestations.

Detoxification is the removal of a toxic substance, literally a poison, from an individual. In the substance abuse field, it is the process of gradual elimination of a substance of abuse from an individual who has become dependent on it because of prolonged use. *Alling F.A., (1992)*. In this paper, detoxification refers to the treatment process used to eliminate a substance from someone who is psychoactively dependent on it by means of gradual tapering off of that substance, or a cross tolerant substance.

Drug misuse, even with some degree of dependence, is not in itself an indication to prescribe controlled drugs. Non specific care such as the supportive environment, staff involvement, use of adjunctives such as nutrition, fluids,, vitamins, ... etc. and non-pharmacological measures such as acupuncture and electro-stimulation may be helpful and effective in alleviating the patient's anxiety about withdrawal (*Gossop et al, 1984 and American Psychiatric Association, 1989*). The most common source of problems in prescribing for drug misuse is the prescription of an open-end supply of drugs without a clearly defined goal. Prescribing too little leads to lies and manipulations; too much leads to over sedation, leakage of surplus drugs to the black market and, in case of controlled drugs, may bring the doctor in conflict with laws regulating controlled drugs prescription (*Hmos, 1991*). It is a common experience among experts in the field that most patients tend to exaggerate the manifestations of withdrawal and frequently demand unnecessarily high doses of medication for longer periods than required. It is, therefore, the recommendation to rely on observable objective signs rather than on subjective symptoms (*Geller A and Burant D, 1990*).

To plan a proper and safe detoxfication, the clinician has to make proper assessment that will help in answering the four main questions. Why do we detoxify patients? who

is to be detoxified? Where? and which protocol to follow?

The two main objectives for substance abuse treatment are to help patients become drug-free and to maintain the drug-free state.

Anyone applying for detoxification should be properly assessed and carefully screened prior to acceptance. Several motives are often seen: legal problems; feeling tired; losses in family, friends and job; fear of AIDS; physical problems; seeking temporary relief of pressure or consciously trying to lower tolerance are common reasons given by patients. It is generally agreed that only patients with evidence of physical dependence should be admitted to detoxification programs. Confirmation of physical dependence is not always easy. Several methods can be used .

Detailed, reliable and non-conflicting history from more than one source can help. Urine toxicology can confirm recent drug intake chemical challenge tests such as the Naloxone Challenge Test (NCT) for narcotics and Phenobarbitone Challenge Test for sedative hypnotic can be used to confirm presence of tolerance. (*Jacobsen L.K. and Kosten T.R, 1989 and Alling F.A., 1992*). The most accurate evidence of physical dependence is the presence of actual withdrawal manifestations. Standardised scales have been used in a number of studies, in the recent years, to assess the degree of dependence on opiates (*Bradley et al, 1987 and Abdel-Mawgoud M. and Al-Haddad, 1989*), on alcohol (*Shaw et al, 1981; Naranjo et al, 1983 and Sellers et al, 1983*) and on benzodiazepines (*Busto et al, 1989*). The aforementioned methods for confirmation of physical dependency are not always definitive, therefore, some drug treatment staff insist that persons seeking treatment should have clearly observable signs of current intoxication or withdrawal before being accepted. The possibility that a non-addicted person might seek admission for medication or inappropriate reason was raised. Newman and Kleber saw that as most unlikely (*Newman, R.G., 1979 and Klebce H.D., 1981*). The author's experience in the Gulf area is that several patients who have no motivation to become drug-free and even some drug pushers present themselves for admission to detoxification units. This may be due to changes in the legislation controlling the prescription of psychotropic medication as well as the strict anti-drug policing. Therefore, we strongly restrict admission to patients with clear evidence of either intoxication or physical dependence.

