

Alcoholism: A Bio- Psycho- Social Disease

OBJECTIVES:

At the conclusion of the course, the learner will be able to:

1. Detail the etiology, pathophysiology and effects of alcoholism.
2. Describe the symptoms and management of alcoholism and alcohol withdrawal.
3. Provide biological, psychological and social care to the alcoholic client.

INTRODUCTION

Alcoholism is a very common chronic disease in our country. It is estimated that almost between eight and ten percent of American adults suffer from an alcohol abuse problem. All ages, genders, socioeconomic classes, cultures and ethnic backgrounds are susceptible to it. Men suffer at a rate four times greater than women. Even children and adolescents are at risk for the development of this disease. (Merck, 2005)

Alcoholism is associated with devastating physical, psychological and social consequences. Those affected by this disease often disrupt and destroy relationships with friends and family. They tend to become progressively poorer performers in the workplace, they call in sick for work on a frequent basis and they often become violent, experience falls, fights, motor vehicle accidents and involved in some form of criminal activity, such as involuntary manslaughter while driving impaired. (Merck, 2005)

Alcoholism has distinct signs and symptoms that increase in severity proportionate to the progression of the disease and it has a somewhat insidious onset. It causes tissue damage, physical dependence with dangerous withdrawals, clinical toxicity, tolerance, psychological dependence, addiction and a series of characteristic and deviant behaviors. . (Merck, 2005)

Alcoholism is a serious public health concern, a concern that necessitates preventive measures, early screening and assessment, prompt and effective treatment and the involvement of the multidisciplinary team as well as the patient and family members.

DEFINITION OF TERMS

Alcoholism: Alcoholism is a disease. It is a chronic disease in which attempts to control or stop the drinking is not successful, despite the fact that the individual is suffering adverse physical, psychological, social and even job related problems as a result of it.

Alcohol Dependence: The degree to which the individual is dependent upon the alcohol. It consists of two phases, that is, alcohol tolerance and physical dependence.

Alcohol Tolerance: Alcohol tolerance is defined as the progressively increasing need to increase the frequency of the drinking and the amount of alcohol consumed in order to produce the effect that was previously achieved with smaller and/or less frequent amounts. Drugs and substances, including alcohol, that produce dependence act on the central nervous system and create at least one of the following:

- Elation
- Reduced anxiety or tension
- Euphoria or another mood change
- Pleasure
- A perception of increased mental activity
- A perception of increased physical ability or prowess
- Behavior change
- Altered sensory perception

Physical Dependence: A physical dependency on alcohol will, without the presence of the substance in the body, precipitate a state of physiological withdrawal and untoward, undesired physiologic changes. Physical dependence does not always result from drug dependence. For example, a person affected by alcohol abuse may be able to cease all alcohol use without any physical withdrawal symptoms. In addition to alcohol, heroin is capable of producing physical dependence.

Addiction: Addiction is defined as the consistent, compulsive use of a substance with or without physical dependence that is causing the individual harm and should be ceased.

Social Alcohol Use: The social use of alcohol, for the purpose of this course, is defined as the intermittent use of limited amounts of alcohol in a social setting, such as a wedding or a family reunion.

THE ETIOLOGY OF ALCOHOLISM

The etiology of alcoholism is largely unknown but recent research suggests that a wide variety of factors appear to place a person at risk for the development of this disease, some of which are biological, some are psychological and still others are social in nature. Some of these possible factors include:

- Genetics. Alcoholism appears to run in families.
- Biochemical defect or deficiency. Alcoholics appear to be more tolerant of the effects of alcohol. They are less easily intoxicated than those who are not an alcoholic.
- Family unit dysfunction. Many alcoholics have dysfunctional relationships with family members. A broken home with a single parent also has a positive correlation with alcoholism.
- Personality characteristics. Many alcoholics are depressed, shy, and/or hostile.
- Social isolation
- Sexual immaturity
- A pattern of self destructive tendencies (Merck, 2005)

THE PATHOPHYSIOLOGY OF ALCOHOLISM

When alcohol is consumed, it is readily absorbed into the blood, primarily through the small intestine; it accumulates in body principally because alcohol is more rapidly absorbed than it is eliminated from the body through the process of oxidation. Alcohol significantly depresses the central nervous system, in fact, it incrementally progresses the central nervous system effects from sedation and tranquility, to a lack of coordination, to intoxication and delirium, and then on to unconsciousness, which is sometimes fatal.

