

SUBSTANCE ABUSE

What You Should Know

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Course Outline

- Chapter I** Introduction to Chemical Dependency (substance abuse)
Progression of Dependence Chronicity and Relapse
- Chapter II** The Opioids
History, Current Impact, and abuse potential
- Chapter III** CNS Depressants: Alcohol
History, Current Impact, and abuse potential
- Chapter IV** CNS Depressants: Sedatives-Hypnotics
History, Current Impact, and abuse potential
- Chapter V** Marijuana
History, Current Impact, and abuse potential
- Chapter VI** CNS Stimulants: Amphetamines, Cocaine
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History, Current Impact, and abuse potential
- Chapter IX** Designer Drugs
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History, Current Impact, and abuse potential
- Chapter XI** Over-the-Counter Drugs
History, Current Impact, and abuse potential
- Chapter XII** Treating Diverse Populations
Basic Treatment Concepts, Treatment Issues, Counseling Skills, Support Groups, Therapeutic Approaches, Aftercare and continuing care
- Chapter XIII** Impaired Health Care Professionals
Potential for substance abuse by health care professionals, extent of the problem, Prevention and treatment concepts, Involvement by state boards of nursing

Course Objectives

At the end of this course, each nurse will be able to:

1. Name and discuss the concept of substance abuse as a disease condition
2. Name and discuss the symptoms of each stage of substance abuse
3. Name and discuss the attitudes and behavior characteristics of denial accompanying substance abuse
4. Name and discuss the risk factors associated with developing substance abuse
5. Discuss the historical development of treatment of substance abuse
6. Discuss the characteristics of opioid abuse and the treatment methods used for this commonly abused substance
7. Discuss the characteristics of alcohol abuse and the treatment methods used for this commonly abused substance
8. Discuss the characteristics of sedative-hypnotic abuse and the treatment methods used for this commonly abused substance
9. Discuss the characteristics of marijuana abuse and the treatment methods used for this commonly abused substance
10. Discuss the characteristics of CNS stimulant abuse and the treatment methods used for this commonly abused substance
11. Discuss the characteristics of the abuse of the hallucinogens and the treatment methods used for these commonly abused substances
12. Discuss the characteristics of the abuse of inhalants and the treatment methods used for these commonly abused substances
13. Discuss the characteristics of designer drugs abuse and the treatment methods used for this commonly abused substance
14. Discuss the characteristics of the abuse of over-the-counter drugs and the treatment methods used for these commonly abused substances
15. Name and discuss the two major types of treatment programs presented in this text
16. Name and discuss 3 of the treatment modalities presented in this text
17. Name and discuss at least 3 treatment considerations in relation to health care professionals who have substance abuse problems

TERMS AND DEFINITIONS

Adaption--The process by which the regulator systems handle stressors. According to Hans Selye, there are three stages of biological reactions to a stressor. There is the alarm reaction, the stage of resistance, and the stage of exhaustion. It is in the stage of resistance where the body tries to restore homeostasis by altering related symptoms.

Antabuse--(disulfiram), blocks oxidation of ethanol at the acetaldehyde stage. Excess acetaldehyde produces a highly unpleasant reaction in the presence of even small amounts of ethanol.

Cannabis--a general term for any of the various preparations of the hemp plant, Cannabis sativa, and used interchangeably with the term marijuana.

Compulsive behavior--The strong impulse to do something contrary to one's will. A stereotyped repetitive action that a person feels compelled to perform. Obsessively washing hands, drinking alcohol, exercising, and gambling are some examples.

Coping--coping is a term that describes various methods or techniques used to adjust, to accommodate the demands of stress and daily living without being overwhelmed. One's general pattern of coping behaviors is known as the *personality*.

Craving Brain--The state of the brain when its landscape is primed for a craving response, exhibiting low serotonin with a highly sensitive nucleus accumbens.

Delusion--false belief that cannot be corrected by reason

Dopamine--A neurochemical that acts as both a neurotransmitter and a neuromodulator to increase salience and control motor action.

Drug--Any substance that enters the human body and can change either the function or structure of the human organism. This broad definition includes practically all foreign materials--even food, vitamins, plants, snake venom, air pollution, and pesticides.

Drug Abuse--Sometimes referred to as substance abuse or chemical abuse. Drug abuse is the deliberated or unintentional continuous use of mind-changing chemical substances (usually for reasons other than legitimate medical purposes) that results in any degree of physical, mental, emotional, or social impairment of the user, the user's family, or society in general. Drug abuse involves using illegal as well as legal mind-changing Asocial@ drugs that lead to ill effects and undesirable consequences. It also includes the use of legal medicines by health people for social convenience or personal pleasure, and the use of typically nondrug substances, such as gasoline, to produce drug-like effects.

Drug Actions--Drug actions are the result of a chemical interaction with some part of a human

organism. For the purpose of this text, two major types of pharmacological actions will be explained: (1) those resulting from the use of structurally nonspecific drugs; (2) those associated with structurally specific drugs.

Ganja--the resinous mass derived from the small leaves and brackets of the cannabis plant.

Hashish--the resinous secretions of the cannabis plant that are collected from the flowering tops, dried, and then compressed into various forms, such as balls, cakes, and cookie-like sheets. This form of cannabis is generally more potent than marijuana, having a THC content ranging from trace amounts up to 20%. Hashish is the major form of cannabis used in the Middle East and North Africa. In the Far East, the dried resinous exudate is called "charas."

Hashish Oil--a dark viscous liquid produced by a process of repeated extraction of cannabis plant materials. A solvent, such as ether or chloroform, percolates through the marijuana mixture, thereby removing more of the existing THC. This extract contains a greater concentration of THC than does hashish, with some samples having a THC content of nearly 60%.

Landscape--The result of the interaction between the terrain and the environment. The landscape is viewed as dynamic and ever-changing while retaining the fundamental aspects of the terrain.

Illusion--erroneous perception of reality

Inhalants--volatile drug and nondrug substances that have drug-like effects when inhaled. A few of these inhalants do have some medical uses, specifically, amyl nitrite and nitrous oxide.

Limbic system--A set of brain structures including a relatively primitive part of the cerebral cortex and parts of the thalamus and hypothalamus. An ancient part of the brain consisting of a group of well-defined neural cellular structures (amygdala, hippocampus, septum, and the nucleus accumbens) that receives sensory input and modulates its affective content. Two major biological functions, self-preservation and species preservation, are directed from this system. It is involved with the regulation of states of arousal, desire, and motivation, and plays a role in incentive learning.

Marijuana--a general term descriptive of any part of the cannabis plant, *Cannabis sativa*, or its extract that produces physical or psychic changes in the human. Marijuana is a tobacco-like substance produced by drying the leaves and flowering tops of the hemp plant.

Modeling--modeling behavior is the relationship between parental drug-taking behavior and that of their children's behavior following the same drug-taking patterns.

Naltrexone--A drug that inhibits the effect of morphine and similar opiates and blocks the pain alleviation ascribed to endorphins. It blocks the rise of dopamine in the nucleus accumbens from alcohol, opiates, and, in certain individuals, food cravings.

Narcotics--powerful painkillers, the narcotic analgesics, often referred to as opioids, also produce pleasurable feelings and induce may induce sleep.

Opiates (opioids)--Drugs that induce a dreamy, relaxed state and, in some people, intense feelings of pleasure. They exert their effects by stimulating special receptor sites within the brain. They include heroin, morphine, codeine, and oxycodone.

Pattern--A recognizable part of either the foreground or background, it may be either conscious or subconscious. All patterns that are recognized can affect the landscape.

Pattern Recognition--The system by which the brain matches sensory input to create a perception.

Perception--The process of identifying, organizing, interpreting, integrating, and retrieving sensory information. The process of becoming aware of one's environment through the senses.

Predisposition--Partly inherent and partly environmental, it is the critical step before response. Predisposition adds the effective content to perception. Its modulation of perception most often occurs within certain parameters known as the temperament. In this text, **predisposition is what we call the landscape.**

Pseudohallucination--misperception recognized as a misperception

Psychoactive Drugs--A psychoactive drug is a chemical substance that changes one's thinking, feelings, perceptions, or behaviors. These changes are a result of the drug's action on the human brain. Many psychoactive drugs already are integrated into the lifestyle of people who daily consume coffee, tea, beer, cola drinks, cocktails, cigarettes, aspirin, and various sleep-enhancing and alertness-promoting preparations. Some of the psychoactive drugs have a legitimate medical use. However, because all mind-altering drugs have the ability to modify mood and behavior, they have a high potential not only for misuse, but also for abuse in the human quest for pleasure or escape. Also referred to as **Psychedelics, mind-expanders, and/or hallucinogens.**

Serotonin--A neurochemical found in the brain, intestines, and blood that is thought to transmit neural impulses across synapses in the brain and play a role in the regulation of emotion and sleep. It acts as a neuromodulator and decreases salience and dopamine-mediated exploratory behavior.

Sinsemilla--a seedless variety of high-potency marijuana, originally grown in California and prepared from the unpollinated female cannabis plant.

Substance Abuse--(also refer to drug abuse)"substance abuse" in this text, will refer to the abuse of all the addictive drugs, dangerous drugs and abused chemicals. The term will be used interchangeably with the term drug abuse, although it could be argued that these terms are slightly different in meaning. The terms drug dependent, dependence, and addiction will also be used interchangeably, although these terms do also have slightly different meanings which will be discussed in the text.

Thai sticks--a cannabis preparation common in Southeast Asia, consisting of marijuana buds bound on to short sections of bamboo.

Tolerance--An altered physiological state, tolerance develops with the repeated use of certain drugs. This condition is usually defined as a decreased response to the effects of that certain drug. As a consequence of this reduced sensitivity, the dosage of the drug must be increased to achieve the desired effects.

Withdrawal--The physical and psychological effects of stopping drug use. The physical symptoms depend on the abused substance. Withdrawal from calming agents can lead to seizures. Removal of stimulant medication can produce depression. Abruptly stopping antianxiety medications can provoke severe anxiety. Withdrawal from narcotics can produce headaches, abdominal pain, and nausea.

CHAPTER I

Introduction to Chemical Dependency

(Substance Abuse)

Chapter I

Chapter I Behavioral Objectives:

At the end of this chapter, each nurse will be able to:

1. Name and define the terms "drug" and "medicine"
 2. Name and discuss at least five problems associated with drug abuse
 3. Discuss the scope of the problem of drug abuse and pregnant women
 4. Discuss the effects of drug abuse on pregnant mothers and the fetus
 5. Discuss at least two factors relating to substance abuse treatment for women
-

Study Questions:

- 1. The broadest definition of a drug is: any substance that enters the human body and can change either the function or:**
A. physiology B. structure C. prevention D. psychology
- 2. Drug problems lead to many other problems, including:**
A. sudden death B. happier life C. enhanced family life
- 3. Estimates of women of childbearing age, _____ are substance abusers.**
A. 15% B. 25% C. 45% D. 7% E. 10%

4. Cocaine can precipitate miscarriage or premature:

A. delivery B. bleeding C. false labor D. stroke

5. At 4 months of age, cocaine-exposed infants are at risk for:

A. SIDS B. AIDS C. seizures D. pneumonia E. motor dysfunction

Introduction

In this chapter we will use the term "substance abuse" to refer to the abuse of all the addictive drugs, dangerous drugs, and abused chemicals. The term will be used interchangeably with the term "drug abuse," although it could be argued that these terms are slightly different in meaning. The terms "drug dependent," "dependence," and "addiction" will also be used interchangeably, although these terms do also have slightly different meanings which will be discussed in the text.

In this text, we will also use the masculine terms "him," "his," "male," etc. Keep in mind that in certain places in the text, "he" may be used to refer to all persons of both genders. We may use the masculine term only for simplicity instead of using "him and her; his/hers," etc.

In this and subsequent chapters, we will present the history of substance abuse and how it became viewed as a disease entity. We will also discuss some of the common characteristics of addiction of various substances as well as many characteristics unique to certain chemicals of abuse. This text will also present statistics of substance abuse as well as the prevalence of addiction, risk factors, and susceptibility.

Drug Use and Abuse in the USA

In order for nurses to be able to treat patients with an addiction, you must first understand the nature of drugs and their effects upon the human body. One person may take a drug at some time in their life (prescribed or not) and never have any craving for that drug again. However, another person may take that same drug and then develop a life-long addiction to that same drug.

It is still unclear why this happens. There are theories as to what causes an addiction, and we will discuss some of these in this text. The nurse, in most cases, will be treating patients for the adverse effects caused by addictions. (Some nurses will also be involved with education and prevention of addictions, but most nurses today will be caring for patients for those medical problems caused by addiction.)

The broadest definition of a **drug** is: any substance that enters the human body and can change either the function or structure of the human organism. This broad definition includes virtually all foreign material that might enter the body and have any effect on that person's body.

The term "drugs" is often incorrectly used to refer to only the "illegal" chemicals that are used as mind-altering or behavior-altering substances. Many people also associate the term

"drugs" only with unlawful activities, rebellious youth, and irresponsible thrill-seekers.

On the other hand, the term "medicines," (which are also drugs) are more often thought of as being "good" for people. For example, sick people take medicines to get well. However, we as nurses should objectively determine the "goodness" or "badness" of any drug by considering how and why the drug is used and the consequences of the drug.

If using drugs and medicines had no long-lasting effects, never impaired physical, mental, social, or spiritual well-being, and always resulted in positive or otherwise health-promoting experiences, there would be no drug problem. However, the use of these powerful chemicals, and the not-so-potent chemicals as well, can and do affect humans--from prenatal to the elderly. Drugs and medicines affect people of both sexes, all races, creeds, educational levels, and ethnic and socioeconomic groups. As such, our drug problems are basically "people problems." (Carroll 1993)

They involve relationships, self-image, and self-identity. Such problems are based on attitudes and motivations that foster immediate satisfaction of needs and the inability to tolerate pain or frustration. Peer pressure, parent pressure, and the subtle influence of significant others are part of the problem. Living a pressure-filled life of competition, accompanied by the need to succeed at all costs, is also involved, as are conditions of economic deprivation and environmental harshness.

In essence, drug problems lead to many other problems, including:

- physical and mental illness
- infection with sexually transmitted diseases
- drug addiction or dependency
- adverse reactions and undesirable side effects
- premature and sudden death
- disrupted family life
- marital discord, often followed by separation or divorce
- aggression
- exploitation of others, rape
- vandalism and destructive behavior
- impaired performance on the job as well as in the classroom
- criminal activities that finance an individual's drug supply or "launder" illegal drug profits through financial institutions
- accidents and injuries due to combining drug use with driving or operating machinery
- imprisonment and institutionalization

These are just some of the elements that reveal the comprehensive nature of drug problems. They are often referred to as the symptoms of drug abuse. Moreover, when the nation's number-one agricultural crop is alleged to be marijuana, there is little doubt that drug problems exist in America.

There is perhaps a basic issue related to drug abuse and chemical dependency. America's drug problems stem not so much from drugs themselves but from an underlying and widely held belief that such substances can help us face modern life. We act as if having fun, working long and hard, and coping successfully with stressors of daily life all depend upon using drugs. Consequently, "Given this situation and knowing that no drug produces only positive effects, we should expect and not be surprised that our society has problems with drugs." Indeed, our society has many drug-related problems. (Carroll 1993)

Trends in Drug Use Among College Students

The following tables are part of the nationwide survey of drug use among high school students and young adults, conducted annually for the National Institute on Drug Abuse by the University of Michigan Institute for Social Research. Each year since 1977, some participants from all previously graduated high school classes have been followed through the use of mailed questionnaires.

The follow-up surveys include a sample of about 1,200 full-time American college students 1 to 4 years past high school.

Trends in Annual Prevalence of Various Types of Drugs Among College Students 1 to 4 Years Beyond High School.

	<u>Percentage Who Used in the Past 12 Months</u>	<u>Any illicit Drug</u>	<u>Any illicit drug Other than Marijuana</u>	<u>Hashish</u>	<u>Marijuana/ inhalants</u>	<u>Hallucinogens</u>	<u>LSD</u>	<u>Cocaine</u>	
1980	10.40%	56.2%	32.3%	51.2%	3.0%	8.5%	6.0%	16.8%	
1981	11.30%	55.0%	31.7%	51.3%	2.5%	7.0%	4.6%	16.0%	
1982	11.50%	49.5%	29.9%	44.7%	2.5%	8.7%	6.3%	17.2%	
1983	11.70%	49.8%	29.9%	45.2%	2.8%	6.5%	4.3%	17.3%	
1984	11.10%	45.1%	27.2%	40.7%	2.4%	6.2%	3.7%	16.3%	
1985	10.80%	46.3%	26.7%	41.7%	3.1%	5.0%	2.2%	17.3%	
1986	11.90%	45.0%	25.0%	40.9%	3.9%	6.0%	3.9%	17.1%	
1987	12.20%	40.1%	21.3%	37.0%	3.7%	5.9%	4.0%	13.7%	
1988	13.10%	37.4%	19.2%	34.6%	4.1%	5.3%	3.6%	10.0%	
1989	13.00%	36.7%	16.4%	33.6%	3.7%	5.1%	3.4%	8.2%	
1990	14.00%	33.3%	15.2%	29.4%	3.9%	5.4%	4.3%	5.6%	
1991	14.10%	29.2%	13.2%	26.5%	3.5%	6.3%	5.1%	3.6%	
1992	14.90%	30.6%	13.1%	27.7%	3.1%	6.8%	5.7%	3.0%	
1993	14.90%	30.6%	12.5%	27.9%	3.8%	6.0%	5.1%	2.7%	
1994	14.10%	31.4%	12.2%	29.3%	3.0%	6.2%	5.2%	2.0%	
1995	14.50%	33.5%	15.9%	31.2%	3.9%	8.2%	6.9%	3.6%	

	Ecstasy	Other	crystal meth	Crack	MDMA Cigarettes	Heroin/ opiates	Sedatives/ Alcohol	
1980	n/a	n/a	0.4%	5.1%	n/a	8.3%	90.5%	36.2%
1981	n/a	n/a	0.2%	4.3%	n/a	8.0%	92.5%	37.6%
1982	n/a	n/a	0.1%	3.8%	n/a	8.0%	92.2%	34.3%
1983	n/a	n/a	0.1%	3.8%	n/a	4.5%	91.6%	36.1%
1984	n/a	n/a	0.2%	3.8%	n/a	3.5%	90.0%	33.2%
1985	n/a	n/a	0.1%	3.8%	n/a	2.5%	92.0%	35.0%
1986	1.3%	2.3%	0.2%	2.4%	n/a	2.6%	91.5%	35.3%
1987	2.0%	2.3%	0.1%	4.0%	n/a	1.7%	90.9%	38.0%
1988	1.4%	0.9%	0.1%	3.1%	n/a	1.5%	89.6%	36.6%
1989	1.5%	2.0%	0.1%	3.1%	n/a	1.0%	89.6%	34.2%
1990	0.5%	0.8%	0.1%	3.2%	0.1%	n/a	89.0%	35.5%
1991	0.6%	0.5%	0.1%	2.9%	0.1%	n/a	88.3%	35.6%
1992	0.5%	2.4%	0.2%	2.7%	0.2%	n/a	86.9%	37.3%
1993	1.1%	0.5%	0.1%	2.7%	0.7%	n/a	85.1%	38.8%
1994	0.9%	0.5%	0.1%	2.5%	0.8%	n/a	82.7%	37.6%
1995	1.1%	2.4%	0.2%	3.8%	1.1%	n/a	83.2%	39.3%

n/a indicates data not available.

Drug Abuse and Pregnancy

Increasing numbers of women are abusing drugs during pregnancy and thus endangering the well-being and lives of their children as well as themselves. The spreading abuse of phencyclidine (PCP), cocaine, and cocaine's potent form "crack," added to the more well-known addictive narcotics such as heroin, has intensified concerns about the implications of maternal drug use for the fetus.

Some harmful effects are generally recognized. Cocaine use, for example, increases risk of hemorrhage and premature delivery, threatening the lives of mother and child. Babies exposed to narcotics in the womb are frequently born addicted, and the misery they suffer from withdrawal makes them difficult to care for, creating special demands on mothers who are often unable to take care of their children adequately. Other effects are less certain. Head size is often smaller in infants exposed to narcotics. While growth erases some of the physical differences, there may be subtle, long-term deficits in mental or neurological functioning in infants exposed to drugs in the womb.

Scientists are just beginning to explore how various drugs may affect the development of physical coordination, language, and emotional interactions. NIDA, (National Institute on Drug Abuse), through its clinical, epidemiological, and basic research programs, is increasing knowledge of immediate and long-term effects of drug use during pregnancy. NIDA grantees and others are designing and evaluating therapeutic programs to help mothers and their children overcome the harm caused by drugs.

Scope of the Problem

Evidence of increasing drug use among pregnant women comes from many parts of the country. NIDA estimates that of the women of childbearing age (15 to 44 years), 15 percent are

current substance abusers. Approximately 34 million consume alcoholic beverages, more than 18 million are current cigarette smokers, and more than 6 million are current users of an illicit drug; of the 6 million, 44 percent have tried marijuana, and 14 percent have tried cocaine at least once.

A 1988 survey conducted by the National Association for Perinatal Addiction Research and Education, of 36 hospitals from across the country and representing approximately 155,000 pregnancies annually, found that on average 11 percent of pregnant women used heroin, methadone, amphetamines, PCP, marijuana, and, most commonly, cocaine. The researchers estimate that each year, as many as 375,000 infants may be affected by their mothers' drug use.

Dr. Barry Zuckerman and his colleagues at the Boston University School of Medicine and Boston City Hospital conducted a study of 1,226 women who gave birth at the hospital between 1986 and 1988. Of this group, 27 percent had smoked marijuana, and 18 percent used cocaine. The researchers found that marijuana users gave birth to babies who are 3 ounces lighter and 1/5 inch shorter than babies born to women who did not use marijuana, while cocaine use was associated with still shorter and lighter infants.

Dr. Loretta P. Finnegan, director of the Family Center of Jefferson Medical College of Thomas Jefferson University in Philadelphia, reports that in 1985, 7 percent of women at the center were found to have cocaine in their urine, and now urine screens show that 58 percent are using it.

Effects on Pregnant Mother and Fetus

Until relatively recently, NIDA's research on the effects of maternal drug use on fetal and infant development has focused on narcotics and drugs like methadone, which is used in the treatment of narcotic addiction. As the abuse of cocaine, PCP, and other drugs grew, NIDA expanded this research program to non-narcotic drugs. NIDA's research in this area is intended to estimate incidence, prevalence, and patterns of use of illicit drugs among pregnant women, to identify the consequences of maternal drug use on the newborn, to identify the mechanisms underlying organic and behavioral effects resulting from exposure to drugs, and to develop strategies and procedures to prevent, ameliorate, or reverse these toxic effects and their developmental consequences.

A NIDA-supported study by Dr. Ira J. Chasnoff and his colleagues at Northwestern University's Perinatal Center for Chemical Dependence found that women injecting cocaine intravenously during pregnancy immediately experienced complications, including premature separation of the placenta from the womb, which causes hemorrhaging that threatens the lives of both mother and fetus.

Another study found that cocaine-addicted women were twice as likely to suffer premature separation of the placenta as women dependent on other drugs and four times as likely as drug-free women for this complication. However, this risk is reduced if the pregnant woman discontinues cocaine use early in pregnancy. Isolated cases of birth defects have been associated with cocaine use during pregnancy. However, additional studies are needed to confirm these observations. Cocaine also can precipitate miscarriage or premature delivery because it raises

blood pressure and increases contractions of the uterus. Maternal cocaine use also endangers the fetus directly. Studies show that it constricts uterine arteries. This constriction diminishes the amount of blood, and oxygen, reaching the fetus. In one extreme case, cocaine apparently caused a fatal stroke.

Effects on Infants

Knowledge of drug effects during the early months of life comes largely from studies of children born to women dependent on narcotics. Infants exposed to these drugs in the womb are often born addicted and undergo a characteristic withdrawal sequence called the neonatal abstinence syndrome (NAS). Newborns with a NAS show increased sensitivity to noise, irritability, poor coordination, excessive sneezing and yawning, and uncoordinated sucking and swallowing reflexes. If these symptoms persist, the infants require medication. NIDA-funded researchers are testing carefully controlled doses of phenobarbital, tincture of opium, and other substances to help infants withdraw from narcotics. Research using ultrasound measurements also raises questions about the rate of brain growth in narcotic-exposed babies. The head circumference tends to be slightly smaller, although this difference soon disappears. By the time infants are 6 months old, there is little difference between drug-exposed babies and others in brain measurement. But concerns remain, because prenatal harm to these areas of the brain could affect mental functioning, such as memory, in later childhood. Some researchers find that certain differences between drug-exposed and other infants persist, adding to concerns about long-term effects.

Other findings include increased risk for sudden infant death syndrome in which incidence among cocaine-exposed infants in the Chicago study was 17 percent compared with 1.6 percent in the general population and 4 percent in infants of mothers maintained on methadone. Assessment at 4 months of age indicates that the cocaine-exposed infants are at considerable risk for motor dysfunction. Data on 30 full-term cocaine-exposed infants and 50 full-term non-drug-exposed infants indicate a significant difference in mean total risk scores with 72 percent of the control group infants in the "no risk" category, while 43 percent of the cocaine-exposed infants were designated "high risk" for motor developmental dysfunction. The infants will be followed to three years of age.

Long-Term Effects

The epidemic of drug abuse among pregnant women is recent enough that investigators only now have the opportunity to follow groups of children over several years and thus generalize about more far-reaching effects. Some of the preliminary findings are encouraging. Children at ages 2 to 5 born to methadone-maintained women seem comparable in intelligence to youngsters of drug-free mothers. However, despite scoring in the normal range for overall intelligence, these children seem to run increased risk of learning disabilities and delayed motor, speech, and language development.

Effective drug intervention programs for drug-dependent mothers and their children may be essential to promoting the youngsters' emotional and intellectual well-being. Dr. Judy Howard at the University of California, Los Angeles, is assessing the benefits of a program using a

pediatrician, a public health nurse, and a social worker to contact homes regularly to offer information, advice, and referrals to medical and other services. In addition, an infant development specialist works with the children on development skills while a specialist helps mothers and foster parents become sensitive to each child's level of stress and state of well-being.

The increasing use of drugs by women of childbearing age, the greater numbers of children being born to drug-abusing women, and the environment in which these infants are reared all lend added urgency to additional research in these critical areas.

Women and Drug Abuse

Addiction to drugs is a serious, chronic, and relapsing a health problem for both women and men of all ages and backgrounds. Among women, however, drug abuse may present different challenges to health, may progress differently, and may require different treatment approaches.

Scope of the Problem

The National Household Survey on Drug Abuse provides yearly estimates of drug use prevalence among various demographic groups in the United States. Data are derived from a nationwide sample of household members aged 12 and older.

- In 1994, 31 percent of U.S. women (females over age 17) had used an illicit drug at least once in their lives--30.5 million out of 98.4 million women.
- More than 3.8 million women had used an illicit drug at least once in the month preceding the survey.
- The survey showed nearly 28 million women had used marijuana at least once in their lifetimes. About 440,000 women had used cocaine in the preceding month; 188,000 had used crack cocaine. About 245,000 women had used hallucinogens (including LSD and PCP) in the preceding month.
- More than a quarter-million women (257,000) used a needle to inject drugs in 1994, and more than 2.5 million had done so at some point in their lives.
- In 1994, about 1.2 million females aged 18 and older had taken prescription drugs (sedatives, tranquilizers, or analgesics) for a nonmedical purpose during the preceding month.
- In the month preceding the survey, more than 26 million women had smoked cigarettes, and more than 2.4 million had consumed alcohol heavily.

Understanding Women Who Use Drugs

Drug-dependent women can, at any age, overcome the illness of drug addiction. But to do so, they need the help of individuals including adult significant others, family members, treatment providers, and the community. Women of all races and socioeconomic status suffer from the serious illness of drug addiction. And women of all races, income groups, levels of education, and types of communities need treatment for drug addiction, as they do for any other problem affecting their physical or mental health.

Many women who use drugs have faced serious challenges to their well-being during their lives. For example, research indicates that about 70 percent of women who report using drugs also report having been abused sexually before the age of 16, and more than 80 percent had at least one parent addicted to alcohol or one or more illicit drugs. Often, women who use drugs have low self-esteem and little self-confidence and may feel powerless. They often feel lonely, isolated from positive support networks, and less worthy of help than men in similar conditions. In addition, ethnic and racial minority women may face additional cultural and language barriers that can affect or hinder their treatment and recovery.

Many drug-using women do not seek treatment because they are afraid--they fear not being able to take care of or to keep their children, they fear reprisal from their spouses or boyfriends, and they fear punishment from authorities in the community. Many women report that their drug-using male sex partners initiated them into drug abuse and then sabotaged their efforts to quit using drugs.

Consequences of Drug Use for Women

Research indicates that women can become addicted quickly to certain drugs, such as crack cocaine, even after casual or experimental use. Therefore, by the time a woman enters treatment, she may be severely addicted and consequently may require treatment that both identifies her specific needs and responds to them. These needs will likely include addressing other serious health problems-- sexually transmitted diseases and mental health problems, for example.

More specifically, health risks associated with drug abuse in women are:

- Poor nutrition and below-average weight
- Low self-esteem
- Depression
- Physical abuse
- If pregnant, preterm labor or early delivery
- Serious medical and infectious diseases (e.g., increased blood pressure and heart rate, STD's, HIV/AIDS).

Women, Drug Abuse, and HIV/AIDS

AIDS is now the fourth leading cause of death among women of childbearing age in the United States. Substance abuse compounds the risk of AIDS for women, especially for women who are injecting drug users and who share drug paraphernalia, because HIV/AIDS often is transmitted through shared needles or syringes. In addition, under the influence of illicit drugs and alcohol, women may engage in unprotected sex, which also increases their risk for contracting or transmitting HIV/AIDS.

From 1993 to 1994, the number of new AIDS cases among women decreased 17 percent. Still, as of June 1995, the Centers for Disease Control and Prevention had documented almost

65,000 cases of AIDS among adolescent and adult women in the United States.

Of these cases,

- Nearly 66 percent were related either to the woman's own injecting drug use or to her having sex with an injecting drug user
- About 36 percent were related to heterosexual contact, and almost half these women acquired HIV/AIDS by having sex with an injecting drug user

Treatment for Women

Research indicates that more than 4 million women need treatment for drug abuse. Unfortunately, there are some important reasons, as stated above, why many women do not seek help.

Research shows that women receive the most benefit from drug treatment programs that provide comprehensive services for meeting their basic needs, including access to:

- Food, clothing, and shelter
- Transportation
- Job counseling and training
- Legal assistance
- Literacy training and educational opportunities
- Parenting training
- Family therapy
- Medical care
- Child care
- Social services
- Social support
- Psychological assessment and mental health care
- Assertiveness training
- Family planning services

Traditional male-oriented drug treatment programs may not be appropriate for women because those programs may not provide these services. Research also indicates that, for women in particular, a continuing relationship with a treatment provider is an important factor throughout treatment. Any individual may experience lapses and relapses as expected steps of the treatment and recovery process; during these periods, women particularly need the support of the community and encouragement of those closest to them. After completing a drug treatment program, women also need services to assist them in sustaining their recovery and in rejoining the community.

Drug Information Helpline

A toll-free hotline is available to provide free, confidential answers to women seeking help for themselves or for someone they care about or to provide referral to a local drug treatment program. The National Drug Information, Treatment, and Referral Line is reached through 1-800-662-HELP; 1-800-66-AYUDA for Spanish-speaking callers. The hotline operates Monday through Friday from 9 a.m. to 3 a.m. and Saturday and Sunday from 12 noon to 3 a.m.

CHAPTER II

The Opioids

(Substance Abuse)

Chapter II

Chapter II Behavioral Objectives

At the end of this chapter, each participant will be able to:

1. name and describe the effects of opioids
2. name and describe the potential for addiction of the opioids
3. identify and describe the natural opioids derived from the opium poppy
4. state how opioids benefit human health and well-being
5. explain how opioids effect the CNS, Central Nervous System
6. name and describe at least 3 medical problems related to long-term opiod use
7. describe withdrawal symptoms from the opioids

Study Questions :

6. All members of the opiod group provide analgesia and depress:

A. vomiting B. respiration C. diarrhea D. smooth muscle E. nausea

7. _____ is one of the most addictive drugs on earth.