Detoxification may occur in either outpatient or inpatient settings. Outpatient detoxification is generally less expensive, less disruptive to patients' lives and does not need readjustrnent after discharge. Inpatient detoxification is preferred when more protection is needed, it can be done safely and more rapidly and, if used properly, can be a good start for handling the multitude of drug related problems (*Alling F.A., 1992*). The clinician has to weigh the advantages and disadvantages of each. It is the author's opinion that inpatient detoxification is generally preferable, if available, especially for treatment of withdrawal of alcohol, narcotics as well as rapid withdrawal of benzodiazepines. Slow withdrawal of benzodiazepines may start on an inpatient basis, but will need to be continued after discharge as it may require weeks or even months.

Several detoxification protocols are available in different centres. They all share the three basic steps. The first is to establish the initial daily dose (the safest starting dose of the suitable detoxifying agent), the second *is to* recommend a schedule for gradual withdrawal and the third is the special adjunctive treatment that helps in easing the suffering during the detoxification period.

The author recommends the following detoxification protocols for the treatment of withdrawal manifestations for:

I. Alcohol
II. Sedative-Hypnotic
III. Opiates
IV. Polydrug Dependence
V.Stimulants, Hallucinogens, Cannabis and Volatile Substances.

I. Protocol for the Treatment of Alcohol Withdrawal Manifestations

Withdrawal from alcohol continues to be the most common withdrawal syndrome requiring physician management. Minor withdrawal manifestations begin within 6-12 hours of

decrease or cessation of drinking; more severe manifestations tend to occur later. Geller and Burant summarised the guidelines to the time of possible development of the common withdrawal manifestations (Table1). The development of fluctuations in blood pressure and seizures may herald the onset of delirium tremens (DTs) which occur in 10% of alcoholics and can be fatal in 1-2%. Therefore, proper control of withdrawal manifestations earlier can prevent serious life threatening situations. (*Geller A and Burant D, 1990*).

Table1: Expected time of alcohol withdrawal

Time after last drink	Withdrawal manifestation
6-12 Hours	Automatic lability
24 Hours	Hallucinosis
24-48 Hours	Seizures
2-4 Days	Delirium Tremens (DTs)

(*Geller A. and Burant D., 1990*)

A) Establishing the initial daily dose:

1- The choice of initial detoxifying drug: Benzodiazepines are commonly used in the management of alcohol withdrawal. Chlormethiazole use has declined in the last decade due to its strong addictive potential, liver toxic effect and *if* given to patients who continue to use alcohol, may cause fatal respiratory depression. Chlordiazepoxide is , now, frequently used as the drug of choice for its safety and flexibility of dosage in gradual withdrawal.(*Gelder M. and Gath D., 1989*)

2- To confirm the presence of physical dependence, use Alcohol Objective Withdrawal Manifestations Scale (AOWMS) Fig.(1) on admission and every four (4) hours. Patients developing 4 or more grade A and/or any of grade B manifestations. during any assessment, will be given 20 mg chlordiazepoxide each time as a single dose.

3- To calculate the initial daily dose, the total amount that had been taken to control withdrawal manifestations in the first 72 hours will be divided by three.

B) Schedule for gradual withdrawal:

The established daily dose can be given in divided doses (tds or qds) and will be reduced by 25% every two days to complete detoxification over an eight days period.

C) Adjunctive treatment. (*Gelder M. and Gath D., 1989*)

A substantial number of patients presenting for detoxification do not demonstrate the physical signs of withdrawal or may do so only to a minor degree. They can be helped by:

1. Basic treatment

a) Provision of a calm, quiet and supportive environment in which staff must be nonjudgemental.

b) Fluid balance: Patients are usually overhydrated rather than dehydrated. Intravenous fluids are not required unless patient has persistent vomiting and diarrhoea.

c) Nutrition: Vitamins and minerals replacement, though commonly needed, will not be tolerated until gastrointestinal symptoms abate. Nutritious diet that contains normal maintenance doses is needed. Thiamine should start as soon as possible. An initiail dose of 100 mg / IM on admission is recommended, followed by oral doses for the next two days.

d) Nausea and vomiting are frequent but can usually be controlled by administration of ice chips, followed by small amounts of juices. Drugs are rarely needed.

e) Epigastric distress should be helped as soon as antacids can be tolerated. Magnesium containing antacids are preferable to replace the frequent low levels of total body magnesium.

f) Insomnia is a normal part of withdrawal. Patients should be reassured and are best advised to use "folk remedies" like warm milk before bed or reading a boring book.