Pathophysiologically, alcohol causes organ damage. The most commonly occurring alcohol related disorders include:

- Brain damage
- Cirrhosis of the liver
- Cardiomyopathy
- Arrhythmias
- Gastritis
- Peripheral neuropathy
- Pancreatitis
- Nutritional deficiencies, particularly thiamine (Merck, 2005)

THE PHYSICAL CONSEQUENCES AND COMPLICATIONS OF ALCOHOLISM

The consequences and complications of alcoholism are complex, numerous, far reaching and life threatening. The physical effects of alcohol abuse and alcoholism affect the following bodily functions and needs.

Nutritional Consequences and Complications of Alcoholism

- Low folic acid levels- anemia and birth defects
- Low iron levels- anemia
- Low niacin levels- pellagra, skin disorders, depression and diarrhea

Gastrointestinal Consequences and Complications of Alcoholism

- Esophagus- esophagitis and cancer
- Stomach- gastritis and ulcers
- Liver- cirrhosis, hepatitis and cancer
- Pancreas- pancreatitis, cancer and hypoglycemia

Cardiovascular Consequences and Complications of Alcoholism

- Heart- arrhythmias and heart failure
- Circulatory system- hypertension, atherosclerosis and CVAs

Nervous System Consequences and Complications of Alcoholism

- Brain- confusion, lack of balance and coordination, short term memory and recall loss, psychosis
- Peripheral nervous system- peripheral neuropathy

A Closer Look at Some of the Physical Disorders Associated With Alcoholism:

- Korsakoff's syndrome
- Wernicke's encephalopathy
- Hepatic coma
- Cerebellum degeneration
- Marchiafava-Bignami disease
- Pathological intoxication
- Cirrhosis of the liver
- Pancreatitis

Korsakoff's syndrome, also referred to as Korsakoff's amnesic psychosis, occurs in those individuals who regularly consume large

amounts of alcohol. Alcoholics who are nutritionally compromised, particularly those with a deficiency of B vitamins, especially thiamine, are at great risk for Korsakoff's syndrome. This syndrome produces significant memory loss for recent events. The short-term memory loss is often so severe that the affected individual attempts to compensate for it by making up stories and covering up for the loss. Korsakoff's syndrome, can occasionally follow an episode of delirium tremens. It can be fatal unless the thiamine deficiency is promptly reversed with thiamine supplements.

Wernicke's encephalopathy is marked with confusion, uncoordinated movements, dysfunctional nervous system and abnormal eye movements.

Hepatic coma affects the alcoholic with signs and symptoms such as dullness, lethargy or sleepiness, stupor, confusion and strangely appearing flapping hand tremors. Hepatic coma is the direct result of the toxic actions of alcohol on the liver and the brain. Hepatic coma, like Korsakoff's amnesic psychosis, is life threatening.

Cerebellar degeneration occurs in alcoholics and others with severe malnutrition. It manifests itself with some of the same symptoms as Wernicke's encephalopathy. An acute or gradually progression loss of gait and ataxia often occur. A CT scan of the affected individual reveals atrophy of the anterior cerebellar lobes and the superior vermis. Vitamin B complex, particularly thiamine, is sometimes useful in decreasing the effects of cerebellar degeneration.

Marchiafava-Bignami disease is a somewhat less common consequence of alcoholism than other consequences. It is most often diagnosed among the male population. Marchiafava-Bignami disease results from the demyelination of the corpus callosum and it causes agitation, confusion and progressively worsening dementia. Some also are affected with coma, seizures and even death as a result of this disease process.