A. Demerol B. Heroin C. Dilaudid D. Morphine E. Marijuana

8. In the 1960's and 1970's, heroin use increased among:

A. adults B. teens C. young adults D. older adults E. the elderly

9. Tolerance to the more potent opioids develops:

A. very slowly B. slowly C. rapidly D. does not occur at all

10. Opioids _____ the placenta to affect the fetus.

A. never cross B. sometimes cross C. do cross D. constrict

11. The severity of withdrawal from opioids depends upon many factors, including:

A. amount used B. length of addiction C. how abruptly withdrawn D. a, b,& c

12. The medical abusers of prescription opioids are predominantly women, middle-class, the elderly, and:

A. young male B. Black/Latino C. teens D. health-care professionals

The opioids:

The term opiod is used in this text to refer to the naturally occurring drug compounds extracted from the opium poppy;

1. *semisynthetic opioids* produced by making minor chemical changes in the naturally occurring substances, and

2. *synthetic opioids* which are chemically different from morphine, but have similar pharmacologic actions.

These drugs are the drugs commonly referred to as narcotics. These drugs are extensively used for their beneficial actions of relieving pain (and other uses). (Bobst 1994) The prototype opiod to which all other opioids may be contrasted and compared is morphine. They are also classified according to their action, either as agonist or antagonist at receptor sites.

The opioids are similar in absorption, duration of effects, side-effects and withdrawal syndromes. All members of the opiod group provide analgesia, act as an antitussive, depress respiration, and produce effects on the gastrointestinal system, smooth muscle, peripheral blood vessels, and endocrine system. They depress the central nervous system to produce changes in mood, drowsiness, mental clouding, and depression of the cardiac function at high doses.

History of the Opioids (opium)

Opium has been used since at least 4000 BC and recognized throughout history for its pain relieving and sedating qualities. Hippocrates and Galen recommended and encouraged wide use of the drug. However, as early as the eleventh century, physicians noticed and described its addictive potential. During the sixteenth century, when the opium compound laudanum was the most popular medication in Europe, Arab scientists warned that chronic use of opium degenerates the mind. Nevertheless, by the nineteenth century opium was cheap, available, and widely used by many nations, largely as a result of legalization of opium in China.

In 1805, the major ingredient in opium was isolated and named morphine after the Greek god of Sleep, Morpheus. Morphine is about 10 times stronger than plain opium and acts much more

rapidly. It may be white, off-white, or light brown and is dispensed in cubes, capsules, tablets, powder, or in an injectable solution.

Thirty years later, codeine, another natural constituent of opium, was synthesized from morphine and made available as phosphate or sulfate salts in syrups, tablets, or in ampules for injection.

During the civil war, morphine and patent medicines containing opium and alcohol were used to treat dysentery and pain. In the 1880's, recreational smoking of opium became popular in the U.S. when Chinese immigrants introduced the practice to Americans. They began cultivating the opium poppy in Mexico, which eventually became the major source of illicit opium in North America.

Growing the opium poppy is illegal in most countries, including the United States. In areas where it is legally grown for medicinal purposes, it is regulated by a network of international agreements. In India, the opium poppy is grown legally as a cash crop. Interestingly enough, there is little illegal opium trade in India. However, in other areas such as central Turkey, the opium poppy is an important illegal cash crop. In Pakistan, Afghanistan, Laos, Burma, and Thailand, growing the poppy is illegal.

Heroin was synthesized from morphine in 1874. In 1898, the Bayer company promoted it as a cough suppressant until it was discovered to be 2 1/2 times stronger than morphine with twice the potential for addiction. Nevertheless, heroin became widely used, helped along by invention of the hypodermic needle, and many physicians prescribed it disclaiming its potential for addiction.

Heroin:

Today, heroin, a very powerful narcotic, is one of the most addictive drugs on earth, both physically and psychologically. It is classified as a depressant, meaning that the user appears tired, drowsy, or drunk rather than energetic or hyperactive (as one might act when under the influence of a stimulant such as cocaine or speed). Heroin may be smoked when in pure powder form, "snorted" into the nose through a straw or rolled up dollar bill, "skin popped" (injected just under the skin), or "mainlined" (injecting directly into the vein). Heroin most commonly comes in three forms: black-tar, brown powder, or white powder.

Black-tar heroin appears just as its name implies - a black ball of tar. Addicts place a small amount (for beginners this would be about half the size of a pea or less) of the heroin in a spoon with a small amount of water which is then heated over a flame. Once the heroin has melted, it is drawn up into a syringe and injected.

Heroin is also produced in a form that looks similar to cocaine - a white powder. And today this form is much more pure and potent than it has been in the past. While many addicts still inject this form of heroin, because of its purity, many others are able to smoke it through a glass pipe, similar to the way cocaine and speed are smoked. This makes the use of heroin more acceptable to middle and upperclass students and business folk who would otherwise shun the

stigma of sticking a needle in their arm like a "common junkie" (not to mention the risk of becoming infected with the AIDS virus through the use of dirty needles).

Some long term physical conditions that accompany heroin addiction include reduced energy level, reduced sex drive, overall lethargy and lack of motivation when it comes to involvement with any activities other than those associated with obtaining their next "fix" (the next dose). Those "associated activities" include burglary, robbery, prostitution, etc. to get money for the drug.

Heroin, a white, odorless, crystalline powder is usually about 3% pure when purchased illegally. The remaining filler substance may be various substances such as lidocaine, procaine, quinine, or lactose. A dose of heroin is called a "bag" on the street, and contains between 1 mg and 5 mg of the drug.

The Harrison Narcotic Act of 1914, was an attempt to control opiod use by requiring a doctor's prescription for its sale. Opiod addicts turned to the "black market," and in 1924, a federal law was passed making heroin illegal. Individuals were prosecuted for the illegal possession of opioids. As a result, criminal organizations and city gangs flourished, the unemployed congregated in the cities, and crime increased at this time.

In the 1960's and 1970's, heroin use increased among young adults. In 1969, it was the number one cause of teenage death in New York City. A 1978 survey of 24 urban areas showed an estimated 432,000 to 508,000 cases of heroin addiction in the United States, while another survey placed the figure closer to 1 million.

Effects of the Opioids

Analgesic Effects: The primary reason for the use of opioids is for pain relief. These agents suppress the perception of pain without completely clouding the consciousness.

Each of the opioids relieves pain in dose-related increments, until they reach a plateau. This plateau is different for each of the opioids. Beyond this plateau, ever-greater doses will only produce greater side effects such as respiratory depression, sedation, seizures, and loss of motor control.

Among the most effective analgesics are parenterally administered heroin, morphine, and hydromorphone (Dilaudid) because of their rapid absorption and high threshold for side effects. Codeine and methadone have good oral absorption, but morphine and meperidine (Demerol) do not.

Antitussive Effects: Opioids suppress the cough reflex by decreasing the sensitivity of the central respiratory center to rising carbon dioxide levels. Death from respiratory arrest can result.

Respiratory Effects: Respiratory arrest is the major cause of death from acute opiod overdose. The opiate antagonists (e.g. naltrexone) can dramatically reverse respiratory depression.

Gastrointestinal Effects: Nausea and emesis may be the initial reaction due to central stimulation, but as central depression occurs, emesis may not occur even with an emetic agent. Both the longitudinal and circular muscular layers of the intestine contract simultaneously, sharply reducing peristalsis action. This can be a helpful effect in patients with dysentery, minimizing loss of fluid and electrolytes. However, the effect can be unpleasant in people being treated for pain because these same effects on the gastric musculature lead to constipation.

Smooth Muscle Effects:

The smooth muscle of the urinary bladder is stimulated by opioids. This can produce a troublesome feeling of constant urgency, however, most opioid abusers come to ignore this due to reduced central perception of this effect. The uterine muscle is mildly affected by opioids so that labor is frequently prolonged.

Peripheral Effects:

Opioids induce a release of histamine which results in peripheral blood vessel dilation, and may cause reddened skin and itching. Another mechanism causes reflex vasoconstriction inhibition resulting in orthostatic hypotension.

Endocrine Effects:

Opioids act on the pituitary gland to decrease thyroid activity and production of gonadotropins and adrenocorticotrophic hormone. This leads to lessened sexual desire in both men and women.

CNS Effects:

There are receptor sites in the central nervous system for endogenous, opioid-like substances called enkephalins, dynorphins, and endorphins. These substances, collectively called opiopeptins, attach to their receptor sites and act as neurotransmitters in the regulation of pain and other body functions. Apparently opioid drugs mimic the natural endogenous opiopeptins, attach to their receptor sites, and act in their place to regulate pain and certain other body functions.

Four receptor sites for opiopeptins have been identified. The *mu* receptors are believed to regulate euphoria, physical dependence, withdrawal, respiratory depression, and supraspinal analgesia. The *kappa* receptors have prominent actions on diuresis, sedation, sleep, and spinal analgesia. Stimulation of the *sigma* receptors can produce emotional unease, dysphoria, hallucinations, and vasomotor stimulation. *Delta* receptors appear to affect cardiovascular function, contribute to analgesia, and cause changes in affective behavior.

When an opioid drug is in the right shape to fit one of these receptors, it can attach and produce a response (agonist), produce a partial response (partial agonist) or prevent any response from occurring (antagonist). For example, *mu* receptors are usually occupied by the morphine-

like opioids (agonists), but can be displaced by drugs such as naloxone (antagonist) so that their effects at the *mu* receptor cannot be felt.

All the opioids are addictive substances, but some are more rapidly addicting than others and more likely to be abused.

Tolerance:

Tolerance results from the chronic use of opioids. This means that over time the user must increase the dose to feel the euphoric effects, and certain other less desired effects such as respiratory depression, nausea, emesis, and impairment of consciousness. Certain other effects such as orthostasis, myosis, constipation, and urinary urgency continue to be felt with no dose increase. Tolerance to most opioids, especially the more potent analgesics, develops rapidly. But, a period of abstinence reverses tolerance and their user can again experience the effects with a smaller dose. The intermittent use of small quantities of opioids does not appear to produce tolerance. It is estimated that about half of recreational opioid users, in certain settings, do not progress to chronic use.

Cross-Tolerance: Cross-tolerance occurs among the opioids, thus an addict, experiencing withdrawal from one of the opioids, can suppress the withdrawal symptoms by substituting another opioid. When the substituted opioid is stopped, he/she will experience the withdrawal syndrome characteristic for that opioid. This procedure may be followed in the detoxification process.

Fetus: Opioids cross the placenta to affect the fetus. Newborns may have symptoms of intoxication or overdose and experience a withdrawal syndrome similar to that in the adult.

Withdrawal from the Opioids

The cessation of chronic, moderate, or heavy use of an opioid, or a reduction in the amount used, or the administration of an opioid antagonist will produce acute withdrawal symptoms. The severity of the withdrawal symptoms depends up many factors such as the amount used, the length of addiction and how abruptly the drug is withdrawn; among other factors. The following table of withdrawal is a guide to the withdrawal symptoms you might expect.

Table of Opioid Withdrawal Symptoms (adapted from Frances & Miller)

Stage I--begins within hours of last dose and peaks at 36-72 hours

- craving for the drug
- tearing (lacrimation)
- rhinorrhea (running nose)
- yawning
- diaphoresis (excessive sweating)

Stage II--begins at 12 hours and peaks at 72 hours

- mild to moderate sleep disturbance
- mydriasis (dilated pupils)
- anorexia (loss of appetite)
- piloerection (goose flesh, goose bumps)
- irritability
- tremors

Stage III--begins at 24-36 hours and peaks at 72 hours

- severe insomnia
- violent yawning
- weakness
- nausea, vomiting, diarrhea
- chills, fever
- muscle spasms (may be severe)
- flushing
- spontaneous ejaculation
- abdominal pain

Always remember that persons using opioids for short periods of time and for medical purposes, will probably have few and mild withdrawal symptoms. These may include slight restlessness or temporary insomnia. Those who have been "recreationally" addicted to high doses of opioids for long periods of time, may have severe withdrawal symptoms. These may include fever, chills, severe abdominal pain, seizures, coma, and even death. Deaths are rare today from withdrawal due to modern medical management of withdrawal.

Neonatal withdrawal:

Neonatal acute withdrawal symptoms include high-pitched crying, fever, sleep disturbances, frantic fist sucking, yawning, sneezing, nasal stuffiness, increased respirations, tremors, convulsions, vomiting, diarrhea, and dehydration. These symptoms may not be seen until several days to several weeks after birth, since drugs are retained longer in neonates. A protracted withdrawal of up to eighteen months is characterized by increased susceptibility to colds, flu, ear infections, viruses, and other conditions related to a deficient immune system.

Current Impact

Opioids today are severely regulated in the United States. However, street demand continues to support a black market characterized by crime and poverty.

Overall, there are three groups of opioid users in the U.S.:

1. street abuser. The average street abuser tends to be a young male, black or Latino with a history of antisocial problems. Typically, he was introduced to heroin by another heroin user and he in turn introduces it to others. Drug abuse usually starts in mid-teens, first with marijuana, then harder drugs, like heroin by age 18. By age 20, the heroin addict is usually arrested for the first time.

2. medical abuser. The "medical" abusers of prescription opioids are predominantly middle-class individuals, women, the elderly, health-care professionals, and people with pain syndrome. The histories of these individuals may be more similar to that of alcoholics than to street abusers, although street opiod abusers also tend to rely on legal prescriptions from physicians as they get older.

In the 1960's and 1970's propoxyphene HCL (Darvon) was the most abused prescribed opiod in the U.S. with 500 deaths reported in 1979. Many propoxyphene HCL dependents abused prescriptions given them by physicians for pain relief, taking the drug indiscriminately. Commonly abused opioids include such drugs as meperidine (Demerol), morphine, and pentazocine HCL (Talwin). Healthcare professionals are especially at risk to abuse opioids because of their accessibility.

3. methadone abuser. The methadone abuser, while being administered methadone at a clinic, may supplement his maintenance dose with black market methadone, alcohol, or other drugs. Or he may ask to go on methadone maintenance only because he is temporarily unable to obtain opioids, or because he wants to decrease his tolerance to an amount he can afford.

Treatment Options

Mentioned below is Ibogaine, a new treatment option for heroin and cocaine addiction. Treatment methods will be discussed in detail later in this text. However, we mention this option here and now because ibogaine is a very new treatment option and is specific for heroin and cocaine addictions.

Ibogaine (NIDA, 1998)

On August 25, 1993, the Drug Abuse Advisory Committee of the U.S. Food and Drug Administration (FDA) voted to permit an individual academic investigator to conduct a limited human investigation of ibogaine. Ibogaine is believed by some to interrupt addiction of some heroin-dependent and cocaine-dependent persons. Ibogaine comes from the root of the iboga plant found primarily in certain West African nations and used in certain African rituals. Ibogaine also is reported to be a hallucinogenic drug. This drug is currently under study and holds promise as an adjunct for treatment. Preliminary reports are due within the next year or two. We will keep this text updated as to the results of the FDA studies.

CHAPTER III

CNS Depressants: Alcohol

(Substance Abuse)

Chapter III

Chapter III Behavioral Objectives:

At the end of this Chapter, Each nurse will be able to:

1. Define and discuss alcoholism in modern society
 2. Discuss the history of alcohol beginning in the 1800's society in the U.S.
 3. Name and discuss the four alcohol states of consciousness
 4. Name and discuss at least five popular attitudes toward drinking
 5. Discuss the current significance of alcoholism in our society including social problems and at least 8 health problems associated with alcoholism
 6. Name and discuss at least three signs and symptoms of alcoholism
 7. Name and discuss at least three stages of withdrawal from alcohol
-

Study Questions:

13. Alcohol in low doses causes suppression of inhibitory centers and produces:

- A. coughing B. apparent stimulation C. respiratory arrest D. flatus

14. After ingestion, ethanol is absorbed primarily from the stomach and the:

- A. esophagus B. small intestine C. tongue D. buccal membranes

15. There is no doubt that (alcohol) intoxication produces an altered state of:

- A. consciousness B. awareness C. confusion D. sleep E. alertness

16. Escape drinking is the use of alcohol to escape:

- A. reality B. problems C. children D. family E. work problems

17. Approximately _____ deaths a year are directly attributed to alcohol abuse.

- A. 240,000 B. 40,000 C. 500,000 D. 640,000 E. 95,000

18. The alcoholic tends to drink in secret in order to hide the:

- A. bottle B. side effects C. cost D. label E. consumption level

19. When sober, the alcoholic may regret what was said or done while:

- A. at home B. at work C. "partying" D. drinking E. vomiting

20. Some alcoholics will experience withdrawal symptoms that may last up to a:

A. year B. month C. week D. day or two E. full 3 months

What is Alcohol?

(Bobst 1994)

Most abusable substances fall into one of three general categories: stimulants, depressants, or psychedelics. Alcohol is classified as a depressant. Alcohol produces some of its effects by depressing various brain functions. Alcohol is also a chemical solvent, a local anesthetic, and an irritant. Many of alcohol's side effects are due to these actions rather than to the sedative effect of the agent.

Alcohol can be mixed in many different beverages and also found in many prescription and nonprescription medications. Alcohol in low doses causes suppression of inhibitory centers and produces apparent stimulation. It also causes impairment of abstract thinking and lessens anxiety. At moderate doses, alcohol can cause drowsiness, slowed reflexes, and incoordination. In large amounts, alcohol decreases vital brain functions, produces sedation, slows the breathing rate, and can cause death.

Alcohol is absorbed from all parts of the gastrointestinal tract. Most of the alcohol enters the bloodstream from the stomach and small intestine. The peak Blood Alcohol Level (BAL) occurs 60 to 90 minutes after ingestion when the stomach is empty. It readily passes from the blood into nearly every tissue in the body, including the brain. The presence of food in the stomach slows the rate of absorption. However, the amount of alcohol absorbed remains unchanged.

While no one would get drunk from the alcohol in one or two teaspoons of cough syrup, liver and stomach enzymes cannot deactivate large amounts of alcohol consumed at one time. Alcoholic drinks, including beer, cause the amount of alcohol in the blood to rise. Excessive drinking may lead to vomiting and other unpleasant toxic effects. These symptoms are part of the automatic defense systems of the body which are activated to prevent more alcohol from being absorbed. When drinking stops, the liver enzymes will eventually convert excess alcohol into less harmful substances. The final products of alcohol metabolism are carbon dioxide and water.

Alcohol has always been used to enhance life, socialize, celebrate traditions and religious rituals, and to medicate. Ethyl alcohol, the oldest of the sedative-hypnotic drugs, dates back to 8,000 B.C.E., when beer was first brewed. Around 8,000 B.C.E., the distillation process was discovered making it possible, with repeated distillation, to bring a liquid to nearly 100% alcohol. The alcohol content of most beverages today, ranges between 3% and 50%.

In the early 1800's Dr. Benjamin Rush popularized the view that alcoholism is an addiction and a disease, rather than a moral failure. Since that time, disagreement has existed as to the cause of alcoholism. Some believe that it is an inherited disease and others believe it is merely a

habit that has gone out of control. Currently, the concept that alcoholism is a disease and addiction is widely accepted by professionals in the field.

Biochemistry of Alcohol:

Ethyl alcohol (C_2H_5OH) is a central nervous system depressant. It is a clear, colorless, hydrophilic molecule, absorbed primarily from the stomach and intestine and distributed into the total body water, and from there to virtually every cell in the body. (Note: Ethyl alcohol is very different from rubbing alcohol, methyl alcohol, which is poisonous if taken internally)

Although ethanol is a CNS depressant, at lower doses it has a stimulating effect which is due to a lessening of inhibitions rather than due to true physical stimulation. As the dose is increased, there is progressive depression of cerebral function. The dose needed to produce the depressant effect depends upon variables such as the individual's age, weight, sex, physical condition, co-ingestion of food, and level of tolerance.

At blood alcohol levels (BAL) of 0.05% (measured in milligrams per deciliter, mg/dl), most people can be expected to have impaired coordination and euphoria. At BAL 100 to 199 mg/dl (0.10-0.19%), ataxia, decreased mentation, poor judgement, and a labile mood set in. When the BAL reaches 200 to 299 mg/dl (0.20-0.29%), most people will have marked ataxia and slurred speech, poor judgement, nausea and vomiting, as well as a labile mood. By 300 to 399 mg/dl (0.30-0.39%), the drinker will be in stage I anesthesia with memory lapse and a labile mood. Finally, at BAL levels of 400 to 700 mg/dl (0.40-0.70%) and higher, respiratory failure, coma, and ultimately death occurs. However, tolerant individuals have been known to be awake and talking with a BAL of 700+ mg/dl.

Ethanol has the ability to damage or destroy every cell in the body. First, because it is found in all body fluids surrounding the cells, including blood, urine, saliva, spinal fluid, and tears. Second because, repeated use in certain concentrations is toxic to body tissue. Third, because it converts to acetaldehyde, a metabolite that is even more toxic than the parent compound, ethanol.

After ingestion, ethanol is absorbed primarily from the stomach and the small intestine. About 5-15% is eliminated through the lungs, kidneys, and sweat glands. The remainder is metabolized in the liver where it is converted to acetaldehyde by the enzyme alcohol dehydrogenase (ADH). Acetaldehyde, more toxic than ethanol, is quickly converted by another liver enzyme aldehyde dehydrogenase (ALDH) to acetic acid which is broken down into carbon dioxide and water and eliminated through the kidneys and lungs.

This is the normal process that occurs when an individual drinks alcohol. However, the metabolism of alcohol is dramatically different in one important way. Although most of the ethanol is broken down by the usual process into carbon dioxide and water and is eliminated through the kidneys and lungs, about 1% is diverted to an alternative fate. Biochemical dependency on ethanol is due to this small portion of diverted acetaldehyde. Acetaldehyde combines with the neurotransmitter dopamine to form an addictive alkaloid called tetrahydroisoquardrelone (THIQ). This alkaloid is closely related to the opioids. In addition,

THIQ combines with other neurotransmitters in the central nervous system, forming other addictive alkaloids.

Most now believe that these substances are not metabolized or eliminated, but remain in the body, and act much like heroin does. Because they remain in the body, once a person is an alcoholic, he will always be one, similar to the reasons that opioid dependency recurs. Thus, even though an alcoholic may abstain from alcohol for 20 years, if he starts drinking again, he will be unable to control his intake.

The metabolism of ethanol requires in addition to ADH, a coenzyme called nicotinamide adenine nucleotide diphosphate (NAD), also found in the liver. If an insufficient amount of ADH is produced in the liver, the individual will not be able to metabolize ethanol. Thus, the active ingredients in ethanol remain in the system longer. A second enzyme, aldehyde dehydrogenase (ALDH), has at least four clinically significant isoenzymes. ALDH I, the most active, is missing in up to 50% of Asian people. The lack of this enzyme has often been tied to the facial flushing that occurs in many Asian people when they drink alcoholic beverages. There is also a high rate of facial flushing and alcoholism among American Indians and Eskimos,

Oxidation of alcohol also leads to release of excess hydrogen in the liver causing an overabundance of a reduced form of NAD. Inadequate feedback regulation of the metabolism of alcohol results in imbalances in the liver, which ultimately lead to alcohol-related liver disease.

Altered States of Consciousness

Although scientists do not agree on the initial site of impairment, there is no doubt that intoxication produces an altered state of consciousness in individuals. Behavioral and biological differences suggest, however, that the period of mood and behavior modification is not a unitary or single state. Rather, the duration of the effects of alcohol is a time composed of several different states of consciousness, depending on whether the blood-alcohol concentration is increasing (the ascending limb of the blood-alcohol curve) or decreasing (the descending limb of the blood-alcohol curve).

Four **alcohol states of consciousness (ASC)** during intoxication:

ASC-1

the time of alcohol absorption and increasing blood-alcohol concentrations, is characterized by talkativeness, laughter, motor incoordination, impaired performance on various cognitive, motor, and sensory tasks, and poor memory

ASC-2

the time beginning after the peak blood-alcohol concentration has been obtained and the blood-alcohol level is declining, during which the drinker becomes quiet and tired, but impaired performance is beginning to improve

ASC-3

the time beginning about halfway between peak blood-alcohol concentration and zero blood-

alcohol level, in which the individual feels confident that he or she is perfectly sober, yet a detectable blood-alcohol concentration is still present.

ASC-4

the time during which all traces of alcohol have disappeared from the body, but for up to 32 hours after drinking, positional alcohol nystagmus (PAN) eye movements can be detected in which the eyeballs involuntarily oscillate laterally, vertically, or in a rotary manner.

Historical and Cultural Aspects of Alcohol

(Carrol 1993)

Whether by accident or intent, beverage alcohol has played more than an inconsequential part in our national history. The earliest immigrants brought their own drinking attitudes and practices to their new homeland. According to legend, the Puritans landed at Plymouth Rock because their beers and victuals were running low. Contrary to popular belief, these early settlers considered alcohol as the good creature of God, and beers and wines became normal parts of family life and festive occasions. It was also during the colonial period that many a Yankee fortune was amassed by manufacturing rum from supplies of West Indies molasses. The rum was then traded for slaves in Africa, giving rise to the infamous "trading triangle" of molasses, rum, and black slaves. New England traders and shippers had discovered a flourishing business.

Early attempts to promote *temperance* were part of a moral crusade by several Protestant churches. Initially their aim was not abstinence, but moderation in the use of beer and wine. People were actively discouraged from drinking whiskey and rum--popular distilled spirits. However, by the late 1830's this movement had evolved into a campaign for total abstinence from all alcoholic beverages. The temperance movement gradually switched from education and moral persuasion to political organization and the power of the ballot box to realize its goals. Leaders of this social and moral reform movement sought to legally repress the liquor trade and prohibit the sale of all alcoholic beverages.

Eventually the Prohibition Party, the Anti-Saloon League, and the Women's Christian Temperance Union were successful in their campaign to establish nationwide prohibition by amendment to the federal Constitution. This effort was truly extraordinary, inasmuch as the major force supporting prohibition, the women of America, had not yet been granted the right to vote.

Passing Congress with the necessary two-thirds majority, the Eighteenth Amendment to the U.S. constitution was submitted to the states for ratification. By 1918, the needed 36 states had ratified the amendment that prohibited the manufacture, sale, or transportation of intoxicating liquors used for beverage purposes.

The Volstead Act, passed in 1919, provided the amendment's enforcement. The constitutional amendment went into effect in January 1920, and ushered in the so-called Prohibition Era, America's "Noble Experiment." What was considered as only immoral before was now also illegal.

The nearly 14-year period of national prohibition (1920-1933) was not particularly successful in eliminating the "evil" and harmful effects of "demon rum" and other alcoholic beverages from America. The nation experienced inadequate enforcement of the Volstead Act and witnessed the growth of organized crime that engaged in a vast network of smuggling "bootleg booze." Ethnic minorities representing millions of drinkers felt that their natural folkways had been unjustly suppressed. And many who would never dream of violating other laws casually visited "speakeasies" or contracted with bootleggers for an example supply of refreshing liquid.

After both drinkers and nondrinkers began to question the government's right to make moral judgements, and at the height of the economic depression, America decided to end the noble experiment. Introduced by Congress, the Twenty-first Amendment to the U.S. constitution repealed the Eighteenth Amendment and ended national Prohibition in December 1933. Thirty-six states had ratified the amendment in less than 10 months. Other than federal taxation and production standards, the control of manufacture, distribution, and sale of alcoholic beverages reverted to the states.

Attitudes Toward Drinking

Many alcohol specialists believe that attitudes about alcohol and drinking are at the very core of our present alcohol problems. In effect, our "stupid thinking" about beverage alcohol contributes to our national "stupid drinking." Myths about alcohol still prevail -- that everyone drinks; that drinking is sophisticated, that drinking is an essential part of a happy and successful life; that alcohol improves thought, physical coordination, and social performance; and that "boozing" is a necessary ingredient of masculinity. Until such faulty perceptions are modified, efforts at promoting a more responsible approach to alcohol use are not likely to succeed.

While a majority of Americans drink (an estimated 56% to 63%), a significant minority abstains from alcohol. There is strong disagreement about the significance of alcohol in terms of use and non-use. Such conflict between the closely coexisting value structures of permissiveness and abstinence generates a considerable degree of confusion and mixed feelings regarding alcoholic beverages and their effects upon human behavior, health, and society.

There is no consensus of opinion on the goodness or badness of drinking. There is no standard of moderation or agreement as to what constitutes responsible drinking. There are no strict controls for social use of alcohol or against abuse of alcohol. We often laugh at drunks who overdose on alcohol, but we rarely think that the person who has overdosed on sleeping pills or who has had a psychotic reaction to LSD is funny.

Although heavy use of alcohol in combination with escape drinking--the use of alcohol to escape "reality" often sets the stage for problem drinking, many Americans tend to associate large consumption with manliness, admire the individual who can hold his or her liquor, and largely approve of escape drinking when confronted with personal problems. Out of one side of our mouths we warn our children not to drink, and we sip a cocktail out of the other side. And when junior gets "bombed" on booze, we thank God that he was not involved with dope or one of those hard drugs.

Although national prohibition ended a half century ago, the temperance movement, prohibition, and repeal may have been responsible for a number of emotional legacies that contribute to our present alcohol problem.

- Drinking is immoral. It is disapproved by many churches and often linked with gambling and illicit sex.
- Nice women do not drink. The alcoholic female, therefore, is to be commended more so than the alcoholic male
- At one time, the sale of alcoholic beverages was illegal, but many people broke the law. Perhaps this is a factor in the continuing disrespect for drinking laws today.
- The federal government once said that buying beverage alcohol was illegal. Now the government permits such purchases. Does the government really know what is best for its citizens?
- All drinking is the same. Therefore, little or no distinction is made between alcohol use and alcohol abuse. Many people do not recognize any differences among various drinking patterns, such as social drinking, occasional excessive drinking, progressive excessive drinking, and chronic alcoholic drinking.
- The alcoholic will eventually lose his or her job, his or her family, and self-respect, and will end up as a skid-row bum. The stereotype of the alcoholic as a "down-and-out" was born, and now we fail to detect the alcoholic in the early stages of problem drinking because the individual still has a job and family.

Such moralistic and contradictory overtones create a good deal of confusion about what is acceptable drinking behavior. Some experience uncomfortable feelings about drinking and not drinking.

In a society marked with such mixed feelings and cultural ambivalence--the perception of both positive and negative aspects occurring in the same thing at the same time--many alcohol-related problems, including alcoholism, are likely to exist. The contrasting and often contradictory nature of our attitudes and practices regarding alcohol become apparent in several areas of concern.

- The different moralities of alcohol use as reflected in different religious denominations. "Drinking is evil." "Alcohol is a fit of God."
- the varying reactions of individuals to inebriation; These range from horror and contempt to admiration and hilarity.
- the conflict over the major focus in alcohol education; Shall it be abstinence, moderation, or alcoholism?
- the crazy-quilt pattern of government laws and college regulations--many of them unenforceable--regarding purchase and consumption of alcohol; After 20 states lowered the legal drinking age from 21 to 18 years during the 1970's, several reimposed higher legal drinking ages by 1983. Such action was taken in response to the sudden increase in the number of drunken teenagers and young adults involved in fatal auto accidents. Then, in 1984, the U.S. Congress, in effect, adopted a national drinking age of 21 by pressuring states to increase their minimum drinking ages or risk the loss of federal

highway funds. Each state still determines the hours during which beverages can be sold, and sets standards for granting permits to distributors, sellers, and even bartenders. And most states, as well as the federal government increase the "vice tax" on booze when expenditures require additional revenues. Prohibition sentiment lives on in our age of affluence and permissiveness.

- the confusion as to the nature of alcoholism; It is variously described as a disease, a lack of willpower, a form of self-indulgence, a basic personality defect, a personal health problem, and a socio-legal problem.
- the difficulty in reducing public intoxication; The standard procedure of arrest, jailing, and release, followed soon by the re-arrest, jailing, and release of the same person (the so-called "revolving-door routine") does not appear to reduce the incidence of public intoxication or alcoholism. Such punitive measures will not give way to medical treatment and rehabilitation until society perceives chronic alcoholism as a health problem and as a drug problem and begins to treat it as such.