2- Symptomatic drug treatment.

a) Seizures: The use of prophylactic anti-epileptic is no longer recommended. If seizures develop, diazepam 10 mg IV may be given over a period of 1-2 minutes to avoid the development of laryngospasm. It can be repeated until seizures cease with no more than 30 mg over a period of 20 minutes.

b) Hallucinations will normally disappear with the treatment of withdrawal manifestations by benzodiazepines. Haloperidol 5 mg / every 4 hours may be given to patients with disruptive hallucinations but it should not be given

without a benzodiazepine as it lowers the seizure threshold.

c) Depressive symptoms are common during withdrawal period, yet, antidepressants are not indicated unless depression continues after withdrawal with evidence of vegetative symptoms.

d) Carpopedal spasm if present is usually repetitive and extremely uncomfortable. While the aetiology is uncertain, 2 cc of magnesium sulphate / IM will generally help.

II. Protocol for the Treatment of Sedative- Hypnotic Withdrawal Manifestations

A) Establishing the initial daily dose:

1- The choice of suitable detoxifying drug: Diazepam has a relatively long half-life and is available in various strengths. This gives it a number of advantages over other benzodiazepines; it may be given as one single daily dose, and is less likely to allow withdrawal symptoms to emerge and readily permits a smooth reduction in dose by small steps. Although it may be preferable to change the patient's current benzodiazepine to diazepam over two weeks period, every attempt should be made for abrupt replacement with the suitable dose of diazepam. This helps in avoiding many problems of finding the drug of dependence or reliably identify the previous regular dose. Table(2) gives the approximate dosage of common benzodiazepines to 5 mg of diazepam. (*DHSS, 1989*).

Table 2: Equivalent Doses for the Common Benzodiazepines

Drug	Dose
Diazepam	5 mg
Chlordiazepoxide	15 mg
Lorazepam	0.5 mg
Loprazolam	0.5 mg
Oxazepam	15 mg
Temazepam	10 mg
Nitrazepam	5 mg

(*HMSO, 1991*)

2- To confirm the presence of physical dependence: use Benzodiazepines Objective Withdrawal Manifestations Scale (BOWMS) Fig.2 on admission and every four (4) hours. Patients developing 4 or more grade A and/or any of grade B manifestations, during any assessment, will be given 5 mg diazepam each time as a single dose.

3- To calculate the initial daily dose: the total amount that had been taken to control withdrawal manifestations in the first 72 hours will be divided by three

B) Schedule for Gradual Withdrawal:

According to the duration of intake and the initial daily dose of diazepam, two schedules can be followed:

1- Low dose rapid withdrawal:
For patients who have short history (weeks) of benzodiazepines intake and requiring 30 mg of diazepam or less to control their objective withdrawal manifestations, Table(3) outlines the schedule for gradual withdrawal.

2- High dose slow withdrawal:
For patients who have been using high doses of benzodiazepines continuously for more than one month or needing more than 30 mg of diazepam to control their objective withdrawal manifestations, a slow schedule of withdrawal should be followed by reducing the initial daily dose by 10% every two weeks (*HMSO, 1991*).

C) Adjunctive Treatment.

Additional drugs should be considered only when gradual withdrawal with adequate psychological support has failed. Additional drugs should be prescribed only for a short period as part of a rapid withdrawal program in order to avoid encouraging long-term use of additional medication. Propranolol can be helpful with physical symptoms of anxiety and should continue for 4 weeks after stopping benzodiazepines, then taper off over one week period. Antidepressants (Imipramine, Dothiepin) can help to reduce withdrawal. Start one month before withdrawal begins, continue 1-3 months after complete stop of diazepam then taper off over 2-4 weeks.