Pathologic intoxication is a rare, but possible, consequence of alcoholism. Pathologic intoxication is marked with extreme aggression, excitement and irrational behavior after consuming only a very small amount of alcohol. Some are also affected with repetitive and involuntary bodily movements. These episodes may last only minutes or they can continue for a period of several hours after which the alcoholic will usually sleep and have amnesia about the episode upon waking. (Merck, 2005)

Cirrhosis of the liver is the most commonly found consequence of the disease among alcoholics. Cirrhosis is irreversible and serious. In the United States, cirrhosis is the eleventh most common cause of death. There are a couple of types of cirrhosis, however, Laennec's cirrhosis, which is a micronodular cirrhosis, is the type most commonly found among alcoholics and alcohol abusers. Individuals with cirrhosis may be asymptomatic or experience an insidious or acute onset of symptoms with characteristic muscular cramps, weakness, fatigue, weight loss and sleep disruptions. In severe cases, the affected individual may have severe anorexia (loss of appetite), nausea, vomiting, abdominal pain, sterility, impotence, loss of libido, amenorrhea and hematemesis. About 70% of cases have an enlarged and palpable liver. Some of the symptoms include:

- Spider nevi, reddened areas of the upper torso that appear to look like small spiders
- Ascites, a collection of fluid in the abdominal area
- Wasting
- Jaundice
- Pleural effusion
- Peripheral edema
- Erythematous areas on the body
- Mottling and redness of the palms of the hands
- Tremor
- Dysarthria
- Delirium

Pancreatitis can be either acute or chronic for the alcoholic. Some of the signs and symptoms of pancreatitis include:

- Severe and deep abdominal pain that sometimes radiates to the left or right side of the back
- Sweating
- Weakness
- Nausea and vomiting
- Fever
- Abdominal distention and tenderness
- Elevated serum lipase and amylase
- Leukocytosis

Mortality secondary to severe cases of acute pancreatitis is quite high, especially when the individual is also affected with a renal, other hepatic or cardiovascular impairment. Recurrences of this disorder are also common among alcoholics. (Tierney, McPhee & Papadakis, 2003)

ALCOHOL TOLERANCE AND WITHDRAWAL

Individuals who consume large amounts of alcohol over an extended period of time become less and less sensitive and more and more tolerant to its effects. As this progressive tolerance evolves, the alcoholic also develops a tolerance to other central nervous system depressants such as barbiturates, nonbarbiturate hypnotics, benzodiazepines, and meprobamate. Physiologically, tolerance develops because the cells of the central nervous system change in an adaptation effort to ward off the intoxicating effect of the alcohol. As earlier ones. As tolerance develops, tolerant individuals have a progressively narrower range between the intoxicating dosage and the lethal one. The margin of error becomes smaller and smaller, narrower and narrower. Many highly tolerant alcoholics expire as the result of respiratory depression and arrest. (Merck, 2005)

Because alcohol abuse leads to physical dependence, an alcoholic who stops drinking abruptly, by choice or for any other reason, they will undergo a withdrawal process with symptoms that vary in intensity according to the severity of the disease process. Withdrawal symptoms typically begin from 12 to 48 hours after the cessation of alcohol consumption. Some of the withdrawal symptoms in order of increasing severity are:

- Tremors
- Weakness
- Sweating or diaphoresis
- Nausea
- Hyperreflexia
- GI symptoms
- Seizures, typically tonic-clonic seizures
- Hallucinations
- Terror
- Delirium tremens (Merck, 2005)

Delirium tremens, which usually begin from 2 to 10 days after alcohol cessation are serious and life threatening. Initially, the affected individual may have a diffuse state of anxiety, however, it then progresses to excessive diaphoresis (sweating), confusion, sleeplessness, nightmares and severe depression. The cardiac pulse rate increases, the alcoholic may develop a febrile state and be affected by hallucinations that lead to intense fear, disorientation and restlessness. Visually hallucinations in dim light are particularly threatening and severe for the alcoholic in withdrawal. Many become

severely confused, disoriented, extremely confused, disoriented, uncoordinated and with a persistent hand tremor that sometimes involves the head and body as well. Delirium tremens occasionally make the alcoholic feel like the room is spinning, the floor is moving and the walls are falling. Other experience visual hallucinations involving bugs on their bed and auditory hallucinations of chirping birds stimulated by the sounds of an EKG monitor on a patient nearby.

THE MANAGEMENT AND TREATMENT OF WITHDRAWAL

Assessment: A complete health history and a medical evaluation is indicated when delirium tremens appear in order to determine whether or not other concurrent, simultaneously occurring illness or disorders are present to produce the symptoms. Once other causes are ruled out, other conditions that could worsen or further complicate the withdrawal are under special scrutiny. A differential diagnosis of withdrawal must discriminate delirium tremens from other mental changes such as acute hepatic insufficiency.