In this ambivalent, drinking society, with its mixed feelings about alcohol use and non-use and the many contradictions regarding drinking behavior, everyone appears to "do his or her own thing" with relation to beverage alcohol. Could such highly prized diversities in attitudes and practices actually promote the self-destructive and antisocial use of alcohol prevalent in America today?

Current Significance of Alcoholism

Americans spend about \$100 billion each year on beverage alcohol. In purchasing a variety of perceived benefits and pleasures, they pay more than \$13 billion annually in alcohol revenues or taxes. Through alcohol abuse, they also generate a yearly expenditure of \$150 billion. This total, estimated annual cost of national alcohol problems reflects expenditures for death expenses, reduced productivity in the workplace, lost employment, motor-vehicle crashes, crime, welfare programs, incarceration, and treatment and rehabilitation services.

At present, all states provide for the legal sale and consumption of beverage alcohol. However, specific restrictions controlling its manufacture, availability, and the time, place, occasion, and qualifications for drinking persist. For example, more than 200 counties in 17 states allow "package" or container sales only, and another 400 counties in 15 states prohibit all sales of alcoholic beverages. In addition, all states now have adopted the 21-year-old minimum drinking age.

While drinking may still be considered a social norm, for the vast majority of Americans, alcohol use is not a very important part of their lives. In fact, just one-third of the total drinking-age population consumes more than 90% of all alcoholic beverages in the United States. However, there are approximately 12 million identified alcoholics today in the United States, of whom about 20% to 50% are women.

When does alcohol begin to be a problem? The key appears to be "loss of control."

Clinically, an individual is diagnosed as alcoholic if he/she continues to drink even though alcohol is causing physical, emotional, family, social, or occupational problems.

Health Problems --

Alcoholism is a health problem surpassed only by heart disease and cancer. About one-third of adult patients in hospitals have problems related to alcohol and about 240,000 deaths a year are directly linked to alcohol abuse; an average of one in 10 deaths in the United States.

1. Liver-- With chronic, heavy ingestion of alcohol, metabolism of fat by the liver is decreased and normal storage and use of fats for energy is disrupted. As the fat accumulates, it is deposited in the liver, causing a reversible disease called hepatic *steatosis* (fatty liver). This common condition, characterized by nausea, vomiting, hepatomegaly, right upper quadrant pain and tenderness should resolve within two weeks of abstinence.

A more serious disease is alcoholic hepatitis (10-30% mortality) which may occur along with fatty liver and cirrhosis. Its symptoms include nausea, vomiting, hepatomegaly, right upper quadrant pain and tenderness, fever and chills. Laboratory tests and liver biopsy are used to distinguish fatty liver from mild hepatitis. Half of the individuals with alcoholic hepatitis who continue to drink develop cirrhosis.

The main feature of cirrhosis is progressive destruction of liver cells accompanied by regeneration and infiltration of the liver with connective (scar) tissue due to continued excessive drinking. The risk of developing cirrhosis has been estimated to increase with the daily consumption of 20g (9g equals 3/4oz. of ETOH) of alcohol in females and 40g in males. Once the scar tissue of cirrhosis develops, the liver is irreversibly damaged. Life-threatening complications of cirrhosis include gastric or esophageal varices, ascites, renal failure, and encephalopathy.

Serious hepatotoxicity can develop in chronic alcoholics who are taking therapeutic doses of acetaminophen. They usually seek help after jaundice and liver disease have already developed. Often the blood acetaminophen level is low and unmeasurable and the diagnosis is based largely on the aspartate amino-transferase level, prothrombin time, and a history.

2. Gastrointestinal Problems -- Alcohol can damage the lining of the esophagus, stomach, and small intestine by irritating the mucosa and causing inflammation. Alcohol increases the secretion of gastric acid and it combines with other irritants such as aspirin to cause bleeding. Alcoholics may mask nausea and pain associated with GI irritation by drinking. However, in cases of severe alcoholism, more serious gastric erosion can develop. As heavy drinking continues, the entire digestive system is irritated starting with the mucous membranes of the mouth and esophagus. Alcohol stimulates the production and release of acid even while it delays emptying of the stomach. Because of disturbances in the gastric-mucosal barrier and the presence of excess acid, most patients will have gastritis. Those who chronically ingest alcohol also have gastric ulcers. Upper gastric hemorrhage is also common due to ingestion of alcohol alone, or alcohol and aspirin.

A serious cycle is now in place because the gastritis from heavy drinking decreases the patient's appetite, leading to malnutrition. Even people who are eating a fairly good diet may be affected by worsening gastritis and eventually become malnourished. With the breakdown of the liver accompanied by vitamin deficiency and poor nutritional status, the chronic heavy drinker becomes extremely susceptible to infections and other types of disease. This pattern of systemic malnutrition and toxicity is a hallmark of alcoholism.

3. Pancreas-- Research shows that 40-95% of patients who develop pancreatitis are chronic, heavy drinkers. Alcohol modifies the pancreatic enzymes releasing proteolytic enzymes that damage the pancreas. In advanced stages, when little pancreatic tissue is left, diabetes mellitus and malabsorption can occur. The mortality of severe pancreatitis with complications may exceed 30%. Stopping the use of alcohol may decrease the pancreatic pain, but does not stop the progression of pancreatic dysfunction.

4. Cardiovascular-- The chronic, heavy use of alcohol is associated with hypertension, vascular abnormalities, cardiomegaly and cardiac arrhythmias. The atrial fibrillation which is so commonly observed after a high alcohol intake is called *holiday heart syndrome*.

5. Endocrine-- Hyponatremia, hypokalemia, hypoglycemia, diabetic symptoms, and abnormal thyroid tests may result from the chronic heavy use of alcohol.

6. Immune System-- Alcohol depresses the movement of white blood cells into areas of inflammation, thereby decreasing resistance to infection. Alcoholics are less resistant than the general population to tuberculosis (TB) and to infections and abscesses resulting from organisms such as Staphylococcus, Pneumococcus, Streptococcus, Hemophilus influenzae, Klebsiella pneumoniae, and Legionella pneumophila. Burns are more likely to result with complications, and the hospital stay may be longer. Respiratory herpesvirus infections may occur in patients who are chronic alcoholics with liver disease.

7. Musculoskeletal System-- Alcoholics have an increased risk of developing osteoporosis and osteonecrosis (metabolic bone diseases). They also risk developing chronic alcoholic myopathy (rhabdomyolysis) which causes pain and swelling in the large muscle groups, or if alcoholic polyneuropathy is also present, they may experience a painless, progressive muscle wasting.

8. Kidneys-- Alcohol is a diuretic so that when the blood alcohol level (BAL) is high, the secretion of the antidiuretic hormone is suppressed. Since this diuretic effect *does not occur when the BAL is constant or falling*, the alcoholic may then retain water.

9. Skin-- Skin conditions such as palmer erythema, spider angiomas, rosacea, rhinophyma, porphyria cutanea tarda, and bronzed cirrhosis may be seen.

10. Blood-- Alcohol decreases the production of all types of blood cells. Macrocytosis (large red-blood-cell anemia) resulting from a folic acid deficiency is often a sign of alcoholism. Decreased production and efficiency of white cells make the alcoholic susceptible to more infections, and decreased production of clotting factors and platelets lead to increased bruising

and gastrointestinal bleeding. The higher incidence of cancer seen in alcoholics may be related to the decrease in thymus-derived lymphocytes.

11. Cancer-- Alcohol consumption is associated with cancers of the mouth, larynx, tongue, esophagus, liver, lung, head, and neck. The risk of cancer is increased about one third in those who drink heavily and may be a result of numerous factors, some of which are nutritional deficiencies, a damaged liver that cannot detoxify carcinogens, cellular injury resulting in metabolic changes, or alcohol itself causes cancer.

12. Nervous system and Brain-- Alcohol acts as a depressant on various brain structures and damages the CNS and peripheral nervous systems by modifying neurotransmitter levels and cell membrane fluidity and function. A peripheral neuropathy is seen in 5-15% of alcoholics.

Organic brain syndrome (OBS) can be temporary or permanent and are associated with both the direct effect of alcohol and with vitamin deficiencies.

Korsakoff's psychosis is an organic mental syndrome in which the patient is disoriented, confused, unable to recall events, and extremely susceptible to suggestion. Usually the patient also has polyneuropathy and Wernick's syndrome: The patient is ataxic, has nystagmus, and ocular muscle palsies. The brainstem is under attack by neuretic and hemorrhagic lesions. The underlying problem is a vitamin deficiency of thiamine. The patient should be immediately admitted to a hospital and given parenteral doses of 50 to 100 mg of thiamine daily, supplemented by oral B-complex vitamins and ascorbic acid.

Dementia associated with alcoholism is another OBS. Here, the patient shows signs of severe loss of intellectual function, and memory impairment. This pattern is seen in long-term alcoholics. In its most severe form, the patient may have emotional instability, disintegration of personality and social function, and overt signs of dementia; but the diagnosis is made on the results of neuropsychological tests. The mild form can be treated in an ambulatory, alcoholic treatment program, but strong efforts must be made to get the patient to stop drinking. If he cannot do so, he should be placed in a residential treatment center.

Alcoholic idiosyncratic intoxication is a rare phenomenon that produces a severe change in mental state and behavior after an individual drinks only a small amount of alcohol. The individual may become confused, have transitory delusions, visual hallucinations, and transient loss of consciousness. He may become enraged, aggressive, destructive, or may be depressed and suicidal. This state lasts for only a few hours to a few days, and is best treated with sedation in the hospital. These people can be dangerous to themselves and others. After a period of sleep, this clears and the individual will not recall the episode.

13. Sleep Patterns-- Alcohol interferes with normal sleep by decreasing the deep sleep stages and causing frequent awakenings. These problems may persist for three to six months during abstinence, and gradually a normal sleeping pattern returns.

14. Nutrition-- The alcoholic may obtain more than one-half his daily calories from alcohol (which has no nutritional value) and neglect eating food. In addition, alcohol suppresses appetite

through its effect on the CNS. Disease of the GI tract, liver, and pancreas may further decrease intake and absorption and contribute to malnutrition. Alcoholics are lacking in vitamins, particularly the B vitamins. The metabolism of iron is altered by alcohol and the alcoholic needs to be evaluated for idiopathic hemochromatosis only after a complete review of his case. A reversal of overload is possible with B vitamin therapy and abstinence.

15. Reproductive System-- Chronic alcoholism inhibits normal testicular, pituitary, and hypothalamic function. Impotence, decreased libido, and decreased testosterone levels may result. Men with cirrhosis of the liver may develop hyperestrogenization (feminization). After three months of abstinence, sperm count, motility, and ejaculate volume tend to improve.

16. Fetal Alcohol Syndrome-- Alcohol crosses the placenta and can result in fetal alcohol syndrome (FAS), which is characterized by physical abnormalities and developmental retardation, and is now recognized as the leading known cause of mental retardation. The severity of the effects depends upon the amount of alcohol ingested during pregnancy. With total abstinence, there is no risk; with two or three drinks daily, there is a moderate risk and severity; with six or more drinks daily, there is high risk of severe abnormalities including mental retardation, poor coordination, irritability, hyperactivity, microcephaly, and low birth weight.

17. Hangover-- There is temporary, acute physical and psychological distress following excessive consumption of alcoholic beverages. The experience known as hangover has been related to the amount of congeners (non-alcoholic components) in beverage alcohol; the type of food eaten and liquor consumed; various emotional influences and expectations; the impact of physical factors, including loud and dark drinking environments; and physical factors, especially fatigue. Nausea, gastritis, headache, and anxiety experienced are painful reminders of disrupted body functions that could not be felt while intoxicated. A hangover is the body's reaction to excessive drinking and represents a pronounced withdrawal syndrome from relatively large amounts of alcohol. Despite some innovative hangover cures, the only effective cures have been the use of analgesics for headaches and the healing powers of time.

Social Problems

In this country, two-thirds of domestic violence incidents, half of all traffic fatalities, one-third of the cases of child abuse, half of the deaths by fire, 67% of homicides and aggravated assaults, 40% of forceful rapes, and 35% of suicides can be traced directly to alcohol abuse; and about 5% of American alcoholics end up homeless.

Alcoholism is found in all socioeconomic classes and cultures. Although the ritualistic use of alcohol is thought to inhibit the development of alcoholism, American Italians and Jews, native American tribal groups, French, and Italian people, have alcohol-related health problems, and all have incidence of alcoholism. Asian-Americans have lower rates possibly due to their metabolism.

Family problems--The family may be completely disrupted and emotionally exhausted by the interpersonal stress imposed on them by alcoholism. There is a high risk that the children of

alcoholic families will become alcoholics themselves.

Signs and Symptoms of Alcoholism

Better known than the causes of alcoholism are the signs and symptoms, often described in a series of developmental phases or stages. E.M. Jellinek first established the following four-phase description based on his analysis of recovering alcoholics: (1) the so-called pre-alcoholic phase; (2) the prodromal or early warning phase; (3) the crucial phase; and (4) the chronic phase. This initial description was later refined and expanded by other alcoholism and drug dependence specialists, including Great Britain's Max M. Glatt, who depicted the development of and recovery from alcoholism in chart form.

The general phases of alcoholism are identified and explained as follows:

Phase 1--during this initial contact-with-alcohol phase, the evolving alcoholic drinks first for social reasons, but eventually changes the motivations for consumption to include those of anticipated stress reduction and relief from psychological tension or pain. Soon the developing alcoholic seeks out drinking occasions, begins to increase consumption (dose), becomes defensive about his or her intake, and typically associates with new drinking partners who accept the heavier drinking behavior and more frequent intoxication. It is during this phase that alcohol and drinking become significant parts of daily living. In essence, the all-consuming "love affair" between the drinker and the drink begins to grow and flourish.

Phase 2--In this phase, the alcoholic tends to drink in secret in order to hide the consumption level, and develops several of the early warning signals, such as, feelings of guilt about drinking; lying about drinking behavior when confronted by others; an extremely pleasant response to alcohol; drinking before joining others in drinking situations; drinking due to worry, tiredness, or depression; the need for increased intake to produce desired effects (tolerance); and the experience of alcohol-induced amnesia, the blackout or memory blank-out. Soon there is no social motivation for drinking. What began as a trend earlier is now the exclusive motivation for intake of alcohol--the expectation of euphoric relief.

Eventually, the alcoholic is preoccupied with procuring a source of alcohol and begins to drink alone, inventing occasions for imbibing if none exists. Intake increases rapidly as guzzling becomes the norm. Sometimes the drinker is unable to abstain. More often, the alcohol abuser cannot control drinking once it has begun, evidence of the so-called "loss of control" phenomenon--inability to determine with any consistency duration of drinking or the amount consumed.

A psychological dependency is now established, and if denied a regular dose, the alcoholic will experience the withdrawal syndrome--restlessness, tremulousness or involuntary shaking of the body, insomnia, feelings of depression and anxiety, loss of appetite, mental confusion, hallucinations and seizures, typically occurring within 6-48 hours after the last drink. The term DT's describes the intensification and most severe form of the withdrawal symptoms, which usually follow heavy drinking that has lasted over an extended time period. Characterized by

vivid and terrifying hallucinations, complete disorientation and confusion, severe agitation with almost continuous motor activity, this medical emergency usually develops between 48 and 96 hours after the last drink. Fortunately, only a small minority of individuals undergoing withdrawal experience DT's.

Phase 3--Now there is an intensification of all forms of alcohol abuse experienced earlier--more solitary drinking, avoidance of family and friends, and an increase in memory blackouts and passouts. When sober, the alcoholic may regret what was said or done while drinking. To prove that he or she still has everything under control, the drinker will often attempt to restrict personal consumption by going "on the wagon" (an abrupt cessation of drinking). Usually, such action is only temporary, excessive intake is resumed, and morning drinking becomes the norm in an attempt to stabilize one's rather chaotic life. Sometimes a form of reverse tolerance develops as a result of liver damage. In such an instance, the alcoholic appears to be easily intoxicated on a small dose that would rarely affect behavior earlier in the disease. A series of physical, mental, and social changes now occurs in the alcohol-dependent individual. These may include nervous and gastrointestinal disorders, cirrhosis of the liver, malnutrition, the overuse of defense mechanisms to justify drinking, and a general deterioration in interpersonal relationships. Chain-drinking and extended "benders" are characteristic of this phase of the illness. Hospitalization for alcoholism or an alcohol-related problem is frequently required during this phase.

Phase 4--

Progression to this stage usually develops after a number of years of excessive intake. Drinking bouts often last for several days at a time. When the alcoholic gets the "shakes" in the morning upon waking, more alcohol is consumed to quiet the "nervous" condition. The person is drunk on important occasions and has increasing numbers of blackouts and passouts. Completely oriented around alcohol, the alcohol abuser displays a complete, ethical breakdown, unreasonable fears, increased reverse tolerance, and loss of motor coordination. Now, the "love-affair" between the drinker and the alcoholic beverage is complete and that relationship takes priority over all the other people and all other life activities. At this point, alcoholics drink to live and live to drink. The medical complications may be so severe that either institutionalization or death occurs unless there is some type of intervention.

Not every alcoholic experiences all of the foregoing signs and symptoms. Moreover, the order in which the abnormal behaviors occur displays great variation. It should also be noted that while alcoholism is a devastating disablement, it tends to display a somewhat inconsistent symptomology; that is, the alcoholic does not always behave the same way with regard to alcohol. Especially in phase two or three, the alcoholic may enter a stage of remission--a temporary, periodic absence of symptoms--during which time he or she does not get drunk after starting to drink. This phenomenon should not be viewed as a complete cure, because another characteristic of alcoholism is the tendency to have a relapse, a return to problem-causing alcohol use again. Consequently, the prevention of relapse is an important part of the alcoholic's recovery.

Withdrawal from Alcohol

Although alcohol is a licit drug, socially acceptable and widely used, it is more physically destructive when abused than nearly any other popular drug. Not only is it physically destructive when abused, but withdrawing from its use can be life-threatening.

Physical dependence upon alcohol occurs gradually and progresses in severity over a period of time. The severity of the withdrawal symptoms depends largely on how much the individual has been consistently drinking, for how long a time, and his general condition. One study showed that 68% of the alcoholics who had abused alcohol for three to five years had mild withdrawal symptoms to include tremors and autonomic hyperactivity. Alcoholics who had abused alcohol for six or more years had more severe withdrawal symptoms, including seizures, while 80% of those who suffered severe withdrawal symptoms to include delirium tremens (DT's) were individuals who had abused alcohol 10 years or more.

Acute withdrawal--Acute withdrawal from alcohol is usually complete in five to seven days if there are no complications. If complications occur, the individual will need medical supervision for a longer period of time. It should be remembered that withdrawal from alcohol can be unpredictable and symptoms can overlap.

- **Stage 1-A**

Withdrawal symptoms usually begin six to 12 hours after the last drink and include coarse intention tremors, flushing, tachycardia of 90 to 100, mild agitation, diaphoresis limited to the axilla, anorexia, restlessness, insomnia, increased respiratory rate of about 20 to 22, hyperreflexia (increased intensity of deep tendon reflexes), hypertension with increased of 10 to 20mmHg. Mild sedation or a small amount of alcohol will usually alleviate these symptoms. Of the alcoholics who experience only these symptoms, 75-80% will have a cessation of symptoms within 24 hours with or without treatment.

- **Stage 1-B**

Symptoms become progressively more severe. The outstanding sign of this stage is the appearance of grand mal seizures which tend to occur in clusters and only rarely progress to status epilepticus. They may occur as early as six hours after withdrawal begins, or as late as 72 hours after withdrawal begins.

The following withdrawal symptoms begin 24 hours after the last drink and last another 48 hours. Tachycardia of 110 to 120, the systolic blood pressure increases 20 to 30mmHg, and the diastolic increases 10 to 15mmHg, the respiratory rate increases to about 25 to 28, diaphoresis increases and includes the axilla, forehead, and palms, intention tremors are more severe and also can be observed at rest, hyperreflexia increases, agitation increases. The patient may also complain of tinnitus, anorexia, nausea and vomiting. These symptoms, with treatment, may resolve and the withdrawal process is completed.

- **Stage 2**

This stage is also called *delirium tremens* (DT's). DT's may appear 2 to 4 days after the last

drink. Symptoms worsen as follows: The heart rate increases to greater than 120, systolic blood pressure increases about 40mmHg, and diastolic increases about 30mmHg, respiratory rate increases to 28, hyperreflexia increases with clonus, severe profuse diaphoresis, total body tremors, metabolic imbalances, frightening hallucinations and an inability to distinguish them from reality, and total disorientation.

During this time, all the experiences the person is exposed to as a result of the hallucinations are greatly exaggerated. He becomes completely disoriented and may hear and see large and threatening animals or hear threatening human voices. He cannot speak coherently, understand instructions, or appreciate any words of comfort. It is very difficult to help the patient return to reality.

It is unknown exactly what causes DT's to occur, but it has been suggested that the higher centers of the brain are overstimulated by alcohol, or that the centers in the brain that act as a governor over the activity become exhausted and can no longer function.

Seizure activity is absent during delirium tremens. Without treatment, the delirium will gradually worsen and then disappear in a week to ten days. Fluid loss and metabolic imbalances can result in cardiovascular failure and death.

Protracted Withdrawal--Some alcoholics will experience withdrawal symptoms that may last up to a year after cessation of drinking. They include autonomic nervous system irregularities, such as labile blood pressure and pulse, irregular breathing, tolerance to sedatives, a fine tremor of the hands, persistent anxiety and depression, insomnia, fatigue, inability to concentrate, and memory impairment; hallucinations (alcoholic hallucinosis) may develop during an episode of heavy drinking, begin during withdrawal, or have an onset several weeks after the last drink and continue for weeks to months after withdrawal.

Neonatal Withdrawal--For mild withdrawal, supportive care is preferred, and includes swaddling to decrease sensory stimulation, frequent small feedings of hypercaloric formula, caloric intake to provide 150 to 250 calories per kilogram every 24 hours. The high caloric diet is needed to replace calories lost through vomiting, diarrhea, drooling, and increased motor activity.

Monitor sleeping patterns, temperature, weight, electrolytes, symptoms of illness, and administer IV fluids and electrolytes if needed.

Sleeplessness, dehydration, fever, seizures, serious weight loss, indicate severe withdrawal and medications should be administered with doses adjusted to weight. Paregoric may be administered at feeding times with initial dose 0.2ml P.O. q3 to q4 hours, and increased by 0.05ml per dose until the symptoms are controlled or the dose is up to 0.75ml or seizures occur, in which case add phenobarbital at 5mg/kg/day in three divided doses. This regimen should be maintained for five to seven days and then decreased by 0.05ml per day.

A protracted withdrawal may last for six months with symptoms of irritability, tremors, and poor sleeping patterns, but medication should not be continued.

Assessment:

History and Physical:

Most people will admit to drinking, but few will admit their addiction. Therefore, appropriate questions need to be asked regarding problems in the areas of physical and emotional health, family relationships, socialization, occupation, legal status, medical history to include medications and/or illicit drugs. The medications and drugs inventory is of great significance in treating the withdrawal syndrome. A psychiatric evaluation is needed if symptoms persist over many weeks into sobriety, or immediately if suicide or homicide is a threat.

The alcohol-abusing patient often presents smelling of alcohol and is a middle-class man or woman with complaints of insomnia, nervousness, depression, and/or interpersonal problems. Medical problems such as ulcers, high blood pressure, and anemia are common, and medical emergencies may include toxic reactions, overdose, or accidents.

The history and physical should always include assessment for concurrent drug abuse complicating the withdrawal process. Drugs concurrently abused by alcoholics in descending order of frequency are marijuana, cocaine, PCP, benzodiazepines, barbiturates, and psychedelics.

In addition to the history and physical, other diagnostic tests may be needed, for example, an electrocardiogram (EKG) and laboratory tests such as basic hematology studies and/or liver function tests. Each facility will have its own protocols for lab and/or diagnostic tests to be performed. Be aware of these protocols and follow them when admitting a patient to an inpatient or outpatient program.

CHAPTER IV

CNS Depressants: Sedatives-Hypnotics (Substance Abuse)

Chapter IV

Chapter IV Behavioral Objectives:

At the end of this Chapter, Each nurse will be able to:

1. Name and discuss at least two effects from this group of drugs
2. Define and discuss the meaning of "half-life" of this group of drugs
3. Name and discuss at least 5 individual drugs in this category
4. Name and discuss at least 4 characteristics of abuse for this group
5. Name and discuss at least 4 related medical problems for this group
6. Name and discuss the withdrawal symptoms associated with this group

7. Discuss the recent developments in widespread abuse of Rohypnol

Study Questions:

21. At higher doses, most sedative drugs will eventually produce:

A. sedation B. sleep C. hypnosis D. amnesia D. drug abuse

22. The combined effects of sedative-hypnotics can be described as:

A. fatal B. repetitive C. potentiating D. interchangeable

23. Dependency on sedative-type psychoactive drugs has become known as:

A. addiction B. additive C. synergism D. hypnotism E. sedativism

24. Stopping the use of CNS depressants result in rebound dreaming and:

A. drowsiness B. depression C. excitability D. nightmares

25. This drug is now commonly known as the "date rape" drug:

A. Rohypnol B. Nembutal C. Tuinal D. Valium E. THC

Chapter IV - Sedatives-Hypnotics

Introduction:

This group of drugs is used (in general) to slow down mental and physical functions of the body. These are also referred to as the **CNS depressants**. Because many of the chemical agents tend to produce a calming effect, relax muscles, and relieve feelings of tension, anxiety, and irritability, they are also described as having a sedating or sedative effect; **the sedatives**. These drugs have been used to restore sleep to the sleepless and to calm the anxious patient--persistent goals of medical practice. When alternatives to the opioids were developed, there was international praise for the new drugs that would help people achieve what the narcotics could not bring--tranquilization by day and relaxing sleep by night. It was not long, however, before the new sleep inducers and antianxiety agents were found to have serious and sometimes health-threatening characteristics.

When taking less than sleep-inducing doses of these new drugs, many people experienced a pleasant, euphoric state of intoxication, known as a "high." This calm "high," achieved through the so-called "down" drugs, soon became the focal point for millions of recreational drug abusers. At last, one could "get drunk" without booze! These depressant, nonopioid drugs--barbiturates, and non-barbiturate sedative-hypnotics, the antianxiety minor tranquilizers and the inhalants--are the major concerns of this section, along with the people who use them and abuse them.

At higher doses, most of these sedative drugs will also produce drowsiness and eventually produce sleep. Drugs that have such a sleep-inducing effect are called hypnotic drugs or **hypnotics**. [This term hypnotics has nothing to do with the term -hypnosis- that means inducing a state of suggestibility.] However, the combination of the terms sedative-hypnotic appropriately identifies the major pharmacological effects of these drugs. In reality, almost any drug that calms, soothes, and reduces anxiety is also capable of relieving insomnia.

Ethyl alcohol and the narcotics (discussed separately) are also considered to be CNS depressants. Along with the sedative-hypnotics, they are considered to be "down" drugs or "downers," as they do decrease activity and reduce excitement. Having limited therapeutic applications today, alcohol has achieved near-universal acceptance as a recreational drug. Thus, it deserves special consideration as America's number one psychoactive drug and number one drug problem. Although the narcotics and sedatives-hypnotics share many of the same actions, the latter drugs have no practical pain-relieving properties. Unlike the narcotics, intoxicating doses of the sedative-hypnotics almost always result in impaired judgement, slurred speech, and loss of motor function.

Due to chemical differences, the sedative-hypnotics include several related families of drugs having common characteristics but somewhat diverse effects and therapeutic uses.

The drugs and categories are :

Category

Barbiturates

<u>Generic Name</u>	<u>Trade Name</u>	<u>Slang</u>	<u>Administration</u>	<u>Routes of Administration</u>	<u>(In hours) Half Life</u>
Amobarbital	Amytal	blue velvet, Blue devils	orally, intravenous	Bluebirds, blues,	8-12 intravenous,
Secobarbital	Seconal	reds, red devils, Red birds, seggy,	orally intravenous		15-40
Pentobarbital	nembutal	yellow jackets, Nembies, yellows	orally intravenous		15-48
secobarbital and amobarbital (Combination drug)	Tuinal	rainbows, Tooies,	orally, intravenous		15-40

Benzodiazepine Minor Tranquilizers

<u>Generic Name</u>	<u>Trade Name</u>	<u>Slang</u>	<u>Administration</u>	<u>Routes of Administration</u>	<u>(In hours) Half Life</u>
Chlordiazepoxide	Librium			Orally, Intravenously	5-15
Diazepam	Valium			Orally, Intravenously	30-60
Lorazepam	Ativan			Orally, Intravenously	10-20
Alprazolam	Xanax			Orally	12-15

Others

(similar to the above)--Chloral Hydrate, Methaqualone, Glutethimide

Major Tranquilizers--Chlorpromazine, Thioridazine, Haloperidol

*Route of administration means how the drug is taken into the body

**Half-life refers to the approximate amount of time it takes for half of the drug to be excreted from the system, for example, a one-hour half life means that it takes one hour for half of the drug (and/or the drug's metabolites) to be excreted from the body.

Among the most frequently abused in these groups are: glutethimide (Doriden), methyprylon (Noludar), diazepam (Valium) and others. These drugs and others are commonly abused, typically by individuals who want to counteract the unpleasant or enhance the pleasant effects of another drug that is actually more highly valued, such as alcohol, an opioid, or a stimulant. In fact, these drugs are many times mixed in various combinations with alcohol and other types of drugs just to enhance, or add to the effects of these drugs.

Characteristics of Abuse of the sedative-hypnotics

Several effects of the sedative-hypnotics are shared by nearly all drugs in this classification because of their pharmacologic similarities:

- 1. The sedative-hypnotics tend to produce widespread depression** or slowing down of the brain and central nervous system, including a reduction in the state of wakefulness. Used primarily for their calming and sleep-producing effects, they are prescribed variously as antiepileptic agents, muscle relaxants, and anti-anxiety drugs. Some of the sedative-hypnotics are used to produce general anesthesia or relaxation before anesthesia.
- 2. With increasing dosage**, nearly all of these drugs produce a variety of behavioral alterations in a continuum of sedation. Beginning with relief from anxiety at low doses, the behavior progresses to disinhibition (a state of euphoria), sedation, hypnosis, general anesthesia, coma, and then, at high doses, death, resulting from depression of the brain's respiratory center. It should be noted, however, that the benzodiazepines do not induce general anesthesia.
- 3. The combined effects of sedative-hypnotics can be described as both additive and potentiating or synergistic** with respect to depressant characteristics, described earlier. Both potentiating and synergistic drug interactions result in an exaggerated depressant effect on the central nervous system when sedative-hypnotics, narcotics, or alcohol are taken in combination. As such, these two descriptive terms are often used interchangeably. [More precisely, potentiation involves one drug intensifying the action of another, while synergism describes the cooperative, facilitative, supraadditive effect of two or more drugs having the same drug action.] The combination use of barbiturates and alcohol or two or more sedative-hypnotics--a common practice for those who want to increase the "high"--contributes frequently to the problem of drug overdose, even death.
- 4. With repeated use** over a prolonged period of time, these drugs are capable of inducing psychological dependence, tolerance, and physiological dependence. Such dependency on

sedative-type psychoactive drugs has become known as "sedativism," an all too common American affliction.

5. To a remarkable degree, both cross-tolerance and cross-dependence are exhibited by the sedative-hypnotics. In cross-tolerance, the tolerance to one drug, "A," results in a lessened or reduced pharmacological response to another, "B," of the same drug class, even though the person never used the drug "B" before. By contrast, cross-dependence is a condition in which one drug can prevent withdrawal symptoms associated with physiological dependence on a different drug. Significantly, any sedative-hypnotic can be substituted for any other in the same drug class.

CNS Depressant-related medical problems

1. Sleep

The CNS depressants shorten stage four sleep, so that stopping their use results in rebound dreaming, nightmares, and night terrors.

2. Respiratory

All CNS depressants can cause excessive respiratory depression in an individual who has chronic obstructive pulmonary disease.