Table 3: Schedule for gradual withdrawal of Diazepam

Day	5 mg	10 mg	15 mg	20 mg	25 mg	30 mg
1	5	10	15	20	25	30
2	5	10	15	20	25	30
3	2	5	10	15	20	25
4	2	5	10	15	20	25
5		2	5	10	15	20
6		2	5	10	15	20
7			2	5	10	15
8			2	5	10	15
9				2	5	10
10				2	5	10
11					2	5
12					2	5
13						2
14						2

(HMOS, 1991)

III. Protocol for the Treatment of Opioid With-drawal Manifestations

A wide variety of narcotics create a physical dependence and may require detoxification. Opium, Morphine, and Codeine are naturally found in the opium poppy; Heroin, Dihydromorphine and Dihydrocodeine are semisynthetic narcotics; while Methadone (Dolphine), Meperidine (Demerol) and Pentazocine (Talwin) are totally synthetic narcotics that, frequently, produce dependence.

A survey of different methods of detoxifying the opiate dependent person in different countries around the world has found that, although methadone is still widely used, where available, a number of other agents are being used with some success (*Roberts K., 1989*) In France, although benzodiazepines are the most commonly prescribed drugs for opioid detoxification, methadone was found to be more effective in controlling objective signs (*Drummond et al, 1989*). Gold and his colleagues reported the use of clonidine in managing the opiate withdrawal syndrome (*Gold et al, 1978*). This appears to help subjective discomfort but not the objective manifestations which led to the suggestion of combining naltroxone, clonidine and benzodiazepines (Brewer et al, 1988). This technique has been criticised (*Drummond and Turkington, 1989*)

A) Establishing the initial daily dose:

1- The choice of suitable detoxifying drug:

Methadone has kept its position over the years as the most widely used and accepted detoxification agent for helping individuals dependent on major narcotic drugs in a relatively short period and with minimal discomfort. It is a long acting drug, can be used orally, and is cross-tolerant with heroin and morphine. It is to be noted that, although methadone detoxification can be completed rapidly with few objective withdrawal signs, subjective feelings of discomfort may persist for years. (*HMSO, 1984; HMSO, 1991 and Alling F.A., 1992*).

2- To confirm the presence of physical dependence: use Opioid Objective Withdrawal Manifestations Scale (OOWMS) Fig.(3) on admission and every four (4) hours. Patients will be given oral methadone 5 mg, for any moderate withdrawal manifestations or 10 mg, for any severe ones, once as a single dose.

3- To calculate the initial daily dose, the total amount that had been taken to control withdrawal manifestations in the first 72 hours will be divided by three

B) Schedule for gradual withdrawal:

Table (4) outlines the schedule of withdrawal for patients requiring 25 mg of methadone or less per day. Baseline dose in excess of 25 mg should be lowered by 5 mg every two days until 25 mg is reached, then the 10 days regime followed (*HMSO, 1984*).

Methadone maintenance programs originally were developed to deal with the problem of heroin addiction in the mid 1960s (*Courtwright D.T. et al, 1989*). This led to an increasing number of addicts on methadone without reducing the overall problem of heroin addiction (*Ausubel D.P., 1983*). Although it is agreed by many authorities to avoid creating new methadone maintenance clinics, the emergence of HIV problem may have an effect on this opinion (*Lowinson J.H. et al, 1992*).