Planning and Intervention: When the patient is diagnosed with delirium tremens, health care professional should initiate an appropriate plan of care. Some of the elements of an effective plan of care for patients with delirium tremens include:

- A humane and caring approach that considers the patient's suggestibility to comfort and reassurance
- The employment of the least restrictive measures and the documentation of all interventions prior to the last resort, that is, restraints
- Monitoring of fluid balance
- Intravenous fluids, sometimes with magnesium or glucose added
- Nutritional considerations such as those associated with a deficiency of vitamins C and B-complex vitamins, primarily thiamine
- A benzodiazepine to reduce agitation
- Antipyretics to reduce life threatening high fever and
- The administration of an antipsychotic medication, such as chlorpromazine or thioridazine, to control psychotic symptoms. (Merck, 2005)

CARE OF THE ALCOHOLIC ALONG THE CONTINUUM OF RECOVERY

Recovery from alcoholism, a chronic disease, is a lifelong process that consists of attention to the biological, psychological and social aspects

of the disease. Once the individual has resolved urgent and acute physical problem, rehabilitation and recovery should begin immediately.

Initial Care

The initial phase of recovery must begin with the immediate cessation of alcohol and an immediate change in behavior. In order to cease all use of alcohol, the alcoholic needs extensive support and treatment. Giving up alcohol is very difficult for the alcoholic, it has become an integral part of their life. Without intensive support and treatment most alcoholics will relapse and continue on with a progressively more destructive pattern of behavior.

Some of the psychosocial treatments for the individual, as based on their own unique needs, can include:

- Individual therapy,
- Group therapy, believed by many to be superior in effectiveness to individual one-to one therapy, and
- Self help group support, with an Alcoholics Anonymous group, for example (Merck, 2005).

Ongoing, Continuous Care: Psychosocial Needs

Alcoholism is a chronic, progressive disease that is highly complex. It affects the entire person and the family as well. The affected individual may have physical needs that require short term or long-term treatment and follow up by their physician. They have psychosocial needs that extend throughout the course of their lifetime. Their needs are best met with the utilization of substance abuse health care professionals skilled in individual and group therapy and support, as indicated, according to the patient's assessed needs. Many also require short or long-term cognitive-behavioral therapy to facilitate life style changes and a steady state of sobriety. All require constant and continuous social support with peer groups, such as Alcoholics Anonymous (AA).

Family members of the alcoholic also require care and treatment. Their psychosocial needs can best be met with individual, family and/or group counseling conducted by a competent and skilled substance abuse health care professionals. They, too, have social support needs. These needs can be successfully met with a peer support self help

group like Al Anon, the correlate of AA for family members and others who are affected by the alcoholic's disease process. (Merck, 2005)

Pharmacological Interventions

Occasionally, an alcoholic may benefit from a medication to ensure the cessation of alcohol use, in conjunction with other psychosocial treatments. To avoid alcohol, a medication called Antabuse (disulfiram) can be used. Antabuse acts by creating a buildup of acetaldehyde, a metabolite of alcohol, in the bloodstream when alcohol is consumed. Acetaldehyde is highly toxic. It causes a throbbing headache, tachycardia (rapid pulse or heart rate), flushing of the face, tachypnea (rapid breathing or respiratory rate) and sweating, usually no more than 15 minutes after the person consumes the alcohol. Up to an hour after consumption, nausea and vomiting occur. These potentially dangerous and highly uncomfortable side effects typically last from one to three hours. Based on the knowledge of these symptoms, alcoholics taking Antabuse usually refrain from ingesting any alcohol at all, including that found in many over the counter cough preparations and wine based salad dressings. (Merck, 2005)

Antabuse is contraindicated for pregnant women and alcoholics until they have had 4 or 5 days of sobriety in order to avoid serious consequences before all alcohol has been cleared from the body. The usual initial dosage of disulfiram is 0.5 g by mouth one time a day for a period of time. Depending on the needs of the client this dosage is usually continued for two to three weeks after which the maintenance dosage is adjusted downward, when possible, to 0.25 g once a day. Concurrent with the use of disulfiram should be ongoing encouragement and support to facilitate continued sobriety and recovery from the entire multidisciplinary health care team. Disulfiram is contraindicated for pregnant women and those with cardiac disease. (Merck, 2005)