3. Liver

The CNS depressants are metabolized in the liver and may accumulate there in an individual with liver impairment such as with alcoholism. They profoundly affect the metabolism of other drugs by stimulating the microsomal enzyme system that metabolizes them. Patients with acute intermittent porphyria could become paralyzed or die if given CNS depressants.

4. Cardiovascular

High doses may depress cardiovascular function, decreasing the systolic blood pressure and increasing the heart rate.

5. Brain

CNS depressants can result in impairment in short- and long-term memory, and impairment in abstract thinking and judgement.

6. Fetus

There is no absolute proof that benzodiazepines cause birth defects, but several studies have reported abnormalities resembling the fetal alcohol syndrome (FAS) in children exposed to benzodiazepines in utero. The time that a drug is taken during gestation is critical; a small dose during the first eight weeks may have a far greater effect than several large doses later in

gestation.

Withdrawal from CNS Depressant Drugs

Rapid withdrawal from all depressants, including the benzodiazepines, after continuous high doses, produces a dramatic withdrawal state. The effect is hyperexcitability, or body reactions nearly opposite to the usual effects of these drugs. The severity of withdrawal symptoms depends upon the strength of the drug, the doses taken, and the length of time the drug has been taken. Most people have a confusion-disorientation syndrome, or organic brain syndrome, upon withdrawal. With a drug like meprobamate (Miltown), severe withdrawal may occur with daily doses of three to 6 gm daily over 40 days. About 500mg of a barbiturate or an equivalent dose of other drugs will place the patient at risk of withdrawal seizures. For the benzodiazepines, mild-to-moderate withdrawal symptoms may be seen when persons take 2 to 3 times the usual clinical dose for only 16 weeks.

Patients who are in withdrawal usually exhibit a strong mixture of physical and psychological signs. Physically, the patient develops fine tremors, gastrointestinal symptoms, muscle aches, and autonomic nervous system problems. With the benzodiazepines, patients often have headache, malaise, and abrupt weight loss. Between 5% and 20% of patients will develop grand mal convulsions withdrawing from any central nervous system depressants. The most typical psychological symptoms of withdrawal from CNS depressants are a high level of anxiety and a strong drive to obtain more of the drug. A few people develop an organic brain syndrome with hallucinations and delirium. With barbiturates, about half of patients will go on to develop delirium if they are not treated.

FLUNITRAZEPAM, (Rohypnol) "roofies"

Recent seizures and anecdotal reporting indicate that distribution and abuse of flunitrazepam are increasing domestically, especially in southern and southwestern states. Of particular concern is the drug's low cost, usually below \$5 per tablet, and its growing popularity among young people. Flunitrazepam is a benzodiazepine that is used in the short-term treatment of insomnia and as a sedative hypnotic and pre-anesthetic medication. It has physiological effects similar to diazepam (commonly known by its trade name, Valium), although flunitrazepam is approximately 10 times more potent. Flunitrazepam neither is manufactured nor sold licitly in the United States. It is produced and sold legally by prescription in Europe and Latin America. The drug usually is smuggled into and transported within the United States through the mail or delivery services.

Manufacture and Distribution

Flunitrazepam marketed under the trade name Rohypnol is manufactured worldwide, particularly in Europe and Latin America, in 1- and 2-milligram tablets by Hoffman-La Roche, Inc., a large pharmaceutical manufacturer. However, the drug neither is manufactured nor approved for medical use in the U. S.

The most recent and largest seizures of flunitrazepam occurred in February 1995. On

February 13, more than 52,000 tablets, packaged loosely in plastic bags and located inside a car door, were seized by the State Police in Louisiana. On February 14, the U.S. Border Patrol in McAllen, Texas, seized more than 57,000 tablets of Rohypnol, packaged in bubble packs, along with 53 pounds of marijuana. The drugs were obtained in Mexico and destined for Florida. Since 1990, more than 1,000 Federal, State, and local investigations have been initiated regarding flunitrazepam. The DEA is pursuing more than 70 investigations involving distribution of flunitrazepam. In many investigations, flunitrazepam was seized along with other illegal substances, including cocaine and marijuana.

Use and Effects

Flunitrazepam is ingested orally, frequently in conjunction with alcohol or other drugs, including heroin. The drug's effects begin within 30 minutes, peak within 2 hours, and may persist for up to eight hours or more, depending upon the dose. Adverse effects include decreased blood pressure, memory impairment, drowsiness, visual disturbances, dizziness, confusion, gastrointestinal disturbances, and urinary retention. Paradoxically, although it is classified as a depressant, flunitrazepam can induce excitability or aggressive behavior.

Flunitrazepam use causes dependence in humans. Once dependence has developed, abstinence induces withdrawal symptoms, including headache, muscle pain, extreme anxiety, tension, restlessness, confusion, and irritability. Numbness, tingling of the extremities, loss of identity, hallucinations, delirium, convulsions, shock, and cardiovascular collapse also may occur. Withdrawal seizures can occur a week or more after cessation of use. As with other benzodiazepines, treatment for flunitrazepam dependence must be gradual, with use tapering off.

Flunitrazepam is touted as an effective parachute or remedy for the depression that follows a stimulant high. Reports indicate that flunitrazepam is used by drug addicts in Spain and Malaysia to allay withdrawal symptoms and to gain a state of oblivion. Abuse of the drug in Western Europe and the Caribbean has been reported over the last 10 years. In Germany, Roche recently removed the 2-milligram dosage from retail distribution restricting it to hospital use only due to the increasing abuse of flunitrazepam in that country.

In the United States, flunitrazepam is used widely in Texas where it is popular among high school students. Flunitrazepam is reported to be readily available in the Miami area, and epidemiologists from that area have stated that it is South Florida's fastest growing drug problem. Additional reports from Miami indicate that the largest and fastest growing group of flunitrazepam users are high school students who take the drug with alcohol or use it after cocaine ingestion. Two common misperceptions about flunitrazepam may explain the drug's popularity among young people: first, many erroneously believe that the drug is unadulterated and therefore safe because it comes in presealed bubble packs; second, many mistakenly think its use cannot be detected by urinalysis testing. This drug is also being used illegally by persons dissolving the drug in a drink and giving it to another person who then becomes sedated and is then raped.

Flunitrazepam is sold under the trade name Rohypnol, from which the street name Rophy is derived. In South Florida, street names include: circles, Mexican valium, rib, roach-2, roofies,

roopies, rope, ropies, and ruffies. Being under the influence of the drug is referred to as being roached out. In Texas, flunitrazepam is called R-2, or roaches.

Outlook

The distribution and abuse of flunitrazepam, in all likelihood, will continue to increase within certain segments of society in the United States, particularly among abusers of other illicit drugs and high school students who mistakenly believe that the drug is harmless. Of greatest concern to drug law enforcement authorities is the involvement of cocaine and marijuana traffickers in the distribution of flunitrazepam. Polydrug traffickers increasingly are smuggling the drug into the country and distributing it through their established illicit channels. The DEA will continue to monitor this emerging threat and to work to reduce the availability of flunitrazepam in the United States.

Recent Update: Flunitrazepam is now available in a form that will turn fluids a blue color. Therefore, it will be easier to recognize when this drug is mixed in a drink. The manufacturer hopes that this will stop the pattern of this type of drug abuse (*date-rape drug*, mixed in drinks, without consent of the person).

CHAPTER V

Marijuana (Substance Abuse)

Chapter V

Chapter V Behavioral Objectives:

At the end of this Chapter, Each nurse will be able to:

1. Name and describe at least two forms of marijuana frequently abused
 2. Name and describe at least 5 effects marijuana has on the human body
 3. Name and describe at least 3 possible medical uses for marijuana
-

Study Questions:

26. _____ remains the most commonly used illicit drug in the U.S.
A. heroin B. marijuana C. alcohol D. LSD E. methamphetamine
27. THC changes the way sensory information gets into the _____.
A. ear canal B. medulla C. hippocampus D. spinal cord
28. Smoking marijuana while shooting up cocaine has potential to cause:
A. diabetes B. infection C. hypotension D. hypertension
29. _____, memory and learning are impaired among heavy users of marijuana.
A. Retention B. Environment C. Balance D. Attention
30. Studies indicate that marijuana is used to avoid dealing with their:
A. difficulties B. parents C. co-workers D. job E. friends
31. _____ is the legal process of reducing the penalty for a behavior.
A. service B. decriminalization C. prosecution D. avoidance
32. THC has been found to reduce intraocular pressure of _____.

A. blindness B. detached retina C. glaucoma D. hypertension

33. THC has been proven somewhat effective for some people as a(an):

A. antibiotic B. depressant C. stimulant D. hypotensive E. antiemetic

Marijuana Update

Marijuana remains the most commonly used illicit drug in the United States. According to preliminary data from the 1996 National Household Survey on Drug Abuse, about 68.5 million Americans (32 percent) had tried marijuana at least once in their lifetimes, and 18 million (8.6 percent) had used marijuana within the past year. The National Association of State Alcohol and Drug Abuse Directors reported that in 1994, 137,564 people were admitted to treatment because of marijuana abuse.

Marijuana has frequently been described as relatively safe despite its illegal status, but it is now known to have significant health-threatening effects of users. In this section we will present the most up-to-date data available on the drug and its use and abuse along with the potential health risks and the myths concerning this drug.

Marijuana is a prepared mixture of the crushed leaves, flowers, small branches, stems, and seeds of the *hemp plant, Cannabis sativa*. Cultivated, as well as growing wild, throughout the world in temperate and tropical areas, the leafy cannabis plant grows for just one season, dies, and then grows up again the following year from its own seeds.

Often incorrectly considered a narcotic, marijuana in low to moderate doses typically causes a sedative, dream-like effect in the user who is observed as relaxed, drowsy, and less socially interactive. However, at high doses, marijuana produces effects quite similar to the mind-expanding psychedelics. As such, marijuana or cannabis shares the characteristics of two major drug classifications. But unlike sedatives, marijuana's active ingredient does not directly produce anesthesia or death. Unlike the powerful psychedelics, there is little cross-tolerance between marijuana and, for example, LSD. Therefore, marijuana is a unique psychoactive drug, best described in a class of its own.

Effects of Marijuana on the Brain

Significant progress has been made by NIDA grantees in determining how marijuana acts on the brain. One study found that long-term use of marijuana produces changes in the brain similar to those seen after long-term use of other major drugs of abuse such as cocaine, heroin, and alcohol. Moreover, these changes may increase a user's vulnerability to addiction to other abusable drugs by "priming" the brain to be more easily changed by drugs in the future. Another study found that chronic exposure of rats to THC (the active ingredient in marijuana) damages and destroys nerve cells and causes other pathological changes in the hippocampus. In fact, several animal studies have focused attention on the hippocampus, the major component of the brain's limbic system that is crucial for learning, memory, and the integration of sensory experiences with emotions and motivation. Taken together, these results may provide clues to the mechanisms underlying marijuana-induced euphoria and loss of memory. Researchers have found that THC changes the way in which sensory information gets into and is acted on by the hippocampus. Investigations have shown that neurons in the information-processing system of the hippocampus and the activity of the nerve fibers are suppressed by THC. In addition, researchers have discovered that learned behaviors, which depend on the hippocampus, also deteriorate.

Effects on the Lungs

Scientists at the University of California, Los Angeles, found that the daily use of one to three marijuana joints appears to produce approximately the same lung damage and potential cancer risk as smoking five times as many cigarettes. The study results suggest that the way smokers inhale marijuana, in addition to its chemical composition, increases the adverse physical effects. The same lung cancer risks associated with tobacco also apply to marijuana users, even though they smoke far less. The study findings refute the argument that marijuana is safer than tobacco because users smoke only a few joints a day.

Effects on Heart Rate and Blood Pressure

Recent findings indicate that smoking marijuana while shooting up cocaine has the potential to cause severe increases in heart rate and blood pressure. In one study, experienced marijuana and cocaine users were given marijuana alone, cocaine alone, and then a combination of both. Each drug alone produced cardiovascular effects; when they were combined, the effects were greater and lasted longer. The heart rate of the subjects in the study increased 29 beats per minute with marijuana alone and 32 beats per minute with cocaine alone. When the drugs were given together, the heart rate increased by 49 beats per minute, and the increased rate persisted for a longer time. The drugs were given with the subjects sitting quietly. In normal circumstances, an individual may smoke marijuana and inject cocaine and then do something physically stressful that may significantly increase risks of an overload on the cardiovascular system.

Effects of Heavy Marijuana Use on Attention and Memory

A study of college students has shown that critical skills related to attention, memory, and learning are impaired among heavy users of marijuana, even after discontinuing its use for at least 24 hours. Researchers compared 65 "heavy users," who had smoked marijuana a median of 29 of the past 30 days, and 64 "light users," who had smoked a median of one of the past 30 days. After a closely monitored 19- to 24-hour period of abstinence from marijuana and other illicit drugs and alcohol, the undergraduates were given several standard tests measuring aspects of attention, memory, and learning. Compared to the light users, heavy marijuana users made more errors and had more difficulty sustaining attention, shifting attention to meet the demands of changes in the environment, and in registering, processing, and using information. The findings suggest that the greater impairment among heavy users is likely due to an alteration of brain activity produced by marijuana, a residue of the drug in the brain, or an actual drug withdrawal syndrome from marijuana.

Effects on Pregnancy

Scientists have determined a link between activation of the biological receptors that respond to cannabinoids, the psychoactive ingredients in marijuana, and abrupt interruption of pregnancy at a very early stage. Studies conducted on mouse embryos demonstrated that when the cannabinoid receptors were activated in the embryos, embryonic development usually ended on

or before the eight-cell, or 3-day stage. When a compound was added to block activation of the receptors, the embryos developed normally. These findings suggest that exposure of embryos to cannabinoids can often prevent the embryos from attaching to the uterine wall.

Failure To Confront Problems

A series of in-depth case studies by a research team at the Center for Psychosocial Studies in New York found that adults who smoked marijuana daily believed it helped them function better, improving self-awareness and relationships with others. However, researchers found that users were more willing to tolerate problems, suggesting that the drug served as a buffer for those who would rather avoid confronting problems than make changes that might increase their satisfaction with life. The study indicated that these subjects used marijuana to avoid dealing with their difficulties and the avoidance inevitably made their problems worse. The most striking observation is the discrepancy between what study participants say and what is actually going on. Although users believed the drug enhanced understanding of themselves, it actually served as a barrier against self-awareness.

Research on the THC Receptor

In 1988, it was discovered that the membranes of certain nerve cells contain protein receptors that bind THC, marijuana's active ingredient. Once securely in place, THC kicks off a series of cellular reactions that ultimately lead to the high that users experience when they smoke a marijuana cigarette. It was reasoned that a THC-like compound must exist in the body and bind to these receptors. In 1992, researchers identified a naturally occurring chemical in the body that binds to these same receptors. Named anandamide, this compound behaves chemically like THC. Studies will continue with anandamide to understand how it interacts with THC receptors to affect memory, movement, hunger, pain, and other functions that are altered by marijuana use.

Genetic Basis for Marijuana Abuse

Scientists have found that whether an individual has positive or negative sensations after smoking marijuana is heavily influenced by heredity. A recent study demonstrated that identical male twins were more likely than nonidentical male twins to report similar responses to marijuana use, indicating a genetic basis for their sensations. Identical twins share all of their genes, and fraternal twins share about half. Environmental factors such as the availability of marijuana, expectations about how the drug would affect them, the influence of friends and social contacts, and other factors that would be different even for identical twins also were found to have an important effect. However, it also was discovered that when twins shared an identical family environment before age 18 there was no detectable influence on their response to marijuana.

Decriminalization

In 1973, several states enacted legislation that decriminalized marijuana. This means that the penalties for possession and use of this drug were reduced in severity. However, one of these states, Alaska recently voted to cancel this legal provision in a statewide referendum.

Decriminalization of marijuana remains in effect in California, Colorado, Minnesota, Mississippi, Nebraska, New York, North Carolina, and Oregon.

Decriminalization is the legal process of reducing the penalty for a particular behavior still restricted by law. In this instance, the behavior refers to the possession and use of small amounts of cannabis preparations. The former misdemeanor offense has been downgraded either to a minor misdemeanor--with no permanent criminal record--or to a mere civil offense requiring a civil fine and sometimes also mandating enrollment in a drug education program or involvement in public service instead of a prison sentence. However, laws forbidding the **sale of marijuana** remain harsh. In many states, punishment for trafficking in marijuana has increased, while penalties for personal possession have decreased.

Most states also have laws which cover the use and possession of drug paraphernalia and for different forms of marijuana (joints, hashish, ganja, hashish oil). In addition, be aware that today there is also a controversy regarding the medical use of marijuana. At this time, marijuana is still a controlled substance by FEDERAL LAW, and is still totally illegal (to varying degrees) in the entire U.S. However, some states have enacted laws that MAY allow the use of marijuana, by prescription, for medical use only. Since these individual state laws "SEEM" to be illegal due to federal laws, there are today, many challenges to these laws. We will update this section as new data becomes available.

Medical uses of marijuana include the following:

1. Glaucoma--

The leading cause of blindness in the U.S. is glaucoma. It is a disease characterized by increased intraocular pressure. This increased pressure damages the optic nerve and eventually leads to progressive vision loss. When smoked, given intravenously, or taken orally, cannabis, THC, and other cannabinoid derivatives have been found to reduce the vision-threatening intraocular pressure of glaucoma. However, undesirable physical and psychological side effects have been demonstrated, especially among older patients. Recently, synthetic-THC eye drops have undergone testing with the hope that unwanted side effects are reduced. Despite its beneficial effects for some patients, marijuana neither prevents glaucoma nor improves vision. In addition, there are other medications that are medical standards for the treatment of glaucoma that have few, if any side effects.

2. Nausea/vomiting--(chemotherapy-induced and AIDS-induced)

The most promising clinical uses of marijuana is in the treatment of extreme nausea and vomiting associated with patients undergoing cancer chemotherapy and certain patients with HIV disease and/or AIDS. THC and other cannabis derivatives have been proven somewhat effective for some people in controlling these undesirable symptoms and are considered to be antiemetics. The extent of this antiemetic activity in relation to other non-cannabis antiemetics has not been determined accurately. Also, some patients report experiencing adverse

anxiety/panic reactions (especially older cancer patients), whereas others show little or no favorable antiemetic response. More study is today being done with the use of cannabis products for this purpose, but basically, marijuana works only for a small percentage of patients. Cannabis products probably are best used only for those patients whose extreme nausea/vomiting is not relieved by the many "traditional" antiemetic drugs, and even then, not all patients will benefit by the use of cannabis.

3. Appetite Stimulant--

Social users often report that the smoking of marijuana increases the appetite. Research has noted that there may well be a stimulating influence on food intake in advanced cancer patients who use marijuana as an antiemetic in conjunction with chemotherapy. Such an effect tends to overcome or reduce the severity of debilitating weight loss in such patients as well as in those with AIDS-related weight loss.

4. Anticonvulsant Action--

Limited human studies confirm results of animal research suggesting that specific components of marijuana--cannabinol and cannabidiol--protect against minimal and maximal seizures characteristic of epilepsy.

5. Antiasthmatic effectC

As indicated earlier in this text, the long-term smoking of concentrated marijuana produces a constriction and obstruction of the airways. However, short-term smoking of cannabis and oral intake of THC have actually produced a bronchodilation effect in normal individuals and in patients with bronchial asthma. Cannabinoid compounds, such as cannabinol and cannabidiol, do not produce psychological effects or alterations in heart function commonly seen with marijuana itself. Therefore, these two compounds are potentially useful for their airway-expanding effect in the treatment of asthma.

6. Muscle-Relaxant Action--

Limited studies suggest that THC is effective in relieving the muscle spasm or spasticity common in patients with multiple sclerosis.

7. Antianxiety effect--

Although marijuana use often reduces anxiety, it sometimes produces undesirable psychological effects, including panic and anxiety. In addition, there is no indication that marijuana is any more effective or reliable than currently available antianxiety medicine.

Monitoring the Future Study Data

NIDA's Monitoring the Future Study initially assessed drug use among high school seniors and young adults across the country, but in 1991, the survey was expanded to include data on 8th- and 10th-graders. >From 1979 to 1992 there was a downward trend in marijuana use among youth, but the trend reversed in 1993, and use of the drug continued to increase in 1994, 1995, and 1996.

Percentage of 8th-graders who have used marijuana: 1991 - 1996

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
Ever Used	10.2%	11.2%	12.6%	16.7%	19.9%	23.1%
Used in Past Year	6.27%	29.2%	13.0%	15.8%	18.3%	20.8%
Used in Past Month	3.0%	23.75%	17.8%	9.1%	11.3%	13.1%

Percentage of 10th-graders who have used marijuana 1991 - 1996

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
Ever Used	23.4%	21.4%	24.4%	30.4%	34.1%	39.8%
Used in Past Year	16.5%	15.2%	19.2%	25.2%	28.7%	33.6%
Used in Past Month	8.7%	8.1%	10.9%	15.8%	17.2%	20.4%

Percentage of 12th-graders who have used marijuana 1991 - 1996

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
Ever Used	36.7%	32.6%	35.3%	38.2%	41.7%	44.9%
Used in Past Year	23.9%	21.9%	26.0%	30.7%	34.7%	35.8%
Used in Past Month	13.8%	11.9%	15.5%	19.0%	21.2%	21.9%

CHAPTER VI

CNS Stimulants: Amphetamines, Cocaine (Substance Abuse)

Chapter VI

Chapter VI Behavioral Objectives:

At the end of this Chapter, Each nurse will be able to:

1. Name and discuss the stimulant properties of cocaine and amphetamines
 2. Name and discuss at least 3 methods of cocaine use and the implications
 3. Name and discuss the health and psychological hazards of stimulant use
-

Study Questions:

34. _____ is one of the most powerfully addictive drugs of abuse.

- A. THC B. marijuana C. heroin D. morphine E. cocaine

35. The number of cocaine-related ER incidents was highest for persons aged:

- A. 35+ B. 25+ C. 20+ D. 18-20 E. Less than 20

36. This mixture of cocaine and heroin is referred to as a:

- A. freebase B. speedball C. crack cocaine D. basuco

37. Mixing cocaine and alcohol for consumption forms a third, very dangerous substance called:

- A. basuco B. cocaethylene C. freebase D. dopamine E. serotonin

38. _____ cocaine treatment can be successful; from 30% to 90% of abusers remaining in this type of treatment program cease cocaine use.

A. inpatient B. residential C. outpatient D. aversion

CNS Stimulants: Cocaine and Amphetamines

Introduction:

Central nervous system stimulants comprise a large category of a wide variety of substances, ranging from caffeine to cocaine and amphetamines. (Caffeine is the most widely and regularly consumed psychoactive substance in the world.)

Cocaine is extracted from the coca plant (*Erythroxylon coca*), by soaking the leaves in kerosene and sulfuric acid, and forming the mixture into crude paste called coca paste, which consists of 70% cocaine in coca alkaloids and oil. Hydrochloric acid is added to the paste to form a 90% pure cocaine salt. This salt (rocks or white flakes) is crushed into powder and sold to an underground market where it is diluted ("cut") with one or more products such as amphetamine, ephedrine, procaine, xylocaine, lidocaine, or quinine.

Cocaine is a natural stimulant; whereas the class of stimulants called amphetamines, is a group of compounds synthesized from ephedrine. Amphetamines include racemic amphetamine, dextroamphetamine, and methamphetamine.

Other CNS stimulants, in addition to cocaine and amphetamines include synthetic amphetamine-like anorectics, caffeine, and nicotine.

All of the stimulants have similar mechanisms of action, effects, and treatment approaches, and therefore will be discussed as a group in this text (except for nicotine), with special focus on cocaine and the amphetamines. Cocaine has already been mentioned in this text and will be discussed in more detail in this section.

History: (of cocaine and amphetamine use and abuse)

Cocaine has been used for its stimulating effects for centuries. Coca leaves are combined with lime, made into balls (cocada), and chewed to appease hunger, increase stamina, and provide a pleasant sensation lasting about 40 minutes.

In the mid 1800's, the Spanish arrived in South America, recognized the value of coca, and brought the leaves back to Europe where the alkaloid cocaine, was extracted in 1857 and used as an anesthetic in ophthalmology surgery.

In addition to being recognized as an anesthetic, cocaine became famous as an ingredient in a popular tonic, Vin Mariani, made by a French chemist, Angelo Mariani. The tonic was thought to nourish, fortify, refresh, aid digestion, strengthen the entire body, and be a medical miracle.

Sigmund Freud promoted its use in medicines and in teas, lozenges, and the drink Coca-Cola. All these drinks became very popular around this time. The use of cocaine grew to epidemic proportions in Europe and the United States in the 1880's, resulting in large numbers of cocaine addicts.

By 1891, recognizing the addictive and corruptive potential of cocaine, physicians spearheaded efforts to regulate its use. In 1906, the U.S. Congress initiated regulation of cocaine by passing the Pure Food and Drug Act, halting interstate shipment of cocaine-containing products, and requiring cocaine to be listed on labels of cocaine-containing products. The Harrison Act of 1914 further restricted the use of cocaine by making it a prescribed medicine. As a result of these measures, cocaine use declined sharply prior to World War I and remained obscure until its resurgence in the late 1970's.

The amphetamines, a group of synthetic stimulant compounds derived from ephedrine, were initially used in the United States in bronchial dilators to relieve nasal congestion and for the treatment of narcolepsy, hyperkinesis, and obesity. Abusers could dismantle the benzedrine inhaler, extract the paper inside containing 250mg of amphetamine, and drink it in a beverage or chew it in gum for the stimulating effects. The abuse continued until 1949 when the amphetamine used in the inhaler was replaced with a very mild CNS stimulant.

Between 1932 and 1946 amphetamines were used medically to treat narcolepsy, heart block, schizophrenia, morphine and codeine addiction, cerebral palsy, hyperactivity, parkinsonism, obesity, and depression.

Most amphetamine abuse of the 1950's and 1960's was prescription abuse by patients who obtained the drug from one or more doctors. After the Controlled Substances Act (CSA) was passed in 1970 making it more difficult for manufacturers to market the drug, the number of clandestine laboratories and street abusers increased.

The purity of amphetamines produced in clandestine laboratories declined, averaging about 10% amphetamine and 90% an over-the-counter (OTC) stimulants such as caffeine, ephedrine, or phenylpropanolamine.

In the 1980's and illicit injectable form of amphetamine known on the street as "speed," "crystal," "crank," or "go" gained popular use. Also "crack," a cheap, smokable form of cocaine, and "ice," a freebase form of methamphetamine, were available.

Cocaine Update:

Cocaine Abuse (from NIDA, National Institute on Drug Abuse, 9/97)

Cocaine is one of the most powerfully addictive drugs of abuse. Most clinicians estimate that approximately 10 percent of people who begin to use the drug "recreationally" will go on to serious, heavy use. Once having tried cocaine, an individual cannot predict or control the extent to which he or she will continue to use the drug.

Extent of Use

Data show that cocaine use among high school seniors had been on a downward trend since

its peak in 1985. The proportion of seniors who have used cocaine at least once in their lifetimes dropped from 17.3 percent in 1985 to 7.1 percent in 1996. Current use of cocaine decreased from 6.7% in 1985 to 2.0% in 1996.

In 1996, 6.5 percent of 10th-graders had tried cocaine at least once, up from 5.0 percent in 1995. The percentage of 8th-graders who had ever tried cocaine rose significantly from 2.3 percent in 1991 to 4.5 percent in 1996.

Lifetime prevalence of cocaine use by 8th-, 10th-, and 12th-graders:
(1991 to 1996)

	1991	1992	1993	1994	1995	1996
• 8 th -graders:	2.3%	2.9%	2.9%	3.6%	4.2%	4.5%
• 10 th -graders			4.13%	33.6%	35.0%	36.5%
• 12 th -graders			7.86%	16.1%	26.0%	39.9%

Of college students in 1995, 3.6 percent had used cocaine within the past year, and 0.7 percent had used cocaine in the past month. In 1995, 4.4 percent of young adults one to four years beyond high school but not in college had used cocaine within the past year, and 1.5 percent had used cocaine in the past 30 days.

National Household Survey

In 1996, 22 million Americans age 12 and older had tried cocaine at least once in their lifetimes; about 4.0 million had used cocaine during the past year; and about 1.7 million had used cocaine in the past month. These were significant decreases in cocaine use from its peak in 1985.

In 1996, about 4.6 million people had used crack cocaine at least once in their lives, and about 1.3 million people had used crack within the past year.

Drug Abuse Warning Network

The Drug Abuse Warning Network (DAWN) collects data on drug abuse morbidity and mortality through reports from hospital emergency departments and a selected sample of medical examiners in 21 metropolitan areas. Data from the DAWN system continue to show increases in adverse health consequences associated with the use of cocaine.

The estimated number of cocaine-related emergency department episodes has fluctuated since 1988 when it totaled 101,578. After decreasing significantly to 80,355 in 1990, the number of cocaine-related ER incidents began an increasing trend in 1991 that reached an estimated 142,494 in 1995.

In preliminary figures for 1995, the number of cocaine-related ER incidents was highest for persons aged 35+. The number for males (94,502) was more than twice that for females (46,544). Blacks accounted for 77,201 mentions of cocaine use, significantly more than the 41,700 for whites and 11,581 for Hispanics.

Methods of Use

Cocaine use ranges from episodic or occasional use to repeated or compulsive use, with a variety of patterns between these extremes. The major methods of administration of cocaine are sniffing or snorting, injecting, and smoking (including freebase and crack cocaine). Snorting is the process of inhaling cocaine powder through the nostrils where it is absorbed into the bloodstream through the nasal tissues. Injecting is the act of using a needle to release the drug directly into the bloodstream. Smoking involves the inhalation of cocaine vapor or smoke into the lungs where absorption into the bloodstream is as rapid as by injection.

There is great risk no matter how cocaine is ingested. It appears that compulsive cocaine use may develop even more rapidly if the substance is smoked rather than taken intranasally. Smoking allows extremely high doses of cocaine to reach the brain very quickly and brings an intense and immediate high. The injecting drug user is at risk for transmitting or acquiring the HIV infection/AIDS if needles or other injection equipment is shared.

"Crack" is the street name given to cocaine that has been processed from cocaine hydrochloride to a free base for smoking. Rather than requiring the more volatile method of processing cocaine using ether, crack cocaine is processed with ammonia or sodium bicarbonate (baking soda) and water and heated to remove the hydrochloride, thus producing a form of cocaine that can be smoked. The term "crack" refers to the crackling sound heard when the mixture is smoked (heated), presumably from the sodium bicarbonate.

Crack resembles hard shavings that are similar to slivers of soap, and is often sold in small vials, in folding papers, or in heavy aluminum foil. Sometimes the crack material is broken into tiny chunks that are sold as "crack rocks." Unlike freebase, which requires the use of elaborate paraphernalia, crack can be smoked either in a pipe or mixed with marijuana. On occasion, crack cocaine also contains a small amount of PCP, a particularly hazardous "dissociative anesthetic" known as "angel dust."

An intensified form of cocaine, crack is now considered one of the most addictive substances ever known, more so than heroin, barbiturates, and alcohol. Because its vapors are inhaled, crack is quickly absorbed through the lungs into the bloodstream and reaches the brain within a matter of seconds. This action is even faster than when cocaine is snorted or injected. Once within the brain, crack produces a short, intense, electrifying feeling of euphoria.

Then, within several minutes of the pleasant "high," a smoker generally develops a severe crisis-like "hangover" characterized by deep depression, extreme sadness, irritability, occasional feelings of paranoia, and an overwhelming craving for more of the drug. However, it is the withdrawal hangover, not the euphoric high, that makes crack so addictive.

Inhaling crack vapors rapidly bankrupts the brain of neurotransmitters--substances that enable the transfer of nerve impulses between nerve cells and thus control mood and behavior. This sudden release of neurotransmitter substances actually causes the intense euphoria, an extremely pleasant feeling. But cocaine also prevents the return of the neurotransmitters, including norepinephrine, dopamine, and serotonin for reuse in the nerve cells. Consequently, the loss of neurotransmitters produces an emergency craving to replenish these natural chemicals of the brain. "The crack abuser misidentifies the craving as a need for more cocaine and focuses on nothing else." Very soon, getting crack, smoking crack, and experiencing crack, become more important than anything else.