Table 4: Schedule for Gradual Withdrawal of Methadone

Day	5 mg	10 mg	15 mg	20 mg	25 mg
1	-	10	15	20	25
2	-	10	15	20	25
3	-	6	8	12	15
4	-	6	8	12	15
5		3	4	8	8
6		3	4	8	8
7			2	4	4
8			2	4	4
9				2	2
10				2	2

(HMSO, 1984)

C) Adjunctive treatment:

A substantial number of patients presenting for detoxification will not demonstrate the signs of physical withdrawal or will do so only to a minor degree. They can be helped by:

1- Basic non-pharmacological treatment

a) Provision of a calm, quiet and supportive environment in which staff must be nonjudgemental.

b) Auricular Acupuncture, Electroacupuncture and Cranial Electrostimulation (CES) are useful techniques that have good body of research. In spite of the limitations of much of this research, there seems to be enough evidence to conclude that they all have some effect in reducing feelings of discomfort and some objective withdrawal signs during opiate withdrawal. *(Smith M.D., 1979, Gossop M. et al, 1984, and Alling et al, 1990)*

2- Symptomatic drug treatment.

Some patients can be detoxified without substitution of the drug of addiction or a specific withdrawal regime. The use of less addictive drugs for patients with subjective or mild objective manifestations may be of value. The following drugs have been found to be of particular benefit *(HMSO, 1991)*.

a) Promethazine (Phenergan): An antihistamine with antiemetic and sedative actions. Useful for symptomatic treatment of mild physical withdrawal.

b) Propranolol (Inderal): Helpful for patients with pronounced somatic anxiety symptoms. Doses as recommended for general anxiety.

c) Thioridazine (Melleril) A phenothiazine tranquilliser with virtually no addictive potential. May be used in small doses to control anxiety. It should not be prescribed for more than two weeks.

IV. Protocol for the Treatment of Polydrug Withdrawal Manifestations

Polydrug abuse and / or dependence is rather common in our patients. The following guidelines help in establishing the main drug of dependence that will require detoxification:

1- Detailed drug history along with full psychiatric and physical examination.

2- Urine screen, if available, to detect drugs of recent use.

3- Patient should be observed on admission and every four (4) hours for any withdrawal manifestations, using the three objective scales.

4- Patients scoring on any scale automatically receive treatment according to the protocol of this scale. It is to be noted that, due to the different half lives of the drugs of dependence, patients who may have started on opioid protocol, may need, also, to follow- a benzodiazepines alcohol protocol later.

V. Protocol for the Treatment of Stimulants, Hallucinogens, Cannabinoids or Volatile Substance Withdrawal Manifestations

Psychoactive dependence, even with the presence of characteristic withdrawal manifestations does not always require medical detoxification. Although it is generally accepted that a withdrawal pattern is associated with the prolonged use of stimulants such as cocaine or its smokable form crack, the discontinuation of these substances does not require detoxification *(Gawin F.H. and Kleber H.D., 1986)*.

A) Establishing the initial daily dose: The use of tapering doses, even in case of cocaine, or a cross-tolerant stimulant substance is not clinically necessary or appropriate. (Watson, A.M., 1988, HMSO, 1984 &1991)

B) Schedule for gradual withdrawal:

Abrupt discontinuation is recommended.

C) Adjunctive treatment.

1. Stimulants: Many drug misusers dependent on stimulants, experience insomnia and depression. Antidepressant medication may be required. Desipramine has been reported as particularly helpful in these circumstances.

2. Hallucinogens: Symptomatic treatment of psychological symptoms may be of value (e.g. short course of benzodiazepines to reduce anxiety). Severe mental disturbance should be treated by appropriate drug (e.g. antipsychotics).

3. Cannabis: No indications of drug therapy.

4. Volatile Substances: No indications of drug therapy.

Acknowledgement

The author would like to thank Professor *Adel Demerdash*, Professor *Lutfy Fateem* and Professor *Sheikh I.A.Rahim* for their valuable contribution. My thanks also goes to all the medical staff at *Al-Amal hospital, Dammam.*

Name:

File No.:

Ward:

Fig 1

Alcohol Objective Withdrawal Manifestation Scale (AOWMS)