Another medication, naltrexone, is used sometimes for the treatment of alcoholism, concurrent with a comprehensive treatment program which includes psychosocial support and counseling. Naltrexone is an opioid antagonist. Naltrexone actions alter the effects that alcohol has on the endorphins in the brain that are associated with alcohol craving and consumption. The primary reason that naltrexone is often preferred over disulfiram (Antabuse) is that naltrexone does not make people sick if they continue to drink. The usual oral dosage is 50 mg by mouth once a day to decrease the risk of relapse. Naltrexone is

contraindicated for alcoholics who have liver disease or hepatitis.
(Merck, 2005)

COMMUNITY AND EDUCATIONAL RESOURCES FOR RECOVERY

Alcoholics Anonymous

Many, if not most, agree that Alcoholic Anonymous is one of the most effective tools that alcoholics can participate in to facilitate continued recovery throughout the course of their lifetime. Alcoholics Anonymous, referred to as AA, is a not for profit organization that has groups all over the globe that meet on a regular daily or weekly basis. These groups have no religious affiliation, however, they do have a strong spiritual component. Many groups address the specific needs and interests of the group members. For example, some groups are for men or women only, others are for doctors or nurses, still others are for single people or married people only and others meet the unique needs and issues of homosexual men or women members. For those unable physically, or for any other reason, to attend a meeting in their geographic community, AA groups are conducted on the Internet on a daily basis, several times a day.

Alcoholics Anonymous is a 12-step program, one in which group members progress through the steps and constantly revisit and practice the steps once accomplished. The first step involves the cessation of drinking and the knowledge that alcohol use and abuse is out of their control. Each and every member of the group ensures the anonymity of all who attend. As members become more comfortable with the program that AA offer, they get a chance to help others in their recovery process by being their sponsor, a person that often is of great help to the affected individual. (Merck, 2005)

INTERNET RESOURCES ON ALCOHOLISM

[About.com: Alcohol-related Articles](#)

Articles containing answers for people interested in information about drinking, alcoholism and treatment, social issues pertaining to alcohol use, and self-help programs.

[Alcohol: A Sobering Look](#)

National Council on Alcoholism and Drug Dependence, Inc. fact sheet on alcoholism, alcohol-related physical and emotional issues.

Alcohol Dependence

Report by Phillip W. Long, M.D. of Internet Mental Health, Inc., on alcoholism, including a set of diagnostic criteria.

Alcohol FAQ's

From the San Antonio chapter of Alcoholics Anonymous, a collection of frequently asked questions about alcoholism, treatment and recovery issues.

Alcohol Statistics

A Centers for Disease Control "rolodex" collection of alcohol-related statistics in the United States.

Alcoholism

Your About.com Guide to Alcoholism, Buddy T, has put together the definitive resource on the Internet for alcoholism-related material.

Alcoholism.about.com

About.com Web site devoted entirely to alcohol-related issues, moderated superbly by guide Buddy T.

Blood Alcohol Charts and Calculator

Useful and easy-to-read alcohol impairment charts for both men and women, along with a blood alcohol level calculator.

Children of Alcoholics

U.S. Department of Health and Human Services Substance Abuse and Mental Health Services Administration page devoted to providing information about, and resources for, children of alcoholics.

Children of Alcoholics Foundation

Excellent site of a national non-profit group that provides a range of educational materials and services to help professionals, children and adults break the intergenerational cycle of parental substance abuse.

REFERENCES

1. Merck & Co. (1995-2005). The Merck Manual of Diagnosis and Therapy. "Alcoholism".
<http://www.merck.com/pubs/mmanual/section15/chapter195/195b.htm>

2. Merck & Co. (1995-2005). The Merck Manual of Medical Information-Home Edition. "Alcoholism".
http://www.merck.com/pubs/mmanual_home/sec7/92.htm
3. Tierney, Lawrence, Stephen McPhee and Maxine Papadakis. (2003). Current Medical Diagnosis and Treatment. New York: Lange Medical Books/McGraw Hill