Crack users have become innovative in their simultaneous use of smokable rock with other psychoactives. Sometimes crack smokers place rocks of freebase in marijuana to produce "champagne" or "caviar"--crack-laced joints. Smokable speedballs or "hot rocks" are combinations of crack and "tar" heroin. To concoct "space base," some users mix PCP (phencyclidine) with crack, while others prepare "crack coolers" by adding crack or regular cocaine to wine coolers.

Sometimes a mixture of cocaine and heroin (referred to as a **speedball**) is taken. Such combined or even sequential use of cocaine and a depressant, smooths out the stimulant's effects, reduces nervousness and excitability, and softens "crashing" after an extended cocaine binge. Nonetheless, speedballing does increase the risks of drug dependency, toxic overdoses, and financial disaster, as well as deeper involvement with the law. John Belushi, a famous comedian, allegedly died because of speedballing--multiple injections of a cocaine-heroin mixture--which resulted in a sudden buildup of either or both drugs to toxic levels that proved deadly.

A new cocaine danger called "freebasing," surfaced in the 1970's. Through an elaborate "do-it-yourself" process, cocaine hydrochloride powder is changed into a smokable and more potent substance called "base" or "freebase." The actual procedure which is extremely dangerous, involves treating the cocaine powder with a strong alkali and then ether. Comedian Richard Pryor apparently was involved in a freebasing accident that set fire to his clothing and left him with third-degree burns on the upper half of his body.

The freebase is then smoked in a water pipe or sprinkled on a marijuana or tobacco cigarette. Within a few minutes, the stimulant reaches the brain and produces a sudden and intense "high." This euphoria subsides quickly and is often followed by a very uncomfortable restlessness, irritability, and depression. In order to maintain the "high" and avoid the "crash," freebase smokers sometimes continue smoking until they are either exhausted or have run out of cocaine.

More recently, still another form of smokable cocaine, basuco, surfaced in Miami and then in New York City. Cocaine basuco (or bazuko) is sometimes called cocaine sulfate, coca paste, or just simply base. A crude form of cocaine, basuco is highly contaminated with lead and petroleum by-products. The drug is typically mixed with tobacco or marijuana and smoked as a cigarette. Relatively cheap in comparison with crack, basuco has sold for about \$1 per dose. This low price and its high potency and rapid, addictive effect, make basuco a "triple threat"

among abused drugs.

Health and Psychological Hazards

Cocaine is a strong central nervous system stimulant that interferes with the reabsorption process of dopamine, a chemical messenger associated with pleasure and movement. Dopamine is released as part of the brain's reward system and is involved in the high that characterizes cocaine consumption.

Physical effects of cocaine use include constricted peripheral blood vessels, dilated pupils, and increased temperature, heart rate, and blood pressure. The duration of cocaine's immediate euphoric effects, which include hyperstimulation, reduced fatigue, and mental clarity, depends on the route of administration. The faster the absorption, the more intense the high. On the other hand, the faster the absorption, the shorter the duration of action. The high from snorting may last 15 to 30 minutes, while that from smoking may last five to 10 minutes. Increased use can reduce the period of stimulation.

Some users of cocaine report feelings of restlessness, irritability, and anxiety. An appreciable tolerance to the high may be developed, and many addicts report that they seek but fail to achieve as much pleasure as they did from their first exposure. Scientific evidence suggests that the powerful neuropsychologic-reinforcing property of cocaine is responsible for an individual's continued use, despite harmful physical and social consequences. In rare instances, sudden death can occur on the first use of cocaine or unexpectedly thereafter. However, there is no way to determine who is prone to sudden death.

High doses of cocaine and/or prolonged use can trigger paranoia. Smoking crack cocaine can produce a particularly aggressive paranoid behavior in users. When addicted individuals stop using cocaine, they often become depressed. This also may lead to further cocaine use to alleviate depression. Prolonged cocaine snorting can result in ulceration of the mucous membrane of the nose and can damage the nasal septum enough to cause it to collapse. Cocaine-related deaths are often a result of cardiac arrest or seizures followed by respiratory arrest.

Added Danger: Cocaethylene

When people mix cocaine and alcohol consumption, they are compounding the danger each drug poses and they are unknowingly forming a complex chemical experiment within their bodies. NIDA-funded researchers have found that the human liver combines cocaine and alcohol and manufactures a third substance, cocaethylene, that intensifies cocaine's euphoric effects, while possibly increasing the risk of sudden death.

Greater Risk for Women

Estimates on the extent of drug abuse by women vary. One NIDA study reported in 1994 that more than 220,000 women had used an illicit drug during their pregnancies. Of this group, more than one-fifth had used powdered cocaine or crack.

When a woman uses drugs, she and her unborn child are exposed to significant health risks. During pregnancy, almost all drugs cross the placenta and enter the bloodstream of the developing baby. The most serious possible adverse effects on the unborn child's health include premature delivery and low birthweight. Other possible problems include ectopic pregnancy, stillbirth, sudden infant death syndrome, and small gestational size. The woman who uses drugs is herself at increased risk of hemorrhage, spontaneous abortion, toxicity, sexually transmitted diseases, and nutritional deficiencies. In addition, drug use by women puts them and their children at risk for HIV/AIDS.

Treatment

The widespread abuse of cocaine has stimulated extensive efforts to develop treatment programs for this type of drug abuse. According to the State Alcohol and Drug Abuse Profile, in FY (fiscal year) 1994, States reported 326,031 patients entering treatment with cocaine as the primary drug of abuse, representing 43 percent of treatment admissions. Another study, NIDA's Drug Services Research Survey, estimates that 31 percent of a sample of drug treatment clients had used cocaine or crack cocaine within 30 days prior to admission for treatment. Data from treatment programs using different therapeutic approaches indicate that outpatient cocaine treatment can be successful. One report suggests that from 30% to 90% of abusers remaining in outpatient treatment programs cease cocaine use.

NIDA has initiated a program with the purpose of discovering new medications that can be used in the treatment of cocaine abuse. Several medications are currently being investigated to test their safety and efficacy in treating cocaine addiction. In addition to pharmacological treatments, behavioral interventions also have been developed that are effective in decreasing drug use by patients in treatment for cocaine abuse. Providing the optimal combination of treatment services for each individual is critical to successful treatment outcome.

Amphetamine Update:

Methamphetamine Abuse

Methamphetamine is a drug that strongly activates certain systems in the brain. Methamphetamine is closely related chemically to amphetamine, but the central nervous system effects of methamphetamine are greater. Both drugs have some medical uses, primarily in the treatment of obesity, but their therapeutic use is limited. Methamphetamine is made in illegal laboratories and has a high potential for abuse and dependence. Street methamphetamine is referred to by many names, such as "speed," "meth," and "chalk." Methamphetamine hydrochloride, clear chunky crystals resembling ice, which can be inhaled by smoking, is referred to as "ice," "crystal," and "glass."

Extent of Abuse

The "Monitoring the Future Study" report, assesses the extent of drug use among adolescents (8th-, 10th-, and 12th-graders) and young adults across the country.

Recent data from the survey:

- In 1996, 4.4 percent of high school seniors had used crystal methamphetamine at least once in their lifetimes, an increase from 2.7 percent in 1990.
- Data show that 2.8 percent of seniors had used crystal methamphetamine in 1996, more than doubling the 1.3 percent reported in 1990.

Methods of Abuse

Methamphetamine is taken orally or intranasally (snorting the powder), by intravenous injection, and by smoking. Immediately after inhalation or intravenous injection, the methamphetamine user experiences an intense sensation, called a "rush" or "flash," that lasts only a few minutes and is described as extremely pleasurable. Oral or intranasal use produces euphoria - a high, but not a rush. Because methamphetamine elevates mood, people who experiment with it tend to use it with increasing frequency and in increasing doses, although this was not their original intent.

Health Effects and Hazards

The central nervous system (CNS) actions that result from taking even small amounts of methamphetamine include increased wakefulness, increased physical activity, decreased appetite, increased respiration, hyperthermia, and euphoria. Other CNS effects include irritability, insomnia, confusion, tremors, convulsions, anxiety, paranoia, and aggressiveness. Hyperthermia and convulsions can result in death. Cardiovascular side effects, which include chest pain and hypertension, also can result in cardiovascular collapse and death. In addition, methamphetamine causes increased heart rate and blood pressure and can cause irreversible damage to blood vessels in the brain, producing strokes. Other effects of methamphetamine include respiratory problems, irregular heartbeat, and extreme anorexia.

Supply

Methamphetamine is a Schedule II drug under Federal regulations, meaning it has a high potential for abuse with severe liability to cause dependence. During World War II, methamphetamine was used by soldiers as an aid to fight fatigue and enhance performance. In Japan, intravenous methamphetamine abuse reached epidemic proportions immediately after World War II, when supplies stored for military use became available to the public.

In the United States in the 1950's, legally manufactured tablets of methamphetamine were used non-medically by college students, truck drivers, and athletes, who usually did not become severely addicted. This pattern changed drastically in the 1960's with the increased availability of injectable methamphetamine. The 1970 Controlled Substances Act severely restricted the legal production of injectable methamphetamine, causing its use to decrease greatly.

According to the Drug Enforcement Administration, methamphetamine has been the most prevalent clandestinely produced controlled substance in the United States since 1979. The clandestine manufacture of methamphetamine was based primarily in the West and Southwest. Since the 1980's, ice has been smuggled from Taiwan and South Korea into Hawaii. However, it

was not until the summer of 1988 that its use became relatively widespread in that State. By 1990, distribution of ice had spread to the U.S. mainland, although distribution remained limited.

METHCATHINONE,

(Indiana Prevention Resource Center; by William J. Bailey)

The scenario seems right out of some science fiction nightmare. A dangerous addictive drug that is cheap and easy to manufacture appears out of nowhere and creates a potential drug crisis. The drug is concocted from a "witches brew" of battery acid, Drano, and over-the-counter asthma medication, and can be manufactured in home kitchens.

Unfortunately, it isn't science fiction. It isn't fiction. It is Indiana's most recent drug threat -- methcathinone. Since 1991 or 1992, this new drug has emerged as a cheap substitute for methamphetamine. Since it is so new, all of the risks have not yet been assessed. But lack of information about risks has not stopped its use in Indiana.

Slang Terms Associated with Methcathinone

Cat
Goob
Jeff
Speed
Bathtub speed
Mulka
Gagers, gaggers
The C
Wild cat
Wonder star
Cadillac express
Ephedrone

Ingredients Used in Methcathinone Synthesis

The ingredients used in various recipes for homemade methcathinone include:

- ephedrine or pseudoephedrine (found in some over-the-counter asthma and cold medications)
- acetone (explosive paint solvent)
- muriatic acid (used in sandblasting and cleaning mortar off bricks)
- sulfuric acid (usually purchased from auto supply stores as battery acid)
- lye (usually in the form of a crystal drain cleaner such as Drano)
- sodium dichromate or potassium dichromate
- sodium hydroxide
- toluene (explosive paint thinner)

History of Methcathinone

Methcathinone is a derivative of a naturally-occurring stimulant drug, cathinone, which is found in the "khat" plant, *Cathula edulis*, which is native to the horn of Africa and southern Arabian peninsula. It was first synthesized in Germany in 1928, and used in the Soviet Union as an antidepressant during the 1930's and 1940's. Abuse of methcathinone, also known as "ephedrone," "Jeff," or "Mulka," has been reported in the Soviet Union since the late 1960's.

In the mid-1950's, American pharmaceutical manufacturer Parke Davis & Company conducted preliminary studies on methcathinone to determine if it had any medicinal potential. Although Parke Davis soon abandoned its methcathinone research, after determining that there were unacceptable safety risks and substantial side effects, their studies revealed that it had physiologic effects similar to amphetamine. Methcathinone reemerged in this country in 1989, when a University of Michigan student who was interning at Parke Davis stumbled across and stole samples of the drug and documentation of the manufacturing process. In 1990, associates of that student began manufacturing and selling the drug in clandestine laboratories in northern Michigan. Its use became popular in the Upper Peninsula of Michigan in 1990 and 1991, and quickly spread statewide. As of 1995, methcathinone laboratories have been discovered in ten states, from Colorado through the Midwest. It has quickly become one of the biggest challenges faced by the U.S. Drug Enforcement Administration.

Methcathinone was classified as a schedule I controlled substance under the federal Controlled Substances Act on May 1, 1992, under the emergency scheduling procedure. The classification was made permanent effective October 15, 1993.

Effects of Methcathinone Intoxication

The most common means of taking methcathinone is snorting (nasal insufflation). Other routes of administration include taking it by mouth (oral ingestion) mixed in a liquid such as coffee or soft drinks, intravenous injection, and smoking it either in a crack pipe or added to tobacco or marijuana cigarettes. Methcathinone is often used in binges lasting from two to six days, during which methcathinone is used repeatedly.

Effects of short term intoxication are similar to those produced by crack cocaine or methamphetamine: stimulation of heart rate and respiration; feeling of euphoria; loss of appetite; increased alertness; pupils may be dilated; body temperature may be slightly elevated. Acute intoxication at higher doses may also result in: insomnia, tremors and muscle twitching, fever, headaches, convulsions, irregular heart rate and respirations, anxiety, restlessness, paranoia, and hallucinations and delusions.

Problems Associated with Methcathinone Use

While research on the long-term effects of methcathinone use is just beginning in the United States, anecdotal reports from users in treatment in this country, and from published research in

Russia, paint a similar picture.

Cocaine and amphetamine-related Medical Problems

1. Medical problems resulting from adulterants and administration

small intestinal ischemia, necrotizing enterocolitis, inflammation of nasal mucosa, necrosis, perforation of the nasal septum, paralysis of the pharynx and larynx, aspiration pneumonia, optic atrophy, osteolytic sinusitis, pneumomediastinum and emphysema, granulomatous pneumonitis, pulmonary edema, burns, skin abscesses, phlebitis, deep vein thrombosis, cellulitis, septic emboli, pulmonary abscesses, bacterial endocarditis, ophthalmological infections, fungal cerebritis, hepatitis, tuberculosis, rhabdomyolysis and its complications, acute renal failure, headaches, and sexually transmitted diseases, including HIV transmission during administration by injection.

2. Medical problems resulting from stimulant abuse

sinus tachycardia, ventricular premature contractions, ventricular tachycardia and fibrillation, myocardial infarction or arrhythmia, seizures, status epilepticus, cerebral hemorrhage, cerebral vascular accident, transient ischemia attacks, hyperpyrexia, respiratory paralysis or arrest, migraine-like headaches, weight loss, dehydration, nutritional deficiencies, endocrine abnormalities, organic mental disorders to include intoxication, delirium, delusional disorder, and withdrawal

3. Disorders from: COCAINE, AMPHETAMINE, SIMILARLY-ACTING SYMPATHOMIMETICS

A. Delirium--may develop within 24 hours after stimulant use. Often the patient is aggressive or violent and may need to be restrained. Delirium usually appears within an hour of substance use and is finished in about six hours. When the stimulant is taken intravenously, the onset of delirium is immediate. On rare occasions, it follows a period of "intoxication." When the other pharmacological effects of the drug have worn off, the delirium disappears completely. The criteria for diagnosing delirium include: delirium developing within 24 hours after stimulant use (assuming that the delirium is not due to any other physical or mental disorder).

B. Delusional Disorder--These disorders are characterized by rapidly developing ideas of persecution shortly after cocaine or an amphetamine is used. The patient often has a distorted body image and people's faces may look strange to him. At first, he may be merely suspicious and curious, and feel pleasure from the drug, but later this turns to aggression or violence against his "enemies." Hallucinations about bugs, snakes, or vermin crawling under the skin may lead to scratching and extensive scarring of the skin. Such delusions may last for a week or longer, but sometimes last for more than a year. The diagnostic criteria for these delusional disorders include an organic delusional syndrome that develops shortly after the drug is used, rapidly developing delusions of persecution as the predominant clinical sign, and the absence of any other physical or mental disorder that could produce the delusions. Cocaine, either smoked or taken intranasally, is currently a common cause of mental illness.

C. Intoxication--is identified by the recent use of a stimulant, and behavioral changes to include fighting, grandiosity, psychomotor agitation, impaired judgement, and impaired social or occupational functioning. Physical signs of amphetamine intoxication include at least two of the following within an hour of use: tachycardia, dilated pupils, elevated blood pressure, excess perspiration or chills, and nausea and vomiting. The list is identical for cocaine except that visual and tactile hallucinations are also included.

Chronic intoxication produces marked weight loss, hallucinations, paranoid delusions, compulsive stereotyped behavior such as sorting objects into neat piles. If cocaine is combined with alcohol, the withdrawal symptoms will be more severe, and the risk of death from heart attack or stroke increases. Alcohol and cocaine in combination are metabolized by the liver to cocaethylene which produces a more intense high, and consequently more severe withdrawal symptoms.

WITHDRAWAL FROM CNS STIMULANTS

Cocaine, amphetamine, or similarly acting sympathomimetic withdrawal progresses through several stages and is characterized by irritability, anxiety, depression, possible suicidal ideations, fatigue, cravings, insomnia, hypersomnia, or psychomotor agitation due to stopping frequent doses, or reducing the amount used of a stimulant drug.

The initial "crash" is followed in one to four hours by intense cravings, prolonged sleep that may be interrupted to eat large amounts of food, numbness of the throat, diaphoresis, tachycardia, and abdominal cramps.

These symptoms, not due to other physical or mental disorders, last longer than 24 hours after cessation of stimulant use, and usually peak in two to four days, although depression and irritability may last for months.

Cravings can occur after months or even years of abstinence and appear to be "conditioned" in that they are triggered by events, either internal or external, that the patient associates with stimulant use. If the patient remains abstinent, the cravings will be less after each exposure. Neonatal cocaine withdrawal is similar to opioid withdrawal except that it is usually mild to moderate.

Treatment considerations:

Stimulant overdose can produce cardiorespiratory distress and seizures. Life support and the administration of thiamine, glucose, oxygen and naloxone are indicated. Naloxone is an opioid antagonist that blocks the opioid receptor sites in the body, and is given because narcotics are often taken along with cocaine or amphetamines.

CHAPTER VII

The Hallucinogens

(Substance Abuse)

Chapter VII

Chapter VII Behavioral Objectives:

At the end of this Chapter, Each nurse will be able to:

1. Name and discuss the general actions of the psychoactive drugs
 2. Name and discuss at least four of the psychoactive drugs presented in this section and their dosages, actions, and side effects
 3. Discuss the trends of use of the psychoactive drugs in today's society
-

Study Questions:

39. Psychedelics tend to distort the user's perception of objective:

- A. illusions B. hallucinations C. motion D. reality

40. A psychological hazard (of the psychoactives) is the _____ reaction.

- A. flashback B. biological C. stress D. euphoria E. mood

41. Using LSD today involves consuming powder pellets called:

- A. windowpanes B. blotter C. units D. cubes E. microdots

42. Physical effects of LSD include dilated pupils, hyperthermia, and:

- A. bradycardia B. hypotension C. drowsiness D. tremors

43. _____ is the major psychoactive ingredient of the peyote cactus.

- A. LSD B. Psilocybin C. Mescaline D. PCP E. MDA

44. MDMA, methylenedioxyamphetamine is commonly known as:

- A. LSD B. ecstasy C. Angel dust D. mace E. mushrooms

45. Phencyclidine was developed in 1959 as an anesthetic, later used as a:

- A. horse tranquilizer B. local anesthesia C. anti-anxiety drug

46. Patients on PCP often became agitated, delusional, and:

A. uncooperative B. calm C. drowsy D. jaundice E. irrational

47. The victim of PCP overdose may experience muscle incoordination, vomiting, skin flushing, noticeable perspiration and:

A. jaundice B. psychotic episodes C. anti-social behavior

The Psychoactive Drugs (Hallucinogens)

Introduction:

This section presents those psychoactive drugs, also known as the hallucinogens (hallucination-producing chemicals). Over the past years, various terms or labels have been used to describe the psychedelics; in addition to **hallucinogens**, these include **psychotomimetics** (drugs that mimic psychosis), **psychodysleptics** (drugs that are mind disrupting), and **psycholytics** (dissolvers of the psyche or mind-looseners). The term psychedelic probably is the most general and the most inclusive term for this group of drugs.

Psychedelic refers to "mind-expansion" or mind-manifestation--the ability of the mind to perceive more than it can tell and to experience more than it can explain. The major characteristics of the psychedelic state are:

- heightened awareness of sensory input, experienced as a flood of sensation
- undergoing especially vivid but unreal imagery, typical of one's childhood
- enhanced sense of clarity or clearness
- diminished control over what is experienced
- persistent feeling that one part of the self is a passive observer while another part of the self participates and receives unusual sensory experiences
- perception of the environment as novel, beautiful, and harmonious
- preemption of the user's inward-focused attention by the seeming clarity of his or her own thinking process
- assignment of profound meaning to the slightest of sensations
- lessened capacity to distinguish the boundaries of one object from another and of the self from the environment
- development of a sense of union with all humankind or the cosmos itself

As a group, psychedelics tend to distort the user's perception of objective reality, decrease logical thought, heightened sensation, and change or modify one's state of consciousness. These drugs invariably bring about a central nervous system excitation that affects the senses--especially time sense--feelings, moods, experience, and mental processes. Stimulation of the sympathetic nervous system also results in a rise in pulse rate and blood pressure as well as sweating and palpitations of the heart.

In very large or toxic doses, psychedelic drugs also produce hallucinations and delusions, although these are relatively rare. More commonly produced are **illusions** and so-called "pseudohallucinations." As a consequence, some people prefer to describe the psychedelics as illusionogenic rather than hallucinogenic in nature.

While mimicking some naturally-occurring neurotransmitters of the brain and disrupting others, individual psychedelics have subtle, unique effects that are especially attractive to users. These may include speed of onset, duration of the psychedelic "high," and the particular sense that seems to be altered more so than others, whether it is visual or auditory.

Commonly shared properties are also part of the psychedelic allure. One of these is **synesthesia**. This is a drug-related effect in which there is a mingling of the senses, in which one sensation may be translated into another. For example, sounds may be seen, smells may be felt, and colors may be heard.

Although the changes in perception, mood, and thinking usually are interpreted as euphoric, sometimes undesirable psychological effects do occur. Among these are acute anxiety and panic reactions or "bad trips"--the most frequent adverse effect--characterized by terror, confusion, dissociation, and fear of losing control over oneself. Such reactions last less than 24 hours in most instances, but they may occasionally persist for days and eventually progress into a chronic, toxic psychosis. In some instances, depersonalization and depression become so severe that suicide is a distinct possibility.

Another psychological hazard is the **flashback** reaction. Long after psychedelics have been eliminated from the body, partial recurrences of psychedelic effects may be experienced, such as the intensification of a perceived color, the apparent motion of a fixed object, or the mistaking of one object for another object. In effect, the flashback is a free trip--a repetition of a drug's effects without using a drug. This sometimes alarming situation may be either spontaneous or triggered by physical or psychological stress, by medicines, or by use of marijuana. While the precise cause remains obscure, flashbacks are probably psychological in origin and may involve a "conditioned response" to a previous panic attack.

History of the psychoactive drugs:

This category includes drugs such as lysergic acid diethylamide (LSD), mescaline, peyote, phencyclidine, and even marijuana. Although generally referred to as psychedelics because of their mind-expanding or mind-manifesting effects, these chemicals really have distinct pharmacological effects. For example, some psychedelics act like stimulants; PCP has sedative-hypnotic effects; and marijuana is sometimes considered a depressant, capable of producing a euphoric state of intoxication.

In addition to LSD, which is the major focus of this chapter, several other psychedelics are examined. These include both natural and synthetic mind-expanders. Another psychoactive drug, phencyclidine (PCP), resembles both the mind-expanders and the sedative-hypnotics. Yet, PCP is in a class of its own, quite possibly the most potentially dangerous of all "street" drugs.

Many plants containing psychedelic drugs have been known and used for their mind-altering effects since prehistoric times. It is probable that the mushroom **Amanita muscaria**, which is neither deadly nor commonly eaten as food, was used both medically and recreationally by people in the early Aryan culture of present-day Afghanistan. Quite likely, this particular mushroom was the "**soma**" described in 3,500-year-old Indian holy books.

Another variety of mushroom containing psilocybin, called "God's Flesh," was employed in the religious rituals of certain Mexican Indians. It is now presumed that the ancient Mayans of Mexico and Guatemala engaged in the worship of these mushrooms nearly 1,000 years before

Christ.

It is fairly certain that the use of plants with LSD-like effects was prevalent in both a religious and therapeutic context long before Dr. Albert Hofmann and Dr. W.A. Stoll first synthesized LSD in 1938. It was not until five years later, in 1943, that Dr. Hofmann took his very first "acid trip."

At first, psychiatrists and scientists felt that the new LSD-25 compound would assist the medical community in the study and treatment of mental illness. Some even thought that this strange compound would produce a temporary "model psychosis" that would help science better understand the mechanism of mental disease. However, research in this area was to prove fruitless. LSD was also highly abused in the 1960's and by 1970, most medical research into LSD has stopped.

Using LSD today involves consuming powder pellets called "microdots," gelatin chips known as "windowpanes," and thin squares of absorbent paper soaked in liquid LSD--the so-called "blotter acid" or just plain "blotter." Supposedly, each square represents one dose. In contrast, with bulky carriers (objects and substances containing LSD), such as sugar cubes, animal crackers, gelatin chips, and tiny pellets, "blotter acid" is practically undetectable. Moreover, the potency of today's LSD is not as strong as it was in the acid heyday of the early 1970's. Because of its weaker potency, LSD tends to produce more manageable reactions.

LSD (Lysergic Acid Diethylamide)

LSD is one of the major drugs making up the hallucinogen class. LSD was discovered in 1938 by Dr. Albert Hofmann and is one of the most potent mood-changing chemicals. It is manufactured from lysergic acid, which is found in ergot, a fungus that grows on rye and other grains. LSD is classified under Schedule I of the Controlled Substances Act, which includes drugs with no medical use and/or high potential for abuse.

LSD, commonly referred to as "acid," is sold on the street in tablets, capsules, and, occasionally, liquid form. It is odorless, colorless, and tasteless and is usually taken by mouth. Often LSD is added to absorbent paper, such as blotter paper, and divided into small decorated squares, with each square representing one dose.

The Drug Enforcement Administration reports that the strength of LSD samples obtained currently from illicit sources ranges from 20 to 80 micrograms of LSD per dose. This is considerably less than the levels reported during the 1960's and early 1970's, when the dosage ranged from 100 to 200 micrograms, or higher, per unit.

Effects of LSD

The effects of LSD are unpredictable. They depend on the amount taken; the user's personality, mood, and expectations; and the surroundings in which the drug is used. Usually, the user feels the first effects of the drug 30 to 90 minutes after taking it. The physical effects include dilated pupils, higher body temperature, increased heart rate and blood pressure, sweating, loss of appetite, sleeplessness, dry mouth, and tremors. Sensations and feelings change

much more dramatically than the physical signs. The user may feel several different emotions at once or swing rapidly from one emotion to another. If taken in a large enough dose, the drug produces delusions and visual hallucinations. The user's sense of time and self changes. Sensations may seem to "cross over," giving the user the feeling of hearing colors and seeing sounds. These changes can be frightening and can cause panic.

Users refer to their experience with LSD as a "trip" and to acute adverse reactions as a "bad trip." These experiences are long. Typically they begin to clear after about 12 hours. Some LSD users experience severe, terrifying thoughts and feelings, fear of losing control, fear of insanity and death, and despair while using LSD. Some fatal accidents have occurred during states of LSD intoxication. Many LSD users experience flashbacks, recurrence of certain aspects of a person's experience, without the user having taken the drug again. A flashback occurs suddenly, often without warning, and may occur within a few days or more than a year after LSD use. Flashbacks usually occur in people who use hallucinogens chronically or have an underlying personality problem; however, otherwise healthy people who use LSD occasionally may also have flashbacks. Bad trips and flashbacks are only part of the risks of LSD use. LSD users may manifest relatively long-lasting psychoses, such as schizophrenia or severe depression. It is difficult to determine the extent and mechanism of the LSD involvement in these illnesses.

Most users of LSD voluntarily decrease or stop its use over time. LSD is not considered an addictive drug since it does not produce compulsive drug-seeking behavior as do cocaine, amphetamine, heroin, alcohol, and nicotine. However, in common with many of the addictive drugs, LSD produces tolerance, so some users who take the drug repeatedly must take progressively higher doses to achieve the state of intoxication that they had previously achieved. This is an extremely dangerous practice, given the unpredictability of the drug. NIDA is funding studies that focus on the neurochemical and behavioral properties of LSD. This research will provide a greater understanding of the mechanisms of action of the drug.

Extent of Use: Monitoring the Future Study

Since 1975 about 15,000 high school seniors nationwide have been surveyed yearly to determine trends in drug use and to measure attitudes and beliefs about drug abuse. Over the past 20+ years, the percentage of seniors who have used LSD has remained relatively stable. Among the class of 1975, 11.3 percent had used LSD by the time they reached their senior year of high school. In 1996, 12.6 percent had experimented with LSD. Annual prevalence of LSD use among high school seniors was 7.2 percent in 1975 and 8.8 percent in 1996.

Annual use of LSD among high school seniors: Monitoring the Future Study:

1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1996
7.2%	5.5%	6.6%	6.5%	5.4%	4.4%	5.2%	4.9%	5.2%	6.8%	8.4%	8.8%

In 1996, 36.2 percent of seniors perceived great risk in using LSD once or twice, and 77.8

percent said they saw great risk in using LSD regularly. Almost 80 percent of seniors disapproved of people trying LSD once or twice, and more than 93 percent disapproved of people taking LSD regularly. More than 51 percent of seniors said it would have been fairly easy or very easy for them to get LSD if they wanted some.

National Household Survey on Drug Abuse

The National Household Survey reports the nature and extent of drug use among the American household population aged 12 and older. The survey measures the extent of the use of hallucinogens, including LSD and PCP. The rate of hallucinogen use in general has been level since 1988. In the 1996 Household Survey preliminary estimates, the percentage of the population aged 12 and older who had ever used LSD (the lifetime prevalence rate) had increased to 7.7 percent from 4.6 percent in 1985. Among youths 12 to 17 years old, the LSD lifetime prevalence rate was 4.3 percent, and for those aged 18 to 25, the rate was 13.9%.

The rate for past-year use of LSD among the population ages 12 and older was 1.0 percent in both 1995 and 1996. Past-year prevalence was highest among the age groups 12 to 17 (2.8 percent) and 18 to 25 (4.6 percent).

The rate of current hallucinogen use in 1996 for those aged 18 to 25 was 2.3 percent and 2.0 percent for 12- to 17-year-olds.

Annual use of hallucinogens, by age group:

National Household Survey on Drug Abuse:

	1977	1979	1982	1985	1988	1991	1992	1993	1994	1995	1996
12- to 17-year-olds	3.1%	4.8%	3.5%	2.6%	2.8%	2.1%	1.9%	2.1%	2.7%	4.6%	4.3%
18- to 25-year-olds	6.4%	9.9%	6.6%	4.0%	5.6%	4.7%	3.9%	4.9%	5.1%	5.3%	6.9%

Percentage reporting hallucinogen use in lifetime, by hallucinogen type and age group, 1996:

National Household Survey on Drug Abuse

	<u>Age Group (Years)</u>				
	12-17	18-25	26-34	35+	Total
Any hallucinogen	5.6%	16.3%	15.4%	7.3%	9.7%
LSD	4.3%	13.9%	11.7%	5.8%	7.7%
PCP	1.2%	2.3%	4.2%	3.4%	3.2%

Drug Abuse Warning Network

The Drug Abuse Warning Network (DAWN) collects data on all types of drug-related emergency department episodes. After remaining at between about 3,500 and 4,000 emergency department visits for six years, LSD-related episodes jumped in 1994 to 5,150. Preliminary estimates for 1995 report 5,943 episodes.