Grade A																																										
Date																																										
Time	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2
1) Fine Tremors																																										
2) Sweating Paroxysmal																																										
3) Anxiety																																										
4) Irritablity																																										
5) Tachycardia(>90/Minute)																																										
6)Loss of Sleep(<5 HRS/Daily)																																										
7)Hyper-Reflexia																																										
8) Vomiting																																										
9) Diarrhoea																																										
Grade B																																										
1) Cloudning of Consciousness																																										
2) Perceptual Abnormalities																																										
Auditory visual Tactile																																										
3) Seizures																																										
4) Electrolyte Imbalance																																										
5) Central Hyper-Pyrexia																																										
6) Coarse Tremors																																										
7) Fluctuating Blood Pressure																																										
Medication:																																										

Vol. 1 No. 2 December 1994

Name:

File No.:

Ward:

Fig 2

Benzodiazepines Objective Withdrawal Manifestations Scale (BOWMS)

Grade A																																										
Date																																										
Time	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2
1) Anxiety																																										
2) Irritability																																										
3) Startle Reaction																																										
4) Loss of Sleep (< 5hrs/day)																																										
5) Tachycardia (> 90/MIN.)																																										
6) Sweating																																										
7) Orthrostatic Hypotension																																										
8) Fine Tremors																																										
9) Hyperreflexia																																										
10) Vomiting																																										
Grade B																																										
1) Clouding of Consciousness																																										
2) Perceptual Abnormalities																																										
3) Central Hyperpyrexia																																										
4) Seizures																																										
Medication:																																										

Name:

File No.:

Ward:

Fig 3

Opioid Objective Withdrawal Manifestations Scale (OOWMS)

Mild																																							
Date																																								
Time	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2
1) Rhinorrha																																							
2) Itching of the nose																																							
and sneezing																																							
3) Lacrimation																																							
4) Frequent Yawning																																							
5) Flushing of Face and Neck																																							
Moderate																																							
1) Dilated pupils																																							
2) Increased Diastolic																																							
systolic B/P																																							
3) Slight increase in																																							
temperature																																							
T-mors & Muscle twitches																																							
5) Increased perspiration																																							
6) Goose flesh appearance of																																							
skin																																							
7) Diarrhoea																																							
Severe																																							
1) Repeated attacks of vomiting																																							
2) Continuous diarrhoea																																							
3) Dehydration electrolyte																																							
Imbalance																																							
4) Marked deterioration of																																							
vital signs																																							
5) Convulsions																																							
Medication:																																							

References

Abdel-Mawgoud M. and Al-Haddad M.K.(1989):. Treatment of Heroin Addiction: Bahrain Experience. Proceedings of the Regional Meeting of the Royal College of Psychiatrists, Cairo, March.

Alling F.A., Johnson B.D., and Elmoghazy E. (1990): Cranial electro stimulation (CES) use in detoxification of opiate dependent patients. J. Subst. Abuse Treat. 7: 173-180.

Alling F.A. (1992): Detoxification and Treatment of Acute Sequel. In Substance Abuse: A Comprehensive Textbook. Second Edition, Chapter 30, pp 402-415.

American Psychiatric Association (1989): Opioids: General Issues and Detoxification. In Treatment of Psychiatric Disorders. A Task Force Report of the American Psychiatric Association. Vol. 2, Chapter 134, pp 1309-1327.

Ausubel D.P. (1983): Methadone Maintenance Treatment: The other side of the coin. The International J. Addictions, 18(6), 851-862.

Bradley B.P., Gossop M., Phillips G.T. and Legards J.J. (1987): The development of an opiate withdrawal scale (OWS). British J. of Addiction, 82: pp 1139-1142.

Brewer C., Rezae H., and Bailey C. (1988): Opioid withdrawal and naltroxone induction in 48-72 hours with minimal drop out, using a modification of the naltroxone clonidine technique. Br. J. Psychiatry 153: 340-343.

Busto U.E., Syko MK. and Sellers E.M. (1989): A clinical scale to assess benzodiazepine withdrawal. J. Clin. Psychopharmacol 9(6): 412-416.

Courtwright D.T., Joseph H, and Des Jarlais D. (1989): Addicts who survived: an oral history of narcotic use in America, 1923-1965. Knoxville: University of Tennessee Press.