LSD-related emergency room episodes:

Drug Abuse Warning Network:

1988	1989	1990	1991	1992	1993	1994	1995
3,835	3,421	3,869	3,846	3,499	3,422	5,150	5,943

Other Psychoactive substances

1. Peyote and Mescaline

The peyote cactus, **Lophophora williamsii**, has been used in the religious rituals of Mexican Indians for thousands of years. Because of the visual and kaleidoscope illusions produced by **peyote**, the ancients were convinced that they could communicate directly with their gods without the need for priests. The fleshy green cactus tips--the mescal buttons--are dried in preparation for chewing and oral consumption. Rather than endure the bitter taste of the sliced mescal buttons, some users prefer to smoke the ground up material. Others brew a peyote tea or swallow capsules containing a powdery form of the cactus buttons. Regardless of the method of administration, peyote tends to cause stomach disorders, nausea and vomiting. Afterward, psychedelic effects persist from six to 10 hours and typically include feelings of weightlessness and depersonalization, perceptual distortions, and synesthesias.

Mescaline is the major psychoactive ingredient of the peyote cactus and is responsible for the mind-manifesting, LSD-like effects of the mescaline buttons. In doses of 200-500 mg (the equivalent of 20 mescal buttons), mescaline causes increased heart rate, increased body temperature, increased blood pressure, and dilated pupils as well as a slowing down of both coordination and reflexes, and a clouding of one's concentration.

Mescaline may now be produced in the laboratory and is available in capsules, tablets, and liquid form. This synthetic mescaline produces effects similar to LSD, but is rarely available on the "street." While mescaline induces altered perceptions, there tends to be less mental or cognitive disorganization than is caused by LSD. Neither peyote nor its mescaline derivative produces physical dependence. Psychological dependence is rare, but tolerance develops rapidly, often within three days. Cross-tolerance with LSD and psilocybin exists. Along with LSD and other psychedelics, peyote and mescaline are Schedule I drugs under the provisions of the Controlled Substances Act. However, peyote is legal only for members of the Native American Church who use mescal buttons sacramentally in their rituals. (Please note that Tequila, an alcoholic beverage, is produced from a cactus with a similar name, but not the same mescal that we are discussing here.)

2. Psilocybin

When psilocybe mushrooms (psilocybe caerulescens, stropharia cubensis) and several other members of the psilocybe genus, are eaten, human perception and cognition are affected in ways similar to those caused by mescaline and LSD. Before the onset of this drug's unique mental effects--visions perceived with eyes closed and altered states of consciousness--the intake of psilocybin may cause nausea and vomiting.

The psychoactive ingredients of these sacred mushrooms are psilocybin and psilocyn, both chemically related to LSD. Both of these drugs can be made synthetically in the form of a white crystalline powder, but they may also be contained in mushroom preparations. Much of what is sold on the "street," however, consists of LSD and other chemicals. Like mescaline, psilybin is rarely available on the "street," although some users have procured "grow-your-own" psychedelic mushrooms from special mail-order houses.

In order for psilybin to produce psychedelic effects, this substance must first be changed (metabolized) to psilocyn in the body before it can enter the brain. After one to five grams of the appropriate dried mushrooms are eaten, or a dose of 20 to 60 mg of synthetic psilocybin is taken, effects begin within half an hour and last three to six hours. The duration of the psilocybin trip is considerably shorter than that of LSD. Injection of psilocybin will initiate the trip somewhat earlier.

Generally, the effects are similar to, but less intense, than those of LSD. Having developed a reputation for producing very strong visual distortions, psilocybin is believed to produce particularly vivid and colorful illusions. Tolerance to the effects of psilocybin builds rapidly and with daily use, although physical dependence does not appear. Though psychological dependence is a possibility, the condition is thought to be extremely rare.

3. DMT (dimethyltryptamine)

A derivative of certain South American shrubs as well as a synthetic compound, DMT is a very powerful, fast-acting drug that produces psychedelic effects of an extremely short duration. Known chemically as dimethyltryptamine, DMT is produced in either liquid or powder forms. Usually, DMT is combined with tobacco, parsley, or marijuana and smoked. Sometimes, a finely ground powder of DMT is sniffed, eaten, or prepared in a solution for injection.

One of the surprising aspects of DMT is its almost instantaneous impact upon the user. Psychedelic effects often begin and reach their peak of intensity within 10 minutes after smoking. The trip lasts only 30 to 60 minutes, and then the visual and time-sense distortions subside rapidly. In essence, a DMT trip is a compact version of an LSD trip, without the side effects of LSD.

As with most other psychedelics, use of DMT soon produces a tolerance, but there is no evidence of physical dependence. Despite its appeal as the "business-person's" trip--allegedly DMT can be taken during an individual's lunch hour--there is little demand for this drug.

Perhaps DMT's action as an MAO inhibitor is its greatest potential hazard. When taken in combination with various foods, liquids, and other drugs, DMT may cause life-threatening changes in blood pressure.

4. Morning Glory Seeds

Pulverized seeds of the common morning glory plant (*ipomoea purpurea* and various species of *Rivea* and *Argyreia*) contain a psychoactive substance, d-lysergic acid amide. This psychedelic drug is very similar to LSD, but is much less potent. A dose of between 200-300 seeds will induce LSD-like effects within 30 minutes after a person eats a powdery mixture or almost immediately after a person injects a liquid preparation. Sometimes, the seeds are chewed thoroughly before they are swallowed. The chewing process releases the psychoactive drug for absorption into the bloodstream.

After an initial period of apathy and irritability, the user typically experiences a pleasant state of elation and serenity, quite similar to low-dose LSD-like phenomena. However, "pearly gates" and "heavenly blues," as the seeds are often called, are not really ideal psychedelics unless a natural source can be located. Seed producers coat commercially available seeds with a poisonous substance to discourage their recreational use. Upon ingestion, the toxic substance induces dizziness, nausea, vomiting, chills, and diarrhea.

5. Nutmeg

A commercial spice derived from the tropical evergreen, *Myristica fragrans*, nutmeg appears as either the whole, dried seed or as a preparation of coarsely ground powder. Both the seed and the powder can be eaten; the powder is occasionally sniffed. Two to five hours after grated nutmegs are swallowed, a confusional state with mild euphoria and illusions develops. These effects are in response to a chemical identified originally as myristican. However, other psychoactive substances may also be involved. In most instances, nutmeg is used only when more powerful drugs are not available. Prisoners sometimes buy or steal this spice when better psychedelics cannot be obtained.

Mace, the orange, lacy covering of the nutmeg shell, also contains myristican. Sometimes the ground or whole mace is used as a kitchen spice. When swallowed in quantity, mace induces mild psychedelic effects. Although its use is infrequent, an occasional "mace party" has been recorded on college campuses.

6. MDA (3, 4-methylenedioxyamphetamine)

Nicknamed the "mellow drug of America," and "speed for lovers," MDA is derived from various plant oils, including sassafras, MDA can also be synthesized as a white powder. This product can be taken orally (in a capsule), sniffed, or injected as a solution.

Chemically similar to both mescaline and the amphetamines, MDA induces euphoria, a peaceful, dream-like state beginning about one hour after a person first takes the drug. The

average trip may last nearly eight hours. Although at very high doses MDA produces many physical reactions--some requiring emergency medical treatment--the most notable effect seems to be a tranquil emotionality. The accompanying psychological warmth and tenderness permit the "tripper" to concentrate on interpersonal relationships. Communication with other people seems to be enhanced as a pervasive sensuousness overcomes the user.

7. MDMA (methylenedioxyamphetamine)

Known as "Ecstasy," "Adam," "the Big E," and "X-TC," MDMA is a chemical cousin of MDA. This psychoactive drug combines some of the hallucinogenic effects of mescaline with the stimulant effects of amphetamines.

Originally synthesized in 1914, MDMA did not become a significant drug of abuse until the 1970's, when it enjoyed a sudden popularity among college students. Although taking the drug by mouth is generally preferred, MDMA is inhaled on occasion, but only rarely injected. Derived by chemically engineering MDA, MDMA is considered a "designer drug"--an originally legal substance that acts similarly to its illegal cousin.

Some advocates of MDMA labeled the drug as the LSD of the 1980's because it provides the euphoric "rush" of cocaine and some of the mind-expanding qualities of psychedelics, without the scary visual distortions. In practical terms, MDMA is the successor to MDA and is often considered an aphrodisiac, despite its interference with erection and inhibition of orgasm in both sexes.

Research indicates that MDMA is somewhat milder and shorter-lasting than MDA and exerts amphetamine-like effects on the body (dilated pupils, dry mouth and throat, lower jaw tension, grinding of the teeth, and overall stimulation). On the other hand, many users report a general relaxation effect, decreased use of psychological defense mechanisms, increased empathy for others, promotion of intimate communications, and enhanced sensual experiences, especially the pleasures of touching.

Some physicians and therapists have found MDMA to be a significant therapeutic aid in dissolving personal anxieties in certain patients. Research also suggests that MDMA tends to intensify feelings, facilitate self-insight, promote positive changes in attitudes and feelings, and facilitate close interpersonal relationships.

Although the claimed benefits sound very attractive, other investigations have revealed several undesirable effects of MDMA. Recreational users report that over time, the desired effects of the drug become weaker, while the negative side effects become more likely. Psychological difficulties reported by users include mental confusion, depression, anxiety, generalized panic situations, and even paranoia. Common physical problems experienced are increased muscle tension, nausea, blurred vision, rapid eye movements, faintness, and increased heart rate and blood pressure. However, the greatest fears are associated with Ecstasy's potential for acting as a toxic substance within the brain and causing major changes in brain chemistry.

Because of its potential for abuse and its possible neurotoxic effect, MDMA was temporarily

restricted as a Schedule I controlled substance in 1985 and permanently classified in Schedule I in 1988. Also that year, the Drug Enforcement Administration rejected arguments supporting its treatment value. As an analogue of MDA, MDMA is also illegal as a "designer-recreational" drug.

8. DOM (also called STP) (4-methyl-2, 5-dimethoxyamphetamine)

Another synthetic variation of mescaline and amphetamine, DOM was first introduced to the drug scene in 1967 as STP. Named after a motor oil additive--scientifically treated petroleum--the original acronym was soon reinterpreted to stand for "Serenity, Tranquility, Peace."

Usually taken orally, DOM, at very low doses induces an amphetamine-like euphoria and feelings of enhanced self-awareness. At higher dose levels, LSD-like effects are experienced. Generally less potent than LSD, DOM is not metabolized rapidly, remains in the body much longer than most other psychedelics (from 12 to 24 hours), and produces a variety of physical problems, including nausea, sweating, tremors, and convulsions. The length and intensity of the DOM (STP) "trip" both contribute to an unusually high rate of bad trips produced by the drug.

Chemical Variations

An almost endless number of psychedelics have been synthesized by creative "kitchen chemists" for the illegal "street" market. Some of these, such as DOB (4-bromo-2, 5-dimethoxyamphetamine) and MMDA are mescaline-amphetamine variants similar to DOM and MDA, respectively. Other psychedelics with stimulant properties are PMA (paramethoxyamphetamine) and TMA (trimethoxyamphetamine). DET (diethyltryptamine) is similar in chemical structure to DMT.

All of these drugs differ from one another in terms of speed of onset, duration of action, potency, and capacity to modify mood. They are seldom pure, their capsule dosages are variable, and they are often misrepresented as other psychedelics. ****Note: This topic will be presented in detail later in this text.**

9. PCP (phencyclidine)

Phencyclidine, commonly referred to as PCP, was developed in 1959 as an anesthetic and was later used in veterinary medicine as a powerful horse tranquilizer. Use of PCP in humans was discontinued in 1965, because it was found that patients often became agitated, delusional, and irrational while recovering from its anesthetic effects. It is classified as a Schedule III drug under the Controlled Substances Act. PCP is illegally manufactured in clandestine laboratories and is sold on the street by such names as angel dust, crystal supergrass, killer joints, ozone, wack, and rocket fuel. The variety of street names for PCP reflects its bizarre and volatile effects. PCP is a white crystalline powder that is readily soluble in water or alcohol. It has a distinctive bitter chemical taste. PCP can be mixed easily with dyes and turns up on the illicit drug market in a variety of tablets, capsules, and colored powders. It is normally used in one of three ways: snorted, smoked, or eaten. For smoking, PCP is often applied to a leafy material such as mint,

parsley, oregano, or marijuana.

Extent of Use

NIDA's Monitoring the Future Study shows that use of PCP by high school seniors has declined steadily since 1979, when 7.0 percent of seniors had used PCP in the year preceding the survey, to 1993, when 1.4 percent of seniors reported using PCP in the preceding year. In 1995, the number was 1.8 percent, and in 1996, 2.6 percent. In 1979, 2.4 percent of seniors had used PCP within the past month, compared to 1.3 percent in 1996.

Percentage of high school seniors reporting past-year use of PCP:

<u>1979</u>	<u>1993</u>	<u>1995</u>	<u>1996</u>
7.0%	1.4%	1.8%	2.6%

According to the 1996 National Household Survey on Drug Abuse, 3.2 percent of the population aged 12 and older have used PCP at least once. Lifetime use of PCP was significantly higher among those aged 26 through 34 (4.2 percent) than for those 18 through 25 (2.3 percent) and those 12 through 17 (1.2 percent).

Health Hazards

PCP was first introduced as a street drug in the late 1960's and quickly gained a reputation as a drug that could cause bad reactions and was not worth the risk. Many people, after using the drug once, will not knowingly use it again. Yet others use it consistently and regularly. The reasons often cited by users as factors in their continued PCP use are feelings of strength, power, and invulnerability and a numbing effect on the mind that often results in anger, rage, and the disappearance of unpleasant memories. Recent studies, including those of men arrested for criminal activity, indicate that if PCP induces violent or criminal behavior, it does so infrequently.

At low to moderate doses, physiological effects of PCP include a slight increase in breathing rate and a more pronounced rise in blood pressure and pulse rate. Respiration becomes shallow, and flushing and profuse sweating occur. Generalized numbness of the extremities and muscular incoordination also may occur. Psychological effects include distinct changes in body awareness, similar to those associated with alcohol intoxication. Use of PCP among adolescents may interfere with hormones related to normal growth and development as well as with the learning process. At high doses of PCP, there is a drop in blood pressure, pulse rate, and respiration. This may be accompanied by nausea, vomiting, blurred vision, flicking up and down of the eyes, drooling, loss of balance, and dizziness.

Psychological effects at high doses include illusions and hallucinations. PCP can cause effects that mimic certain primary symptoms of schizophrenia, such as delusions, mental turmoil, and a sensation of distance from one's environment. Often speech is sparse and garbled. People who use PCP for long periods report memory loss, speech difficulties, depression, and weight loss. When given psychomotor tests, PCP users show loss of fine motor skills and short-term

memories. Mood disorders also have been reported. PCP has sedative effects, and interactions with other central nervous system depressants such as alcohol and benzodiazepines can lead to coma or accidental overdose.

PCP Overdoses:

Research has revealed that some regular PCP users rarely appear in criminal justice or medical care statistics. These individuals often use PCP along with alcohol or marijuana at parties or otherwise value PCP's psychedelic properties without experiencing the undesirable reactions that often end in violent behavior, depression, and paranoia. Apparently, such users have managed the concept of dose control in order to maximize desired psychoactive effects and minimize undesired effects.

Because of the level of potency of any given dose, the effects of PCP are often unpredictable. Over-dosing is a possibility. The victim of such drug overdose is likely to experience muscular incoordination, oscillating movements of the eyeballs, inability to move from a fixed position, vomiting, skin flushing, noticeable perspiration, generalized anesthesia (loss of sensation), and psychotic episodes.

The PCP-induced psychosis, most likely to occur in individuals who have already suffered severe mental disorders, may be characterized by violence, aggression, extreme anxiety, and tension. The psychotic experience usually progresses through three stages, each lasting about five days. Stage one is often the most severe and is marked by delusions, anorexia, insomnia, and unpredictable assaultiveness. This is followed by an intermediate second stage with continued paranoia, restlessness, and intermittent control over one's behavior. In the third stage, the PCP user undergoes a gradual recovery, but social withdrawal and severe depression often persist for months.

Of course, PCP can display the harmful properties of a CNS depressant with cardiovascular instability, respiratory depression, seizures, and coma. To prevent death, emergency medical treatment will include life-support measures, isolation of the victim to reduce sensory stimulation, and detoxification by gastric lavage.

Surprisingly, the number of alcohol-PCP and heroin-PCP related deaths has been higher than expected, reflecting either a preference for taking these drugs in combination or some interaction in the effect of the drug combinations. Many of the reported deaths, however, were not the result of overdose or drug interaction but rather the direct result of some external event, such as homicides, accident, suicides, gunshot wounds, strangling, drowning, auto accidents, falls, and cuts.

Research Advances

Research is under way to explain the biological actions of PCP and the architecture of a receptor known as NMDA receptor complex. The NMDA complex has been implicated in the process of cell death in the nervous system. PCP has been found to block the NMDA-operated ion channels, thereby indirectly blocking the receptor that responds to glutamate, a normal

chemical messenger. This may give a clue to deciphering the cause of schizophrenia.

In addition, research has determined that PCP can protect the brain from permanent damage after a stroke or heart attack. Basic brain research on the actions of amino acids and the effects of commonly abused drugs led to the discovery that PCP can stop the uncontrolled activity that destroys nerve cells. This discovery is expected to help people who suffer from any trauma that interrupts the supply of oxygen to the brain. Researchers are now looking for drugs that can work like PCP without producing the psychological effects.

Supply

PCP had a brief period of popularity in the late 1960's, when it was trafficked as a "magic peace pill." The Drug Enforcement Administration reports that abuse of the drug resurfaced from 1975 into the late 1980's because of the low price and powerful effects. From 1981 through 1985, trafficking of PCP escalated significantly, particularly among persons younger than 21. Narcotics agencies reports show that the number of PCP laboratories seized since the mid-1980's is considerably smaller than the high number reported in 1978.

Modifications of the basic PCP manufacturing process have yielded a variety of chemically similar compounds referred to as "analogues." These PCP variants or analogues, include PCC, PCE, PHP, TCP, and the anesthetic, ketamine, produce similar psychic effects and have already been sold on the illicit "street market" as PCP. More commonly, PCP is sold under numerous other names that reflect its bizarre effects, for example, "angel dust," "peep," "supergrass," "KJ," "killer weed," "ozone," "embalming fluid," and "rocket fuel." In the recent past, PCP was often misrepresented as more attractive drugs, such as THC or other marijuana products, mescaline, LSD, amphetamine, and even cocaine, because of PCP's bad "street" reputation.

CHAPTER VIII

THE INHALANTS

Solvents, Glues, Aerosols

(Substance Abuse)

Chapter VIII

Chapter VIII Behavioral Objectives:

At the end of this Chapter, Each nurse will be able to:

1. Name and discuss at least four types of abused inhalants
 2. Discuss the adverse health effects abused inhalants have on the body
 3. Name and discuss the reversible and irreversible effects caused by the abused inhalants
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Study Questions:

48. Inhalants are breathable chemical vapors that produce _____ effects.

- A. medical B. sedative C. psychoactive D. stimulating

49. Examples of solvents are: paint thinners, degreasers, and:

- A. gasoline B. rubber cement C. toluene D. anti-freeze

50. The first cases of volatile substance abuse appeared in:

- A. 1891 B. 1951 C. 1990 D. 1880 E. 1900

51. Non-therapeutic methods of inhalation include inhaling from an open container and:

- A. spray into mouth B. filling a bag C. spray into nose

52. Continuous inhalation of vapors will eventually result in loss of:

- A. control B. bowel function C. consciousness D. equilibrium

53. High concentrations of inhalants also cause death from:

A. toxicity B. acidosis C. suffocation D. alkalosis

Inhalant Abuse

Inhalants are breathable chemical vapors that produce psychoactive (mind-altering) effects. Although people are exposed to volatile solvents and other inhalants in the home and in the workplace, many do not think of inhalable substances as drugs because most of them were never meant to be used in that way. Young people are likely to abuse inhalants, in part because inhalants are readily available and inexpensive. Sometimes children unintentionally misuse inhalant products that are found around the house in household products. Parents should see that these substances are monitored closely so that they are not inhaled by young children.

The inhalants are favorite drugs of abuse for young people and, like marijuana, may be the first step on the road to more dangerous drugs. As teenagers mature, they abandon the use of these substances and move on to other drugs. However, a small percentage do continue to use inhalants as a drug of choice.

Inhalants fall into the following categories:

(1) Solvents

- Industrial or household solvents or solvent-containing products, including paint thinners or solvents
- degreasers (dry-cleaning fluids)
- gasoline
- art or office supply solvents, including correction fluids, felt-tip-marker fluid, and electronic contact cleaners.

(2) Glues

- toluene (adhesive)
- plastic (styrene) cement: acetone, hexane, trichloroethylene, benzene;
- rubber cement: benzene, hexane, trichloroethylene
- toy model cement: toluene, acetone, naphtha, hexane, alcohols, aliphatic acetates, tricresylphosphate, hexane

(3) Aerosols

This group includes: fluorocarbons, trichlorethylene, toluene

(4) Gases

This group includes:

- gases used in household or commercial products, including butane lighters, propane gas tanks and isobutane
- whipping cream aerosols or dispensers (whippets)
- refrigerant gases

- household aerosol propellants and associated solvents in items such as spray paints, hair or deodorant sprays, and fabric protector sprays
- medical anesthetic gases, such as ether, chloroform, halothane
- nitrous oxide (laughing gas)
- Nitrites and aliphatic nitrites, including cyclohexyl nitrite, which is available to the general public; amyl nitrite, which is available only by prescription; and butyl nitrite (found in room deodorizers and in over-the-counter "poppers") which is now an illegal substance.

(5) Others

- antifreeze (isopropanol)
- cleaning fluids: trichloroethane, naphtha, perchloroethylene, methylene chloride
- fingernail polish removers: acetone, aliphatic acetates
- some fire extinguishers: bromochlorodifluoromethane
- some inks: toluene, chlorinated hydrocarbons
- some liquid shoe polishes: toluene, chlorinated hydrocarbons

History of inhalant Abuse

The use of inhalants for their effects goes back to ancient times when ointments and perfumes were used to enhance religious ceremonies in Egypt, Babylon, and Biblical Palestine. In the sixteenth century, alcohol fumes were inhaled as an anesthetic for surgery and childbirth. Nitrous Oxide was first synthesized in 1776 and used socially. In the mid 1800's, along with ether, it was used as an anesthetic.

These substances were widely abused during the mid-1800's to mid-1900's, generally by patients who had been treated for a legitimate medical problem. The first cases of volatile substance abuse appeared in 1951 when a physician reported two cases of young boys who sniffed glue. During the 1950's and early 1960's, the number of cases involving youths and some adults grew rapidly. Most people abused model airplane cements and lighter and cleaning fluids. Various aerosols, gases, propellants, and refrigerants also became popular with inhalant abusers.

In the early 1960's, the number of deaths due to benzene and carbon tetrachloride, moved the Hobby Industry Association of America and toy manufacturers to take these products off the market. In a further effort to stop young people from sniffing glue, the Testor Corporation, the largest manufacturer of plastic cement of the type most often abused in the United States, began adding oil of mustard to the basic formula. When sniffed, this ingredient leads to nasal irritation similar to eating a chunk of horseradish, but will not affect persons who are using the product appropriately. The federal government banned the use of carbon tetrachloride in any product sold directly to the public, and by the mid-1960's, 26 cities and six states had passed statutes to gain control of the inhalant solvents. Nevertheless, abuse of the inhalants increased significantly in the late 1960's and 1970's along with multiple drug use.

Methods of Administration

Legitimate and therapeutic administration of an anesthetic by a dentist or doctor is guided by current medical regulations. These are administered in a controlled medical setting with adequate ventilation (use of oxygen concurrently with the inhalant) and in controlled amounts. Abuse of these inhalants (and others inhalants) will carry with them, great danger for adverse side effects, brain damage, and even death.

Non-therapeutic methods of administration depend upon the type of substance and its properties. Solvents (volatile liquids) and gases are usually inhaled through the nose and mouth, but solvents also may be taken orally if they are in liquid form. Non-therapeutic methods of inhalation include inhaling from an open container, filling a bag or balloon with the inhalant and holding it over the head/nose/mouth, and/or pouring solvent on a cloth and holding it to the mouth and nose. The concentration of some solvents may be increased by warming the can. It is possible to produce vapor concentrations 50 times maximum allowable industrial concentration.

Euphoria occurs in a few minutes. Continuous inhalation of the vapors will eventually result in a loss of consciousness. If the bag falls from the hand and mouth, deep respiratory depression and death can be avoided. This is not the case when a plastic bag is used. The plastic is non-porous and a tight seal is established between the mouth and the bag. It may not automatically fall away when consciousness is lost. Suffocation is eminent. Plastic bag suffocation is one of the leading causes of death among young persons who sniff solvents. Suffocation may follow inhaling freon gas because the gas can freeze the airway, cutting off all airflow.

Monitoring the Future Study (inhalant use)

NIDA's national survey of drug use among high school students provides estimates of the percentage of seniors using inhalants since 1976. The percentage of seniors who have used inhalants in the past year has basically remained within a stable range, between 6% and 9% since 1979.

Trends in annual prevalence of inhalant use among 12th-graders:

1979 - 8.9%	1991 - 6.6%
1981 - 6.1%	1992 - 6.2%
1983 - 6.2%	1993 - 7.0%
1985 - 7.5%	1994 - 7.7%
1987 - 8.1%	1995 - 8.0%
1989 - 6.9%	1996 - 7.6%

The Monitoring the Future Study also includes 8th- and 10th-graders, providing estimates of drug use among a younger population. In 1996, 21.2 percent of 8th-graders and 19.3 percent of 10th-graders had used inhalants at least once in their lives; 12.2 percent of 8th-graders and 9.5 percent of 10th-graders had used inhalants in the past year.

Percentage of 8th-, 10th-, and 12th-graders reporting past-year and lifetime use of inhalants, 1996: Monitoring the Future Study

Grades:	8th	10th	12th
Past-Year	12.2%	9.5%	7.6%
Lifetime	21.2%	19.3%	16.6%

The perceived harmfulness of inhalants varies among high school students. In 1996, almost 41 percent of 8th-graders and more than 47 percent of 10th-graders said there is great risk in trying inhalants once or twice. More than 68 percent of 8th-graders and almost 76 percent of 10th-graders saw great risk in taking inhalants regularly.

National Household Survey

Data from the National Household Survey on Drug Abuse show that in 1996, 5.9 percent of 12- to 17-year-olds reported use of inhalants at least once in their lifetimes, and 4.0 percent reported using inhalants in the past year.

Adverse Effects and Medical Problems Associated with Inhalants

Adverse Effects of use although different in makeup, nearly all abused inhalants produce effects similar to anesthetics, which act to slow down the body's functions. When inhaled via the nose or mouth into the lungs in sufficient concentrations, inhalants can cause intoxicating effects. Intoxication can last only a few minutes or several hours if inhalants are taken repeatedly. Initially, users may feel slightly stimulated; with successive inhalations, they may feel less inhibited and less in control; finally, a user can lose consciousness. Sniffing highly concentrated amounts of the chemicals in solvents or aerosol sprays can directly induce heart failure and death. This is especially common from the abuse of fluorocarbons and butane-type gases. High concentrations of inhalants also cause death from suffocation by displacing oxygen in the lungs and then in the central nervous system so that breathing ceases.

Other irreversible effects caused by inhaling solvents are as follows:

- Hearing loss - toluene (paint sprays, glues, dewaxers) and trichloroethylene (cleaning fluids, correction fluids)
- Peripheral neuropathies or limb spasms - hexane (glues, gasoline) and nitrous oxide (whipping cream, gas cylinders)
- Central nervous system/brain damage - toluene (paint sprays, glues)
- Bone marrow damage - benzene (gasoline), classified as an aromatic hydrocarbon, is extremely toxic and can produce bone marrow aplastic anemia and necrosis or fatty degeneration of the heart, liver, and adrenal glands. Its CNS effects include headache, drowsiness, and irritability. Benzene is often implicated in bone marrow toxicity and in leukemia. It is a common ingredient in many dry-cleaning fluids.

Serious but potentially reversible effects include:

- Panic Attacks - Panic attacks are quickly over as the period of intoxication is between 15 minutes and one hour

- Organic Brain Syndrome - This condition is frequently seen in chronic inhalant abusers and is characterized by confusion, decreased intellectual functioning, impairment of recent memory, and an inability to think through problems.
- Liver and kidney damage - toluene-containing substances and chlorinated hydrocarbons (correction fluids, dry-cleaning fluids)
- Blood oxygen depletion - organic nitrites ("poppers," "bold," and "rush") and methylene chloride (varnish removers, paint thinners).

Death from inhalants usually is caused by a very high concentration of fumes. Deliberately inhaling from an attached paper or plastic bag or in a closed area greatly increases the chances of suffocation. Even when using aerosol or volatile products for their legitimate purposes (i.e., painting, cleaning, etc.), it is wise to do so in a well-ventilated room or outdoors.

Today, many new propellants are used in household product and food products in order to minimize the abuse potential of these common products. However, another danger of many propellants used today is just simply **suffocation**. Many of the newer propellants, gases, and solvents are NOT DIRECTLY TOXIC to the human body. However, when inhaled, they simply deprive the body of oxygen. The abuser feels dizzy and lightheaded and thinks he/she is getting high. In reality, they are just merely suffocating to death. Therefore, even these newer, so-called non-toxic substances may still be lethal.

CHAPTER IX

Designer Drugs

(Substance Abuse)

Chapter IX

Chapter IX Behavioral Objectives:

At the end of this Chapter, Each nurse will be able to:

1. Define the term designer drug and give at least 2 examples
 2. Name and discuss the health risks of abusing designer drugs
-

Study Questions:

54. A designer drug is an analog, that is similar (to another drug of abuse) in structure and _____.

- A. design B. color C. price D. function E. effect

55. Control of these new designer drugs is now strictly _____.

- A. priced B. controlled C. sold D. legal E. tested

56. Use of designer drugs presents some major health risks, such as:

- A. overdose B. nausea C. vomiting D. over-stimulation

57. Without any quality control, designer drugs are often sold on the street contaminated with:

- A. dirt B. lidocaine C. other drugs D. impurities E. heroin

58. Fentanyl analogs are marketed as potent _____ alternatives.

- A. heroin B. analgesic C. LSD D. PCP E. amphetamine

59. "China White" is an analog for which common, medically approved drug?

A. Fentanyl B. Demerol C. both Fentanyl & Demerol D. PCP

Introduction:

Designer Drugs

A designer drug is an analog, a chemical compound that is similar in structure and effect to another drug of abuse but differs slightly in structure. Designer drugs are usually produced in clandestine laboratories to mimic the psychoactive effects of controlled drugs. Theoretically, the number of potential synthetic analogs that can be made and distributed is very large. The most commonly known types of synthetic analog drugs available through the illicit drug market include analogs of fentanyl and meperidine (both synthetic opioids), phencyclidine (PCP), and amphetamine and methamphetamine (which have hallucinogenic and stimulant properties). The street names of designer drugs vary according to time, place, and manufacturer, and they change frequently.

Control of these new "designer drugs" also called "High-Tech Designer Drugs," is now strictly controlled. New laws now make illegal all such designer drugs and "look-alike" chemicals. Even yet undiscovered designer drugs are covered under the new laws. Basically, any synthetic substance produced by chemically altering or engineering existing drugs in order to make an "act-alike" psychoactive drug, with any action similar to a presently controlled drug, is covered under the new laws. So any present drug or future drug that acts like a now controlled drug, is also controlled.

Health Risks:

Use of designer drugs presents some major health risks, such as overdose, degeneration of the nerves, and death. But many of these new concoctions have never been tested before, and their potency and selective action are unknown. Moreover, without any quality control, designer drugs are often sold on the street contaminated with impurities and poisonous by-products.

Nevertheless, the abuse of these high-technology creations will likely continue, because such drugs are relatively inexpensive to produce and pharmacologically more potent than other illicit drugs. In addition, most designer drugs are still rather difficult to detect in blood and urine samples due to the drug's low concentrations in the body's fluids.

New concentrated or varied forms of existing illegal drugs are constantly renamed and then marketed to certain ethnic or income groups. For example, an amphetamine-like substance made from phenylpropanolamine is available as "U4EA" or "Euphoria," known as the "thinking man's cocaine." "Croak" is now sold in some areas of the nation as a prepackaged mixture of "ice" (smokable methamphetamine) and crack, while a mixture of crack cocaine and regular cocaine is also available as "croak." A combination of crack and heroin (the old speedball) is marketed as "moon rock." Taking their cue from Madison Avenue advertisers, some street peddlers have been featuring a newly packaged form of heroin, called "HIS" or "heroin-in-a-straw." Powdered heroin is tapped into a plastic straw and then the ends are heat-sealed. And if a "sandwich" is preferred, some drug abusers with rubber-tipped glass pipes insert two rocks of crack cocaine with heroin powder between them, and then smoke it.

Fentanyl Analogs

Fentanyl was introduced in 1968 by a Belgium pharmaceutical company as a synthetic

narcotic to be used as an analgesic in surgical procedures because of its minimal effect on the heart. In the early 1980's, however, crude clandestine laboratories began manufacturing fentanyl derivatives that were pharmacologically similar to heroin and morphine. These fentanyl analogs create addiction similar to that of the opiate narcotics and present a significant drug abuse problem, including an increased potential for overdose. The most commonly known fentanyl analog is alpha-methylfentanyl, which is known on the streets as China White. Other fentanyl analogs on the street include synthetic heroin, Tango and Cash, and Goodfella.

Health Hazards

As with other narcotic analgesics, respiratory depression is the most significant acute toxic effect of the fentanyl derivatives. Fentanyl analogs are 80 to 1,000 times more potent than heroin, depending on how they are made, and are 200 times more potent than morphine. They are intended to duplicate the euphoric effects of heroin. Fentanyl analogs have a very rapid onset (one to four minutes) and a short duration of action (approximately 30 to 90 minutes), which varies according to the particular drug. Because of the potency and quick onset, even a very small dose of a fentanyl analog can lead to sudden death.

The most common route of administration is by injection. Authorities report that a victim can die so suddenly from respiratory paralysis that the needle may still be present in the dead user's arm. The antidote naloxone may be used in an overdose situation to counter respiratory depression when the victim is found in time. Recent data indicate that smoking and sniffing are two means of ingestion that are becoming more popular; perhaps because of the attempt on the part of users to avoid the transmission of HIV/AIDS.

Supply

Fentanyl analogs are marketed as potent heroin alternatives to the heroin-using population. China White (alpha-methylfentanyl), which appeared in Orange County, California, in 1979, was the first synthetically produced fentanyl that resulted in overdose deaths. Between 1980 and 1985, China White and several other fentanyl analogs were responsible for 100 unintentional overdose deaths in California. In 1982, China White was placed on Schedule I of the Controlled Substance Act (CSA), along with other drugs that have the highest potential for abuse and have no recognized legitimate medical use except for experimental purposes. In 1985, TMF (3-methyl-fentanyl) another lethal analog, along with two other similar derivatives, also was classified as a Schedule I drug under CSA.

In 1988, TMF was identified in 16 unintentional overdose deaths in Allegheny County, Pennsylvania. Multiple drug use was common in most of these cases. Since TMF is a powerful opiate, it is possible that it compounded the suppressant respiratory effects of the other drugs ingested, thereby causing death. In 1991, the fentanyl analog Tango and Cash was implicated in at least 28 deaths, primarily in New York and other northeast areas. In 1992, China White was found to be the cause of death in 21 overdoses during 2 months in Philadelphia. To date, fentanyl analogs are responsible for the drug overdose deaths of more than 150 people in the United States.

Meperidine Analogs

Meperidine, was the very first *synthetic* narcotic ever produced and is known by the trade name of Demerol. Demerol is a narcotic controlled under Schedule II of the CSA (meaning that it has a high potential for abuse as well as recognized medical use).

Chemically unlike morphine, it does resemble the opium extract in its analgesic potency. Meperidine is available in pure form and in products containing other medications. It is administered orally or by injection. Tolerance and dependence occur with long-term use, and large doses can result in convulsions. Over the past decade, the illicit use of meperidine has increased during periods when heroin was scarce. Two meperidine analogs that have appeared on the streets include:

- (1) MPPP--(1-methyl-4-phenyl-4-propionoxypiperidine), and
- (2) PEPAP--(1-[2-phenylethyl]-4-acetyloxypiperidine)

They often are marketed as "new heroin," "China White," or "synthetic Demerol." MPPP is popular among drug users because when it is injected, it produces a euphoria similar to that produced by heroin.

An impurity formed during the clandestine manufacture of MPPP, called MPTP (1-methyl-4-phenyl-1,2,3,6,-tetrahydro-pyridine), has been shown to be a potent neurotoxin and has caused irreversible brain damage in several individuals. The damage is manifested in a syndrome resembling a very severe parkinsonism, which results in increased muscle tone, difficulty in moving and speaking, drooling, and cogwheel rigidity of the upper extremities. Tremor in such patients characteristically involves the proximal muscles and is more pronounced than the typical involuntary rest tremor occurring in idiopathic parkinsonism. MPTP was identified primarily in California, in the early 1980's.

Methamphetamine Analogs

Several dozen analogs of amphetamine and methamphetamine are hallucinogenic; many have been scheduled under the CSA. The methamphetamine analogs currently of concern include MDA (3,4-methylenedioxyamphetamine) and MDMA (3,4-methylenedioxy-methamphetamine).
*note: [These drugs were already presented in detail in this text.]

PCP Analogs

PCP is registered under Schedule III of the CSA. Over the past eight years, PCP analogs have been identified in confiscated street samples, but the use of these drugs is not widespread.

**Please note that many other drugs are being "cloned" for street use. Almost every day there are new "designer drugs" on the streets.

CHAPTER X

Other Abused Drugs (Substance Abuse)

Chapter X

Chapter X Behavioral Objectives:

At the end of this Chapter, Each nurse will be able to:

1. Name and describe at least three other abused substances
 2. Name and describe at least three health hazards related to nicotine use
 3. Name and describe at least 3 health hazards associated with steroids
 4. Define and describe at least 3 complications of prescription drug use
-

Study Questions:

60. Cigarette smoking has been the most popular way of taking:

- A. tranquilizers B. nicotine C. marijuana D. cocaine

61. Nicotine is both a transient stimulant and a:

- A. amphetamine B. vasodilator C. depressant D. sedative

62. Pregnant women who smoke cigarettes run an increased risk of having:

- A. hypertension B. nausea C. premature infants D. overweight infants

63. Research suggests that smoking cessation should be a _____ process.

- A. rapid B. withdrawal C. gradual D. psychological

64. Anabolic steroids are synthetic derivatives of the male hormone:

- A. testosterone B. anaboloid C. androgen D. TST E. HGH

65. Anabolic steroids produce increases in lean muscle mass and:

A. strength B. bulk C. definition D. muscle tissue

66. Major side effects of anabolic steroids are liver tumors and:

A. hypotension B. hypertension C. diaphoresis D. enuresis

Tobacco and Cigarette Smoking

Cigarette smoking has been the most popular method of taking nicotine since the beginning of the 20th century. In 1989 the U.S. Surgeon General issued a report that concluded that cigarettes and other forms of tobacco are addictive and that nicotine is the drug in tobacco that causes addiction. In addition, the report determined that smoking was a major cause of stroke and the third leading cause of death in the United States. Despite this warning, the National Household Survey on Drug Abuse shows that more than 61 million Americans were current cigarette smokers in 1996, making nicotine one of the most heavily used addictive drugs in the United States.

Nicotine is both a transient stimulant and a sedative to the central nervous system. Nicotine is physically and psychologically addictive. The ingestion of nicotine results in an almost immediate "kick" because it causes a discharge of epinephrine from the adrenal cortex. This stimulates the central nervous system, as well as other endocrine glands, which causes a sudden release of glucose. Stimulation is then followed by depression and fatigue, leading the abuser to seek more nicotine.

Extent of Use: National Monitoring the Future Study

Prevalence rates for smoking among young people remain high, in spite of the demonstrated health risk associated with smoking. Since 1975, cigarettes have consistently been the substance that the greatest number of high school students use daily.

Since peaking in the late 1970's, current cigarette smoking (smoking in the prior 30 days) among high school seniors remained between 28 to 34 percent through 1996.

In 1996, 21.0 percent of 8th-graders, 30.4 percent of 10th-graders, and 34.0 percent of 12th-graders had smoked cigarettes during the past month. More than 4 percent of 8th-graders, 9 percent of 10th-graders, and 13 percent of 12th-graders said they smoked half a pack of cigarettes or more per day.

In 1995, among college students, 39.3 percent had smoked cigarettes within the past year and 26.8 percent within the past month. Of those young adults aged 19 to 28, about 39 percent had smoked cigarettes within the past year and 29.4 percent within the past month.

Percentage of Students Who Have Used Cigarettes, 1996

	8th Grade	10th Grade	12th Grade
Ever Used	49.2%	61.2%	63.5%
Used in Past Month	21.0%	30.4%	34.0%
Half Pack + per Day	4.3%	9.4%	13.0%

National Household Survey on Drug Abuse

Approximately 153 million people 12 years and older (71.6 percent) have tried smoking cigarettes; about 69 million (32.3 percent) have smoked cigarettes within the past year; and more than 61 million (28.69 percent) have smoked cigarettes within the past month.

People aged 18 through 25 have the highest rates of smoking. In this age group, 38.3 percent had smoked cigarettes within the month preceding the 1996 survey.

About 32 million males (31.1 percent) and almost 30 million females (26.7 percent) have smoked cigarettes within the past month. Current smokers are more likely to be heavy drinkers and illicit drug users.

Health Hazards

Nicotine has been reported to reduce anxiety, and smokers report that they get calming effects from it. Nicotine is absorbed readily from tobacco smoke in the lungs. With regular use, levels of nicotine accumulate in the body during the day and persist overnight. Thus, daily cigarette smokers are exposed to the effects of nicotine for 24 hours each day.

Nicotine taken in by cigarette smoking takes only seconds to reach the brain but has a direct effect on the body for up to 30 minutes. Cigarette smoke is primarily composed of a dozen gases (mainly carbon monoxide), nicotine, and tar. The tar in a cigarette, which varies from about 15 mg for a regular cigarette to 7 mg in a low-tar cigarette, exposes the user to a high expectancy rate of lung cancer, emphysema, and bronchial disorders. The carbon monoxide in the smoke increases the chance of cardiovascular diseases.

The effects of nicotine escalate bronchial and cardiovascular disorders:

- chronic bronchitis and emphysema are common diseases among cigarette smokers.
- The risk of congestive heart failure also is increased by the effects of nicotine.
- Nicotine produces effects on mood as well as on the heart, lungs, stomach, neurotransmitters, and sympathetic and parasympathetic nervous systems.
- Short-term effects of nicotine in cigarette smoke can include sweating, vomiting, and throat irritation. Over time, more serious conditions develop, including increased heart rate and blood pressure.
- The most serious effects of smoking are lung cancer (only 12 percent of people diagnosed with lung cancer will live for 5 years) and stroke. Cancers of the esophagus, mouth, lips, and larynx also are associated with cigarette smoking.

Pregnant women who smoke cigarettes run an increased risk of having stillborn or premature infants or infants with low birthweight. Women who smoke generally have earlier menopause. If women smoke cigarettes and also take oral contraceptives, they are more prone to cardiovascular and cerebrovascular diseases than are other smokers; this is especially true for women older than 30.

The Environmental Protection Agency has concluded that secondhand smoke causes lung cancer in adults and greatly increases the risk of respiratory illnesses in children.

Treatment

Research suggests that smoking cessation should be a gradual process, because withdrawal symptoms are less severe in those who quit gradually than in those who quit all at once. Rates of relapse are highest in the first few weeks and months and diminish considerably after 3 months. The optimal treatment for smoking cessation includes behavioral therapy. Studies have shown that pharmacological treatment combined with psychological treatment, including psychological support and skill training to overcome high-risk situations, results in some of the highest long-term abstinence rates.

Nicotine chewing gum, now available without prescription, is one medication approved by the Food and Drug Administration (FDA) for the treatment of nicotine dependence. Nicotine in this form, acts as a nicotine replacement to help smokers quit the smoking habit. The success rates for smoking cessation treatment with nicotine chewing gum vary considerably across studies, but evidence suggests that it is a safe means of facilitating smoking cessation if chewed according to instructions and restricted to patients who are under medical supervision.

Another approach to smoking cessation is the nicotine transdermal patch, a skin patch that delivers a relatively constant amount of nicotine to the person wearing it. A research team at NIDA's Intramural Research Program studied the safety, mechanism of action, and abuse liability of the patch that was consequently approved by FDA. The nicotine patch can now be obtained without a doctor's prescription. Both nicotine gum and the nicotine patch are adjuncts to nicotine cessation programs and are used to help people achieve abstinence, reduce withdrawal symptoms, and prevent relapse while undergoing behavioral treatment.

Anabolic Steroid Abuse

Anabolic steroids are synthetic derivatives of the male hormone testosterone. The full name is androgenic (promoting masculine characteristics) anabolic (building) steroids (the class of drugs). These derivatives of testosterone promote the growth of skeletal muscle and increase lean body mass. Anabolic steroids were first abused nonmedically by elite athletes seeking to improve performance. Today, athletes and others use steroids to enhance performance and also to improve physical appearance.

Extent of Use: Monitoring the Future Study

Monitoring the Future assesses drug use among adolescents and young adults across the country. Because of growing professional and public concern over the misuse and abuse of steroids by adolescents and young adults, questions regarding anabolic steroid use were added to the Monitoring the Future Study in 1989 to afford a better understanding of the extent of the problem. From 1989 to 1993 there was a slight, gradual decline in lifetime and annual prevalence of anabolic steroid use among 8th-, 10th-, and 12th-graders. In 1994 and 1995 the levels

remained about the same. In 1996, the levels showed another decline.

Among the class of 1996, 1.9 percent of high school seniors had used anabolic steroids at least once in their lifetimes; 1.4 percent had used steroids in the past year.

In 1996, 1.8 percent of 8th-graders and 1.8 percent of 10th-graders had used anabolic steroids at least once in their lifetimes, and 0.9 percent of 8th-graders and 1.2 percent of 10th-graders had used anabolic steroids within the past year.

Anabolic Steroid Use By Students, 1996

	8th Grade	10th Grade	12th Grade
Ever Used	1.8%	1.8%	1.9%
Used in Past Year	0.9%	1.2%	1.4%
Used in Past Month	0.4%	0.5%	0.7%

In addition to data regarding use, the study reported students' attitudes toward steroid use.

- **In 1996**, 67.6 percent of seniors perceived great risk in trying steroids; **In 1995**, that number was 66.4 percent
- **In 1996**, 91.7 percent of seniors said they disapproved of people who use steroids; **In 1995**, 91.0 percent disapproved.
- **In 1996**, 40.3 percent of seniors felt it would be fairly or very easy for them to get steroids; **In 1995**, that number was 45.5 percent.

Attitudes of High School Seniors Toward Anabolic Steroids

	1994	1995	1996
Perceive Risk in Trying Steroids	66.1%	66.4%	67.6%
Disapprove of Use	91.9%	91.0%	91.7%
Easy To Get	42.9%	45.5%	40.3%

Methods of Use

Steroids are taken orally or injected, and athletes and other abusers take them typically in cycles of weeks or months, rather than continuously, in patterns called cycling. Cycling involves taking multiple doses of steroids over a specific period of time, stopping for a period, and starting again. In addition, users frequently combine several different types of steroids to maximize their effectiveness while minimizing negative effects, a process known as stacking.

Health Hazards

Reports indicate that use of anabolic steroids produces increases in lean muscle mass, strength, and ability to train longer and harder; but long-term, high-dose effects of steroid use are largely unknown. Many health hazards of short-term effects are reversible, but not all; and there

is concern over possible psychiatric effects. In addition, people who inject steroids run the added risk of contracting or transmitting hepatitis or the HIV virus. The major side effects of anabolic steroid use include liver tumors, jaundice, fluid retention, and high blood pressure; others are severe acne and trembling.

Additional side effects include the following:

For men

- shrinking of the testicles
- reduced sperm count
- infertility
- baldness
- development of breasts

For women

- growth of facial hair
- changes in or cessation of the menstrual cycle
- enlargement of the clitoris
- deepened voice

For adolescents

- growth halted prematurely through premature skeletal maturation and accelerated pubertal changes

NIDA-supported research shows that aggression and other psychiatric side effects may result from anabolic steroid abuse. Many users report feeling good about themselves while on steroids, but researchers report that steroid abuse can cause wild mood swings including manic-like symptoms leading to violent, even homicidal, episodes. Depression often is seen when the drugs are stopped and may contribute to steroid dependence. Researchers reported also that users may suffer from paranoid jealousy, irritability, delusions, and impaired judgment stemming from feelings of invincibility.

Supply:

The supply of anabolic steroids comes primarily from three sources: anabolic steroids are manufactured legally or illegally outside the United States and smuggled into this country (often through the mail); they are manufactured legally and diverted to supply the black market; and they are manufactured in clandestine laboratories. The anabolic steroids seized by the U.S. Customs Service have come from several countries, including Brazil, Italy, Mexico, Great Britain, Portugal, France, and Peru. Many substances sold as anabolic steroids are actually counterfeits. There are dangers inherent in using steroids of unknown origin and purity.

Possession and distribution of anabolic steroids for nonmedical purposes are illegal under

Federal law. In November 1990, steroids were added to Schedule III of the Federal Controlled Substances Act, which made the nonmedical possession of anabolic steroids a criminal act and greatly increased the penalties for steroid distribution. Possession of steroids is now punishable by up to one year in prison, and distribution can draw a sentence of up to five years and a fine of \$250,000.

Prescription Drug Abuse

According to the Food, Drug, and Cosmetic Act, drugs are substances intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease. Many of these drug substances or medicines are used beneficially in programs of self-medication that relieve minor symptoms. These over-the-counter drugs (OTC) (drugs that can be purchased without a prescription) can be used without a physician's supervision. These drugs will be discussed later in this text.

There are many other drugs that also have a legally recognized therapeutic value, such as the antibiotics, hormones, tranquilizers, and others. Unlike OTC drugs, these medicines can be obtained only by the direction of a physician and are referred to as "prescription" drugs. Sold only by licensed pharmacists, prescribed drugs are used in treating specific disease conditions of a more serious nature, are generally more powerful than OTC drugs, and are more likely to cause unexpected and adverse side effects. In comparison with OTC drugs, prescribed medicines have a relatively higher risk of causing toxicity and lower safety margin.

Potent chemotherapeutic agents, prescription drugs require professional supervision in their use because of the complex and powerful actions these drugs can have on human structure and body function. Presently, several non-physician specialists, such as dentists, podiatrists, and some pharmacists, optometrists, physician's assistant's, and nurse practitioners--all of whom have been granted limited prescribing privileges in specific states--are qualified to determine the nature of a particular health problem and recommend an appropriate medication. Nevertheless, only physicians are trained professionally to use a broad range of therapeutic drugs safely. Only these professionals can determine how long a specific drug can be taken--and in what amounts--without harm.

Many people believe in the myth of fail-safe medicine, that is, the expectation that all drugs work safely on all people at all times. However, there is a common and not well publicized reality that exists in all medical practice as well as in many aspects of human endeavor--the so-called benefit-risk equation. According to this equation, there is a high probability that absolute safety does not exist. This is particularly true with regard to drugs.

Whether at the conscious or unconscious level, nearly all regulatory judgements are based on a compromise between benefits and risks. This benefit-to-risk judgement applies to crossing a busy street, driving a car, chewing a piece of meat that could cause choking, and undergoing surgery, as well as to taking a prescribed medicine. The probability of the good outweighs the possibility of the bad. If a medication poses an unusual or serious risk to the user, then its benefits must be proportionately high and urgently required.

Indeed, every drug has the potential for causing unanticipated and unintended drug reactions

or side effects. These side effects may range from relatively minor or mild complaints that are undesirable and discomforting to the more serious effects that can be life-threatening, even fatal. The more serious side effects are usually described as adverse drug reactions.

It is the competent physician then, together with an informed patient, who must decide if the health-giving or medicinal characteristics of a prescription drug are greater than the drug's potential hazards. Consequently, pharmacists can dispense these powerful drugs only to individuals who have a physician's prescription.

Complications of Prescription Drug Use

1. Following label directions--One of the most common problems associated with prescription medications is not taking the medication as directed. A person may take too few (under-dosing) or too many (overdosing) of the prescribed doses. Several obvious problems are associated with under-dosing and with overdosing. Underdosing will cause the drug to be ineffective and most likely will not have the desired therapeutic effect. Overdosing also has a variety of adverse outcomes according to the adverse effects of the individual drug.

2. Drug-Drug Interactions--The use of two or more prescription drugs at the same time during the course of treatment for a particular illness is known as "polypharmacy." Mixing two or more medications can result in unexpected and sometimes dangerous chemical interactions within the body. Be sure that the patient's doctor knows all the medications they are taking. The problems usually occur when a patient has several physicians who prescribe medications for various illnesses. Be sure that each physician knows all the drugs that the patient is taking, even those prescribed by other physicians.

3. Food-Drug Interactions--Another possible problem with the use of prescription drugs is the potential for interaction with foods. When a person is taking a drug, the food that they eat could make the drug work faster or slower or even prevent it from having any effect at all. More alarming is the possibility of severe adverse reactions to drugs that can be caused by specific foods or alcoholic beverages. Some of the reactions, if left unchecked, can be life-threatening.

A few examples of these food-drug interactions are as follows :

a. Tetracycline and dairy products--the calcium in milk, cheese, and yogurt impairs the absorption of this drug, thus making it virtually ineffective. Teach patients not to take milk or any dairy products (or antacids) within an hour before or after taking this drug.

b. Colchicine and mineral oil--Mineral oil blocks the proper absorption of nutrients by the intestine.

c. Drugs and soda pop and certain juices--Certain soda pops and acid fruit and vegetable juices can result in excess acidity that may cause some drugs to dissolve quickly in the stomach instead of in the intestine, where they can be more readily absorbed into the bloodstream.

4. Prescription Drugs and OTC Drug Interactions--As mentioned earlier, one or more prescription drugs taken together may cause harmful effects. The same is true for OTC drugs taken at the same time as prescription drugs. Perhaps this latter situation is even more dangerous than the use of multiple prescription drugs since the average person may not even think that there could be a problem with taking these drugs because they are over-the-counter. However, OTC drugs may also have very dangerous interactions with each other and with prescription drugs when taken at the same time. Be sure the patient tells his/her physician about ALL drugs he/she is taking including OTC drugs.

5. Trading prescriptions--It is also a common practice to trade prescriptions with friends or to share a family member's prescription with everyone in the family. These are obviously very dangerous practices. Each person should obtain their own prescription and medical advice for any illness.

CHAPTER XI

Over-the-Counter Drugs

(Substance Abuse)

Chapter XI

Chapter XI Behavioral Objectives:

At the end of this Chapter, Each nurse will be able to:

1. Describe the potential for abuse of over-the-counter drugs
2. Name at least 4 categories of OTC drugs that may be commonly misused
3. Name and describe the possible health risks associated with misuse or abuse of the OTC drugs

Study Questions:

67. The most frequent users of OTC drugs tends to be white, middle-class:

- A. men B. women C. children D. adults E. elderly

68. Elderly women are far more likely to self-medicate with:

- A. narcotics B. analgesics C. antiemetics D. prescriptions E. OTC drugs

69. The continuing demand for OTC drugs reflects a national ethic of impatience and of insistence on (a)an:

- A. cheaper drug B. effective drug C. lasting cure D. instant fix

70. Drug misuse involves taking medications in excess of recommended:

- A. time interval B. label directions C. dose D. a, b, & c

71. Some OTC drugs may cause kidney or liver damage that have:

- A. no symptoms B. lasting symptoms C. severe symptoms D. jaundice

72. _____ are most susceptible to adverse reactions to OTC analgesics.

A. adults B. infants & children C. elderly D. women E. men

73. Phenylpropanolamine, PPA is a mild stimulant as well as a:

A. decongestant B. antidepressant C. analgesic D. antipyretic

74. Most OTC sleep aids now contain _____ as the main ingredient.

A. Nembutal B. Benadryl C. Benzocaine D. Ibuprofen E. Aspirin

75. Most OTC stimulants are composed primarily of:

A. amphetamine B. ephedrine C. benzocaine D. Benadryl E. caffeine

76. Overdose with caffeine is possible, resulting in mood changes and:

A. depression B. backache C. insomnia D. dilated pupils

Over-the-Counter Drugs and Drug Abuse

Introduction:

This section will examine many classes of the commonly available OTC drugs that may be abused or "misused." We tend to think of these drugs as being "mild" and without any significant risk, and in most cases, this is correct. However, as with virtually any chemical substance, there is a potential for misuse and abuse.

There are currently more than 600,000 different OTC drugs available in the United States. These OTC drugs are often addictive and frequently abused by people who self-medicate, perhaps because they are unable to afford medical care, do not have a regular physician, or lack knowledge about the products. General information offered on television or as advertisements in magazines and newspapers are not sufficient to inform the public of potential dangers.

The most frequent users of OTC drugs tend to be white, middle-class women. The elderly, particularly elderly women, are far more likely to self-medicate with OTC products than are any other age group. They account for the purchase of 2 of every five OTC products.

Influenced by advertising on radio and television and the print media, many individuals firmly believe that some miracle drug is available for almost every human ailment. Many also feel that if a physician's treatment is to be effective, the therapy must include some drug. These beliefs have achieved the status of national expectations and are reflected in the continuing demand for medicines. Legitimate, reputable drug manufacturers have responded in kind to this persistent demand with hundreds of thousands of drug products, the medicines or medications designed to relieve, cure, and prevent illness.

In addition to the large quantities of illegally produced and marketed drugs, billions of doses of physician-prescribed medicines and those purchased for self-treatment are used each year. Recent estimates of prescription drug sales exceed \$35.8 billion annually, while Americans spend another \$19.8 billion on non-prescription drugs each year. The price tag for our national "pill-popping" is considerable indeed. However, the total expenditures for such relief and treatment rarely include the human cost of the six million drug-induced adverse reactions that occur each year in the United States.

Drugs, nevertheless remain popular because they can have wonderful effects upon the human body and mind. The drugs and medicines can aid in the diagnosis of illness. They can also be used to relieve symptoms of disease, including pain and fever. Some drugs are used to kill or inactivate disease-causing microorganisms; others--vaccines and toxoids--are employed to prevent disease. Drugs in some medications can slow down or speed up body functions, as well as suppress them entirely, as seen in the effect of oral contraceptives on the process of ovulation. While some diseases can be cured by drugs, others, including epilepsy and diabetes, can only be controlled.

However, healing and disease-preventing drugs, especially those taken by mouth, also involve potential risks. Sometimes drugs taken with the intention of restoring or improving

health status can harm the body and endanger life itself, as described earlier in this text. Depending upon their use, certain drugs can act as poisons and intoxicants, alter the effects of other medications, and cause some very undesirable and unanticipated side effects, including adverse drug reactions and drug dependencies.

People have continued to spend billions of dollars for nonprescription drugs despite the fact that the U.S. Food and Drug Administration recently identified--and then later banned--more than 200 ingredients as ineffective. In addition, evidence of improper labeling, listing of ineffective drugs as active ingredients, and inadequate warnings about proper use and possible adverse reactions, all suggest that safety and effectiveness are not guaranteed absolutely. Although a drug may be "generally recognized as safe" (GRAS), it isn't necessarily safe for everyone. And a drug "generally recognized as Effective" (GRAE), is not guaranteed to be completely effective for everyone. Those most at risk are the very young, the elderly, pregnant women, and patients being treated for certain long-term or chronic diseases.

In part, the continuing demand for OTC drugs reflects a national ethic of impatience with any frustration and of insistence on an "instant fix" for every possible discomfort. Frequent victims of advertising tactics, American consumers also continue to buy drugs for imagined illnesses or to calm basic insecurities or fear of pain. But after the purchase is made, at least one in five individuals takes nonprescription medications without ever reading the product label! Thus, many people buy drugs that not only do them little good, but could actually cause them harm. Thus, the very use of medicines constitutes one of the greatest potential hazards to drug-takers' health, as well as to their pocketbooks.

Equally alarming, and life-threatening is the occurrence of "drug misuse," the widespread inappropriate use of medications resulting in impaired physical, mental, emotional, or social well-being. Drug misuse involves taking medications in excess of recommended doses, not following directions regarding time intervals between doses or other conditions of use specified on the drug label, and providing personally prescribed medicines to other individuals. Sometimes the drug misuser is lucky and no adverse reactions occur. On occasion, though, such drug misuse practices can have tragic consequences.

The OTC drugs are sold widely at pharmacies, supermarkets, and department stores. Such drugs include everything from a bar of antibacterial soap to a nighttime sleep aid, headache remedy, or antacid preparation. When directions and warnings on the OTC drug labels are followed, most people can use the medications with relative safety and with beneficial results.

However, OTC drugs rarely, if ever, cure any illness or disease. The major effect of these nonprescription drugs is to relieve minor symptoms of illnesses, such as headache or menstrual cramping. For example, a cold remedy may make a person feel more comfortable by reducing sniffles and sneezes, but the cold itself will last as long as it would with no medicine at all. In effect, many OTC medicines mask or cover up the signals from the body--the symptoms that usually alert people to take some corrective action. Therefore, OTC drugs should never be used on a regular basis over an extended period of time. If symptoms persist, an appointment should be made with a health professional who can identify and treat the basic problem underlying the symptoms.

Summary of OTC drugs Use and Misuse:

Good points of OTC Drugs:

Properly used, OTC drugs may relieve certain symptoms. This may have beneficial effects for the person. Without a headache or sniffing, etc., you could be more productive at work (in fact, you might have stayed home from work); without minor aches and pains, you feel better and get in a better mood (that's a "good thing") and spend more quality time with your family/friends; without diarrhea, you may be able to go work and be more productive. I think you get the point. When used properly, OTC drugs may certainly have many benefits with a very low risk of any adverse effects.

Possible Risks for OTC Drugs:

The person taking OTC drugs must carefully READ THE LABELS (perhaps nurses and medical people are worst about this part). OTC drugs may mask symptoms of an underlying disease. They may also cause mild to severe side effects. Some of these side effects may not be readily apparent. Some OTC drugs may cause kidney or liver damage that has no symptoms in the short-term. OTC drugs may even prolong a cold or other disease by stopping the body's response to illness (symptoms of an illness). And in the worst case, OTC drugs may lead to severe adverse reactions or even death (rare, but it happens).

As a health professional, you should be familiar with these OTC drugs just as you would be with prescription drugs. And if all this isn't enough, many people PURPOSELY ABUSE these drugs. Following are some of the specific drugs and their specific indications and precautions.

Following are groups of potentially addictive (and have potential for abuse) OTC products. **This list does not include ALL OTC drugs**, just those drugs that would commonly be dangerous if misused or abuses. (Of course, ANY OTC drug may possibly cause serious adverse effects, but the ones listed here are MOST likely to be misused or abused.)

*****The author of this text has devised a scale to indicate the possible abuse potential of each of the groups presented below. This is a simple scale to alert the reader to the possible serious adverse effects of the misuse and/or abuse of the drugs in these categories.

Potential for Misuse and Abuse of OTC drugs

Rating	Potential for Misuse	Potential for Abuse
4	4M--High Potential	4A--High Potential
3	3M--Moderate Potential	3A--Moderate Potential
2	2M--Low Potential	2A--Low Potential
1	1M--Very Low Potential	1A--Very Low Potential

Example: antacids would be 3M & 1A, Antacids can be taken misused (overdose) and cause some moderately severe side effects. However, their potential for abuse is very low. It is not

likely that a person could get "high" off antacids.

These OTC drug categories include:

1. Allergy Relief Products--relieve symptoms of sneezing; watery nose and eyes; itching of the nose, mouth, and throat; headache; irritability; insomnia; and lack of appetite associated with an allergy (a special sensitivity to some ordinarily harmful substance. Symptoms of allergies are often treated by OTC antihistamines and decongestants. These drugs are among the same drug preparations used in relieving symptoms of the common cold (Actifed, Allerest, Benadryl, chlor-trimeton, Contac, Coricidin, Dimetapp, Dristan, Drixoral, Sudafed, Teldrin). [3M,3A](see table pg 115)

2. Analgesics--provide relief of minor aches and pain, and tend to bring down a fever (antipyretic). The most popular of these non-prescription pain relievers are aspirin, acetaminophen, and ibuprofen. Some of these OTC analgesics also have anti-inflammatory properties useful in relieving symptoms associated with arthritis--pain, aches, swelling of the joints.