Drummmond D.C., and Turkington D (1989): Naltroxone and clonidine withdrawal treatment (Letter) Br. J. Psychiatry 154: 571-572.

Drummmond D.C., Turkington D., Rahman M.Z., Mullin R.J., and Jackson P. (1989): Chlordiazepoxide Vs methadone in opiate withdrawal: A preliminary double blind trial. Drug Alcohol Depend 23:63-71.

Gawin F.H. and Kleber H.D. (1986): Abstinence symptomatology and psychiatric diagnosis in cocaine abusers. Arch. Gen. Psychiatry; 43:pp 107-113.

Geldcr M. and Gath D.(1989): The Abuse of Alcohol and Drugs. In Oxford Textbook of Psychiatry. second edition, Chapter 14, pp 507-555.

Geller A and Burant D (1990): Management of Withdrawal. In Syllabus for the Review Course in Addiction Medicine. American Society of Addiction Medicine. Editor Bonnie B. Wilford, Chapter 8, pp 173-206.

Gold M.S., Redmond D.E., and Kleber H.D. (1978): Clonidine in opiate Withdrawal. Lancet 1: 929-930.

Gossop M., Bradley B., Strang J. and Connel P. (1984): The Clinical Effectiveness of Electro-stimulation Vs oral Methadone in Managing Opiate Withdrawal. British Journal of Psychiatry, 144: 203-208.

HMSO (1984): Department of Health and Social Security. Report of the Medical Working Group on Drug Dependence. Guidelines of good clinical practice in the treatment of Drug Misuse.

HMSO (1991): Department of Health, Scottish Office Home and Health Department, Welsh Office. Drug Misuse and Dependence. Guidelines on Clinical Management.

Jacobsen L.K. and Kosen T.R. (1989): Naloxone challenge as a biological predictor for treatment outcome in opiate addicts. Am. J. Drug Alcohol Abuse, 15 (4): pp. 355-366.

Kleber H.D. (1981): Detoxification from Narcotics. In: Lowinson J.H. and Ruiz P. eds. Substance Abuse: Clinical Issues and

Perspectives. Baltimore: Williams and Wilkins pp. 329.

Lowinson J.H. et al, (1992): Methadone Maintenance. In Substance Abuse: A Comprehensive Textbook. Second Edition, Chapter 43, pp 550-561.

Naranjo C.A., Sellers E.M., Chater K., Iversen P., Roach C. and Sykora K. (1983): Non-Pharmacological interventions in acute alcohol withdrawal. Clin Pharmacol. Ther. 34:214-219.

Newman R.G. (1979): Detoxification treatment of narcotic addicts In: Dupont R.J., Goldstein A., O'Donnell J. eds. Handbook on Drug Abuse. Rockville, M.D: NIDA pp. 21-23.

Roberts K. (1989): Treatment and Detoxification of Opiate dependent drug abusers in different countries. Jr. Soc. Health 109 (3): 100-109.

Sellers E.M., Naranjo C.A., Harrison M,Devenyi P., Roach C. and Sykora K. (1983): Oral diazepam loading: simplifled treatment of alcohol withdrawal. Clin. Pharmacol. Ther. 34:822-826.

Shaw J.M., Kolesrag, Sellers E.M., Kaplan H.C. and Sandor P. (1981): Development of optimal treatment tactics for alcohol withdrawal: assessment and effectiveness of supportive care. Journal Clinical Psychopharmacology 1: 382-387.

Smith M.D. (1979): Acupuncture and natural healing in drug detoxification. Am. J. Acupuncture 2(7): 97-116.

Watson A.M. (1988): Preventing Relapse to cocaine. J. Clin. Psychiatry, 49 (suppl 2): 34-38.

Author

Abdel-Mawgoud. M

Medical Director, Al-Amal Hospital, P.O. Box. 5054, Dammam 31422, Saudi Arabia.