There are two major types of OTC internal analgesics, the salicylates and non-salicylates. Both the salicylates and nonsalicylates have been combined with other ingredients, resulting in a variety of cold remedies, antacids, decongestants, antihistamines, buffered analgesics, and medicated gums--all containing OTC analgesics.

These drugs are rarely abused to get "high." However, these drugs may be misused. Various adverse effects may be experienced if these OTC drugs are not taken properly. Infants and children are most susceptible to adverse reactions and to overdose on these common drugs found in most households. Care must be taken to follow the directions on the label. Be sure not to mix OTC drugs without consulting a physician or pharmacist as many common preparations contain combinations of these OTC analgesics and overdose may occur (especially in children). For example, If you take acetaminophen for pain and then Excedrin for something else, you are getting a double dose of acetaminophen, because Excedrin also contains acetaminophen. [4M, 2A] (see table page 115)

3. Appetite Suppressants--are used as OTC weight control preparations, such as diet pills that reduce an individual's desire to eat food. These OTC products that help individuals curb their appetites are known as diet aids, appetite suppressants, anorexics, or anorectics. Although many drugs have been included in diet aids in the past, the U.S. Food and Drug Administration has now limited the active ingredients in these products to phenylpropanolamine hydrochloride (also called PPA) and benzocaine. Other nonprescription products used in the control of weight, as well as the regular appetite suppressants, are available in a variety of preparations.

PPA, is a mild stimulant as well as a decongestant often used in shrinking swollen nasal passages. Related to amphetamine, PPA has been considered useful as an appetite suppressant. As the result of an FDA OTC drug panel's findings, PPA was identified initially as a safe and effective OTC drug for curbing appetite. Consequently, nearly all of the diet aids at one time or

another contained this drug, varying only in dosage form (capsule, tablets, or drops), and dosage schedule (25 mg three times a day vs. 75 mg in one time-release capsule).

Some drug authorities however, disagree about both the safety and effectiveness of PPA. Side effects of PPA use may include nervousness, restlessness, insomnia, headache, nausea, elevated blood sugar level, and dangerous increases in blood pressure. Individuals who are at risk of heart disease, stroke, hypertension, kidney disease, and diabetes have been cautioned to avoid PPA. [3M, 4A]

Increasingly, this drug is being recognized as potentially dangerous to at least 20% of the population. The risks of serious complications increase with misuse and abuse of these drugs.

While PPA diet aids may suppress appetite for short periods of time, in some individuals by stimulating the central nervous system, their effect is modest at best. Furthermore, Consumer's Union medical consultants state that unless more convincing evidence of its safety and effectiveness is revealed, "...PPA is more appropriate for occasional use in shrinking swollen nasal passages than in shrinking waistlines."

Benzocaine, a topical anesthetic often used to relieve sore throats and the pain associated with minor cuts, scrapes, burns, and hemorrhoids, is the only other active ingredient now approved by the FDA. Contained in lozenges, candies, and gums, the benzocaine supposedly numbs the tongue and taste buds mildly and temporarily. This numbing effect supposedly reduces one's ability to taste food, and results in a decreased appetite. However, the anesthetic effect of benzocaine-based candies and gums may interfere with the swallowing process. If these products are sucked or chewed on a continuous basis, hypersensitivity reactions can occur.

Other so-called diet aids include bulk-formers, laxatives, diuretics, and food supplements containing methyl cellulose compounds and fiber from grains and fruits. Sometimes in combination with PPA, the bulk-producers actually absorb liquid in the stomach, produce a feeling of fullness, and thus reduce the desire to eat. Bulk-forming laxatives are also used inappropriately to control weight by "purging" the body. Such laxatives relieve constipation and promote elimination by providing fiber to the diet. Diuretics aid in the relief of simple water retention or bloating. These diuretics cause a temporary weight loss by reducing body fluid, evidenced by increased urination. None of these products is considered safe and effective in promoting a permanent loss of weight.

4. Asthma Preparations--drugs that increase or widen the diameter of the air passages within the lungs. OTC medications containing bronchodilators, such as ephedrine, epinephrine, methoxyphenamine, and theophylline, cause tightening air passages in the lungs to expand, thus relieving shortness of breath and an acute sense of suffocation symptomatic of asthma (Bronkaid, Primatine Tablets). [2M, 4A]

5. Cold Preparations--provide relief for symptoms of the common cold. Typical OTC remedies include antihistamines, decongestants, and combination of these medications with analgesics, cough suppressants, and expectorants. However, none of these drugs or combinations actually cure a cold. [2M, 2A]

6. Sleep Aids--promoted originally as drugs that would reduce nervousness during daytime as well as relieve sleeplessness. Presently, these OTC medications are used only to help people fall asleep, and most of them contain antihistamine ingredients that cause drowsiness. In fact, most of the OTC sleep aids now contain diphenhydramine hydrochloride (Benadryl), an antihistamine, as the main ingredient. Since this drug was declassified from prescription to OTC drug, it is commonly used as an OTC sleep aid.

Remember that this drug is primarily an antihistamine, and the main side effect of this drug is drowsiness. These OTC sleep aids capitalize on this side effect and market the drug as a sleep aid now. Be sure to advise your clients to read the label. This drug rapidly loses its side effect of drowsiness and should be used only occasionally. Other side effects include dry mouth, blurred vision, dizziness, loss of appetite, constipation, and even diarrhea. There are many physicians who do not advocate the use of antihistamines as a sleep aid due to severity of some side effects.[3M, 3A]

7. Stimulants--tend to increase physical activity (motor performance) and mental alertness. Most OTC stimulants are composed primarily of caffeine. OTC stimulants are used to mask or cover up conditions of fatigue, and thus permit the successful completion of a required task. While these drugs may help individuals stay awake, they may not be sufficient in promoting the alertness or efficiency needed to drive an automobile skillfully and safely.

The only approved effective ingredient of OTC stimulants is caffeine (marketed as a stimulant). This drug can help restore mental alertness or wakefulness in those people experiencing fatigue or drowsiness. Each stimulant capsule contains from 100 to 235 mg of caffeine. Generally, the recommended dosage range is from 100 to 200 mg of caffeine every three to four hours.

Some products, until restricted by the FDA, also contained phenylpropanolamine hydrochloride and ephedrine sulfate, both mild stimulants. A variety of vitamins and small amounts of sugar have also been added to some OTC stimulants. Since vitamins have no stimulating effect, they do not help people stay awake.

Use of an OTC stimulant may be considered reasonable on an occasional basis, especially when used to reduce fatigue or tedium associated with long, boring, and repetitive tasks. However, self-treatment with a stimulant should not last more than a week. It is also very important to remember that there is no drug substitute for adequate sleep. Although an OTC stimulant may relieve the feeling of tiredness, the body is still fatigued.

Caffeine itself is a natural component of various plants. These plants are sources of caffeine: coffee, tea, kola nut extracts, cocoa, and chocolate. Present in many prescription drugs, caffeine is also an ingredient in nearly 2000 OTC medicines, such as analgesics and cold remedies. Because it is used typically in very dilute forms, caffeine is a relatively safe drug. However, excessive intake--whether in coffee, teas, cola drinks, OTC stimulants, or OTC analgesics--can contribute to sleep disturbances, nervousness, and irritability.

Overdose with caffeine is also possible, resulting in mood changes, anxiety, insomnia, headache, and restlessness, all characteristics of caffeinism. When caffeine doses exceed 5-10 grams, convulsions may occur, and on rare occasions, even death.

Since OTC stimulants are concentrated doses of caffeine, enough coffee, tea, or caffeine-containing cola drinks should be as effective and probably much less expensive. In each cup of coffee, there is an average of 65 mg of caffeine to as many as 180 mg. Some teas contains an average of 30-110 mg of caffeine per cup, while the caffeine in cola drinks ranges from 15-45 mg per 12-oz container. [4M, 4A]

CHAPTER XII

Treating Diverse Populations

(Substance Abuse)

Chapter XII

Chapter XII Behavioral Objectives:

At the end of this Chapter, Each nurse will be able to:

1. Name and describe at least three treatment considerations
2. Define and describe the current impact of drug abuse treatment
3. Define and describe the nursing assessment for patients in treatment
4. Name and describe the differences in short-term and long-term treatment
5. Define and describe the detoxification process as part of treatment
6. Name and describe at least 4 treatment modalities in drug abuse

Study Questions:

- 77. One of the most significant considerations in substance abuse is the:**
A. person B. nurse C. type of drug D. diverse populations
- 78. There are many psychosocial factors that affect treatment, these are:**
A. depression B. stress C. family issues D. a,b,&c
- 79. Treatment of drug abuse today is progressing toward a _____ approach.**
A. inpatient B. outpatient C. medical D. multi-disciplinary
- 80. Treatment today is also focusing on identifying the _____ individual.**
A. dependent B. adolescent C. elderly D. adult E. abused
- 81. The _____ is still a very important part of the treatment process.**
A. assessment B. testing C. family D. social aspect
- 82. Drug and alcohol abuse are medical problems that respond to:**
A. sympathy B. medications C. therapy D. medical treatment
- 83. About _____ percent of people who need treatment can't get it.**
A. 5% B. 10% C. 15% D. 20% E. 30%
- 84. _____ is usually the first step in the treatment of substance abuse.**
A. imprisonment B. detoxification C. medication D. nutrition
- 85. Most inpatient programs include group therapy, family therapy, and:**
A. outpatient B. drug education C. drug therapy D. equine-therapy
- 86. Inpatient programs almost always include some type of aftercare or:**
A. drug therapy B. psychotherapy C. follow-up D. day-care
- 87. Outpatient treatment is a structured program which usually involves:**
A. drug therapy B. long-term treatment C. day-care treatment

88. Relapse is defined as a return to drug use after the patient has:

A. gone into treatment B. tried drugs C. changed drugs D. stopped

89. The nurse should carefully obtain a detailed history from the patient in order to discover any other diagnoses that could affect _____.

A. treatment B. payment C. admission D. his health

Introduction:

This section will present the history and evolution of substance abuse treatment over the years. It is quite obvious that treatments of substance abuse have changed dramatically over the years as newer psychological and pharmacological modalities have been developed.

One of the most significant considerations in substance abuse is the diverse populations affected by drug abuse. People of all ages and backgrounds are affected by drug abuse and each of these populations needs to be considered when treatment is instituted. For example, there are many differences in treating young people as opposed to adults and older people with substance abuse problems. Each of these populations may be treated differently. However, there may also be some common threads to consider when treating these diverse populations. This chapter will deal with these unique and also these common aspects of substance abuse treatment.

It is the opinion of this author that long-term treatment approaches tend to be more successful than short-term treatments for addictions. Most people with substance abuse problems have developed addictions over a long period of time and with many contributing factors involved. It makes sense that these addictions would require long-term and comprehensive treatment approaches. Short-term is defined as up to six months of treatment. Long-term treatment is defined as 6 months and longer treatment programs with 12 to 18 month programs as ideal. These long-term programs will also include follow-up care (also called aftercare) for one to several years after the initial treatment program. (Again, this is just this author's opinion formed by reviewing the literature and anecdotal research.)

Treatment Considerations:

As you review the following treatment methods, remember to consider the many factors involved in substance abuse. These factors will also influence greatly the treatment method(s) used.

You must consider:

1. The drug(s) that is/are being abused

Every substance has its own effects upon the person and therefore, may have implications upon the treatment method used. In addition, *combinations of drugs* also have their own implications for treatment.

2. The length of time of abuse

Each drug has treatment implications in relationship to the length of time the drug or drug combination was abused. The length of time of abuse also has dosage implications for many specific drugs. For example, persons addicted to opiates (and other types of drugs) will often continually raise the dosage of the drug they are taking. Most opiates have a tolerance factor that requires the person to continually increase the dosage to achieve the same effects from the drug.

These increased dosages and length of time addicted to the drugs will definitely have treatment implications.

3. Physical Factors

There are many physical factors that will influence treatment choices for various drug addictions. The individual's *age and sex* will be considered. *Body weight and composition* are especially important. Body fat tends to store some drugs for long periods of time. This affects the time it takes to rid the body of some drugs. It may take weeks for some drugs to be totally cleared out of the body. *Individual metabolism rates* will also influence drugs being eliminated from the body and thereby affect treatment options. *Individual tolerances* to drugs will also affect the treatment choices. Finally, any *disease conditions* present in the individual will also affect the choices of treatment options available.

4. Psychosocial Factors and "Reasons" for addiction

There are many psychosocial factors that could affect treatment options. These include, but are not limited to: *family issues, depression and other psychological disorders, stress, resource availability, sexuality issues, religious issues*, and many others.

History of Substance Abuse treatment:

As early as the 1700's, treatments for substance abuse were established, based upon existing psychiatric models of the time. One method was known as the "Asylum" method. This provided an isolated environment which forced the person to abstain from substance abuse and isolated the persons from their former friends who used drugs. The second method, known as the "Moral" method, provided both civil and respectful consideration for the recovering individual. (Basically, church groups and community organizations kept the person away from the drug(s) of choice.)

Both of these above methods (or forms of these) still exist today, but their effectiveness is in question. These two methods are generally very costly. They also depend upon community-based services that are not always available to everyone in every community.

Another treatment used in the late 1700's and 1800's was to replace the "drug of choice" with another, less "destructive" drug. An example was to use laudanum (similar to phenobarbital), in place of alcohol. A dilute form of morphine was recommended for opiod addictions. This type of replacement drug therapy is still used today in limited situations. First, methadone is still used to replace heroin and other opiod addictions. Secondly, tranquilizers (librium, valium) are sometimes used in alcohol withdrawal.

Starting in about the mid 1900's, many communities adopted public detoxification facilities. These facilities became popular in Europe as well as in the U.S. Some detoxification facilities today offer a variety of treatment options. However, some detoxification facilities do not offer any long-term treatment options, but rather just a place to "detoxify" from acute alcohol/drug intoxication.

In the mid 1900's the "Minnesota Model" of treatment of substance abuse was developed. It evolved from the combined program ideas and philosophies of the Wilmar State Hospital treatment program, Hazelden (a private treatment facility), and the Minneapolis Veterans Administration Hospital Program.

Following are the basic philosophies of the Minnesota Model:

- inpatient or residential care for a few weeks or months
- focus on psychoactive substance use disorder with little or no attention to associated psychiatric conditions or individual psychosocial factors
- AA concepts, resources, and precepts including "12 steps" central to recovery
- referral to self-help groups such as AA upon discharge from residential or inpatient care, with limited or no ongoing professional treatment
- limited family therapy, although the family may be oriented to AA principles and Al-Anon
- nonacceptance of psychotherapy and pharmacology for either substance abuse or psychiatric disorder

During the 1950's and 1960's, this model helped bridge the gaps between hospital programs and self-help groups. Currently, many treatment facilities employ only some aspects of the model, and augment it with a wide range of holistic approaches affecting recovery of the mind, body, and spirit of the recovering individuals as well as his or her family.

From the 1960's to the present, the workplace became a center of early prevention, education, referral for treatment and rehabilitation through company-sponsored "employee assistance programs." Many large companies today have prevention and treatment programs available to employees. These programs may take the form of an actual on-site counselor/health professional (nurse) or a program through the employee health insurance.

Current Impact

The treatment of substance abuse in America today is progressing toward a multi-disciplinary approach to the problem. As new knowledge about drug dependency is gained, this new information is being applied to treatment methods. Ultimately, of course, treatment is the responsibility of the dependent individual. However, a combination of the client, family, and social involvement is becoming more successful in the treatment field.

Treatment today is also focusing on identifying the dependent individual and on prevention of the progression of the dependency. Prevention is always a concern to treatment professionals. However, prevention is practically impossible because it is not known "exactly" what causes dependency. Therefore, it is imperative to identify persons as early as possible in their dependency before the disease progresses.

Lastly, substance abuse treatment seems to be heading toward specialization of treatment

methods. Following are areas of specialization in dependency counseling identified by Sean O'Hara, MA, CADC: (O'Hara 1997)

- detoxification
- recovery homes
- hospital programs
- social learning models
- prison/parole populations
- drug/alcohol dependency testing
- DUI/DOT assessments/evaluations
- dual diagnosis
- education and training
- business counseling
- cultural, ethnic, and religion diversified counseling
- family dynamics
- private medical group practice
- managed care case managementwork with personality disorders
- high profile clients
- EAP services, assessments and evaluations
- prevention programs
- adolescent counseling
- counseling elderly patients
- research
- intensive outpatient
- program development
- intervention
- working with gay, lesbian, bisexual and transgender populations
- counseling disabled clients

According to O'Hara, diversification allows for individualized treatment specifically for those populations being treated, while increasing the effectiveness of treatment itself. Diversity and specialization also gives the treatment counselors more autonomy, credibility, and support in the health care environment that increasingly is dominated by managed care.

Nursing Implications:

The nurse must keep in mind that **Assessment** is still a very important part of the treatment process. Assessment of the **known** substance abuser is relatively simple. The nurse will perform a head-to-toe assessment as outlined earlier in this text. The general assessment will also include (concentrate on) any particular systems which are greatly affected by the known drugs being abused.

The nurse must also be aware of **unknown** chemically dependent patients. The nurse should assess *all patients* for possible dependency/misuse of medications or other chemical substances. Any patient you contact may also have a substance abuse problem in addition to any other

medical problem for which they are being treated. Keep this in mind as you assess your patients/clients. In fact, there are specific assessment tools you may use, if you suspect that the patient has a substance abuse problem. Contact the patient's physician if you feel further assessment for chemical dependency may be indicated.

During your physical assessment and history-taking, the following are some indications that there may be some type of drug problem. In addition, these factors may help the physician or counselor in treating any drug problem that may exist. Remember that the patient may or may not be drug-dependent. The patient may just be over-medicated or they may *inadvertently* have adverse drug interactions.

Assess for:

Historical Facts:

- all medications currently taking
- history of seizures
- previous detoxifications/addictions
- any previous psychiatric diagnoses
- suicidal ideations or suicide attempts

Physical Examination:

- assess for labile vital signs: fever related to intravenous drug use or withdrawal from sedatives or alcohol; irregular pulse due to caffeine, tobacco, alcohol or amphetamines
- mental status: poor personal hygiene related to chronic drug use; evasiveness, suspiciousness, manipulative, seductive; mood changes; thought process; orientation to time, person, place.
- Organs and systems: **head**-new or old trauma, pediculosis;
eyes-pupils constricted due to opioid intoxication or dilated with opioid withdrawal, dilated and non-reactive related to alcohol or sedative overdose, conjunctiva congested as with cannabis and alcohol, pale with anemia, lacrimation related to opioid withdrawal, sclerae yellow with liver disease, oculomotor shows ophthalmoplegia with thiamine deficiency, both horizontal and vertical nystagmus related to PCP use, toxic amblyopia related to use of tobacco, alcohol, and methanol.
Nose-rhinorrhea, septal ulcers, and perforations related to sniffing drugs, rhinophyma and acne rosacea related to heavy use of alcohol
Ears-gouty tophi related to alcohol use and increased serum uric acid.
Breath-odor of alcohol, poor care of mouth, odor of tobacco or cannabis, lips showing malignant or premalignant lesions due to use of alcohol and tobacco, cyanosis may be seen in heavy smokers, perioral rash related to solvent use.
Teeth-dental caries and periodontal infection related to use of any drug, particularly drugs that are chewed
uvular edema-heavy use of hashish

- chest-spider angiomas related to liver damage, gynecomastia in male related to liver damage and decreased testosterone, rib fracture related to trauma while intoxicated
- lungs-bronchitis or emphysema related to heavy smoking of opium, tobacco, marijuana, or hashish; lung abscess related to aspiration during intoxication; acute pulmonary edema related to use of opioids; asthma related to LSD, cannabis, opium, and other drugs; cor pulmonale related to chronic smoking
- Heart-cardiomegaly, alcoholic cardiomyopathy, acute cardiac dilation related to inhalant intoxication; cardiac murmurs related to bacteremia from IV drug use causing valvulitis and endocarditis; dysrhythmias related to use of alcohol, solvents, tobacco, caffeine, or stimulants
- abdomen-distention due to ascites related to chronic use of alcohol or inhalants; dilated superficial veins due to portal vein obstruction related to alcoholism; surgical scars from peptic ulcer, liver biopsy, paracentesis; hematemesis from esophageal varices due to hepatic cirrhosis related to alcoholism; palpation finds hepatomegaly with or without tenderness; tenderness of right upper quadrant due to hepatitis, periumbilical or epigastric alcoholic pancreatitis; ascites fluid wave; decreased peristaltic sounds related to use of opioids or stimulants; increased peristaltic sounds related to alcoholic malabsorption syndrome or to opioid withdrawal; shifting dullness due to ascitic fluid; hepatomegaly
- musculoskeletal-muscle wasting, muscle spasm and rigidity related to PCP use; fractures due to trauma and/or accidents; osteomyelitis and septic arthritis from IV drug use; muscle tenderness especially in calves due to kidney disease related to IV drug use
- neurological-tremors, liver flap with hepatic encephalopathy related to withdrawal from alcohol or sedatives; abnormal gait resulting from alcoholic cerebellar degeneration
- dermatological-stained fingers from holding cigarettes; IV tracks occurring as pigmented linear marks along the course of the superficial veins; thrombophlebitis, abscesses also from injecting IV drugs; pruritis, chronic papular seborrheic dermatitis, cheilosis due to vitamin deficiency and stress; perspiration from withdrawal from opioids, alcohol, or sedatives; piloerection from opioid withdrawal; pyoderma due to poor hygiene or from white blood-cell suppression resulting from alcoholism

Basic Treatment Concepts

Study: Treatment Best for Addicts (The Associated Press, March 1998)

By LAURAN NEERGAARD

WASHINGTON (AP) - Drug and alcohol abuse are medical problems that respond to medical treatment just as well as diabetes and other chronic diseases do - and treatment is cheaper and more effective than jail, says new research.

Yet the nation spends only 20 percent of its \$17 billion drug-control budget to treat addicts, and the public believes that jailing addicts is best, a bipartisan group of public health experts said Tuesday.

"We've been telling people to 'just say no' when addiction is a biological event," said Dr. June Osborn, who chairs the new Physician Leadership on National Drug Policy.

"There must be a bridge between what the public believes and the science," added Dr. Lonnie Bristow of the American Medical Association.

The group of prominent physicians and public health leaders from the Clinton, Bush and Reagan administrations commissioned the research. They are using it to urge doctors to play a greater role in diagnosing and treating addiction - and are providing it to politicians who control drug-treatment money.

Many of the 14 million American alcoholics and 6.7 million drug addicts relapse after drug treatment, but the scientists concluded that:

Jailing a drug addict costs \$25,900 per year. A year of traditional outpatient drug treatment costs \$1,800, intensive outpatient care costs \$2,500, methadone treatment for heroin users costs \$3,900 and residential drug-treatment programs range from \$4,400 to \$6,800 a year.

Drug treatment can cut crime by 80 percent, said Brown University addiction director Norman Hoffman. Brown researcher Craig Love studied female substance abusers who were in jail, and found that 25 percent who underwent treatment were later re-arrested, vs. 62 percent released without substance abuse treatment. A California study of 1,600 drug abusers found their involvement in drug sales, drug-related prostitution and theft decreased threefold after treatment.

Every dollar invested in drug treatment can save \$7 in societal and medical costs, said former Assistant Health Secretary Philip Lee.

Long-term drug treatment is as effective as long-term treatment for chronic diseases, said Dr. Thomas McLellan of the University of Pennsylvania. One-year relapse rates for the diseases and for addicts all are about 50 percent, he said. Compliance with therapy is similar, too: Fewer than half of diabetics comply with their therapy, as do fewer than 30 percent of asthma and hypertension patients and fewer than 40 percent of alcohol or drug abusers.

Drug treatment also helps society's health, McLellan said. Heroin users, for example, are at huge risk of catching and spreading the AIDS virus or hepatitis. A seven-year study of heroin addicts found 51 percent who never entered drug treatment caught HIV during that period, vs. 21 percent of treated addicts.

Yet, there is a severe shortage of drug-treatment programs, the doctors said. About 15 percent of people who need treatment get it. Seven states don't offer any methadone clinics for heroin addicts, and every U.S. methadone clinic has a waiting list. Only 5 percent to 20 percent

of pregnant drug abusers can get drug treatment because of too few programs, inability to pay or too few inpatient programs that will accept the woman's other children, said Pennsylvania's Dr. Jeffrey Merrill.

The findings conflict with public opinion.

An analysis of surveys being published today in the Journal of the American Medical Association finds support for increased spending on drug treatment has dropped from 65 percent in 1990 to 53 percent in 1996.

In contrast, 84 percent of Americans say the solution is tougher criminal penalties. Next on the list are anti-drug education, more police and mandatory drug testing.

The survey also found Americans believe drug abusers are predominantly poor, uneducated and minorities. In fact, the majority are like Dr. Richard Corlin's son, once a cocaine addict: white, from well-educated families and initially employed.

Dispelling those myths is vital to public commitment for drug treatment, said Corlin, a Los Angeles medical professor. "People think it is someone else's problem. It is not."

Clinical Treatment Modalities

Preliminary Efforts:

Before the actual treatment regimen can begin, there are several considerations:

Firstly, the nurse and/or treatment professional must review all the facts, the drug-related findings, physical assessment, and psychological assessment factors. All of these factors must be considered before a specific treatment method can be proposed to the individual and/or their family.

Secondly, the treatment options should be discussed with the individual and/or family. In some cases, (such as with minors) there are no options. In other cases, there may be several treatment options available. The options should be discussed in detail. These details should include what clinicians will be involved, whether inpatient or outpatient, the expected results of the treatment, family involvement, short-term and long-term effects of the addiction, and costs involved.

Treatment of Substance Abuse:

1. Detoxification

Detoxification is usually the first step in the treatment of substance abuse. No matter what type of treatment program is prescribed, the client must first successfully be cut off from all drugs of abuse.

Even most inpatient facilities will usually admit *all patients* for detoxification regardless of their admitted level of drug use. This admission will usually last 2-3 days or more. The reason for this is that most patients are in some form of denial when using drugs. Therefore, it is

difficult to assess their actual level of drug use. In most cases, drug use is **under-reported** by most drug abusers. It is usually wise to observe patients during detoxification and withdrawal in the event there are any complications which require medical intervention.

Many larger communities have private and public detoxification centers. Many communities maintain free and/or inexpensive detoxification facilities for their citizens. These "public" detoxification facilities are often linked to other short-term and long-term recovery programs in the community. Clients may be admitted to these "detox" centers voluntarily or confined there by the authorities for detoxification.

Most detoxification services have standing orders for their clients. Obviously, clients are screened for any major medical problems and complications of drug abuse. This screening may include certain diagnostic tests. Vital signs are monitored on a regular basis. Some detoxification centers also have standing orders for medications to be administered during detoxification.

Some detoxification centers have only simple, basic services for clients to "sleep it off." Other detoxification centers may provide intensive medical treatment and diagnostic services. Most detox centers are somewhere in between these two types. Whatever services are offered, there are usually trained counselors available to clients in detox. These counselors work with clients to evaluate, motivate, and advise them regarding the next step, which is rehabilitation services.

Pregnant women in detox need special care and treatment and are almost always admitted to an inpatient facility. There are many severe complications which may accompany drug abuse in pregnancy, not the least of which is a spontaneous abortion. In addition, many drugs of abuse cross the placental barrier and also affect the fetus. The mother and fetus are both carefully monitored during detoxification. This usually requires a very specialized detox facility; also true for neonatal detoxification.

The overall treatment plan in substance abuse, begins with detoxification and continues with rehabilitation (the treatment program). The treatment program chosen for each individual is based upon many factors (discussed earlier in this text). The treatment program is developed as each of these factors are evaluated. The nurse and/or treatment professional should keep in mind that the treatment program should be flexible. Just as the Nursing Process is dynamic, so is the treatment plan for the recovering abuser. When a problem is discovered by the nurse, the treatment plan may be revised so that reasonable, measurable objectives may be formulated in order to resolve the problem. All of these measures are started during detoxification and carried on through the treatment phase.

2. Treatment Modalities

Introduction:

Keep in mind that the treatment for substance abuse is very complicated. A **Treatment Plan** may include different *modalities*. For example, one client may need intensive inpatient

treatment, with group therapy, individual therapy, medications, etc. On the other hand, another client may only need outpatient treatment with education classes and support from a sponsor.

Example 1

Treatment Plan:

Treatment Modalities

1. Inpatient treatment
2. Individual therapy
3. Group therapy
4. Peer counseling

5. NA meetings daily
6. Antidepressant medications

Example 2

Treatment Plan:

Treatment Modalities

1. Outpatient treatment
2. Drug education classes
3. Sponsor

4. Weekly AA meetings
5. Monthly family therapy

Various *Treatment Plans* (also known as ***Rehabilitation Plans*** or "***Rehab***," and also known as ***Treatment Programs*** or "***Programs***") have been used to treat substance abuse within the past 50 years. Excellent advances have been made in assessment, diagnosis, and therapeutic models over the past years. Following, we will detail some of the most successful and widely used modalities today.

The Two Major Treatment Programs for substance Abuse:

- A **Inpatient Treatment****
- B **Outpatient Treatment****

A **Inpatient Treatment:**

As the name implies, inpatient treatment takes place in a structured 24-hour treatment facility. Inpatient programs are most often prescribed for those individuals who need a very highly structured and intensive treatment program. Clients using inpatient programs are usually clients who have a severe drug problem and usually with drugs that are extremely addicting. Adolescents often are prescribed inpatient programs because adolescents often require the structure and education available with inpatient settings.

Inpatient programs begin immediately after the successful completion of the detoxification program. The patient must first be totally free of the drug(s) of abuse. Some programs even

require the patient to be drug-free for a certain period of time, such as 30 days or 60 days or 90 days. Then they may enter the inpatient program. Some inpatient programs have their own detoxification program right in the same facility. However, that is not very common.

Inpatient treatment programs are very often located in a traditional hospital setting. Many public hospitals have inpatient programs. Today, there are many private hospitals that also have inpatient programs. Still other private facilities exist for the sole purpose of drug rehab. Therefore, there are many choices today for inpatient treatment programs.

Remember that **Inpatient Drug Treatment** can be considered **EITHER** (1) a Treatment Program, by itself; OR (2) Inpatient Treatment may be considered a ***treatment modality***. Inpatient hospitalization is commonly referred to as an entire Treatment Program. However, in most cases, it is a part of a bigger treatment program or treatment plan that includes Inpatient and then aftercare, or follow-up of some kind. It is almost non-existent that a patient leaves the hospital and then never has any follow-up.

Most inpatient programs include, group therapy, family therapy, 12-step study, drug education, psychotherapy, and many other modalities may be used. An inpatient program at one hospital may be very different from an inpatient program at another hospital. A client needs to choose which program suits him/her, or the patient's physician may choose one program over another program according to the needs of the patient.

The nurse should remember that inpatient treatment is usually a major disruption of the patient's life (of course, so is drug abuse). The patient will not be able to work or carry on with their lives and normal relationships. Also remember that the cost of such inpatient treatment is usually very high. Most medical insurance covers very little, if any, of such costs. In fact, in many cases inpatient hospitalization is not even a consideration for many people due to the prohibitive costs.

Inpatient programs almost always include some type of aftercare or follow-up after discharge. After discharge, the patient may still attend group meetings, family therapy meeting, etc. Many patients will be enrolled in an outpatient program after discharge; again, depending upon the individual's situation and history. Adolescents almost always are required to attend outpatient programs and education programs after discharge. Also remember that some persons were admitted to inpatient programs by courts or other legal commitments. These persons may also be required to attend a certain number of 12-step meetings or other follow-up programs. Be sure to instruct patients as to these requirements as well.

Lastly, the nurse must keep in mind that many substance abuse clients also have dual-diagnoses. Some patients may have psychiatric disorders and/or medical problems that also must be considered. Many patients require medical follow-up for these other problems. The nurse must be aware of these problems and provide referrals to the appropriate agencies after discharge.

B Outpatient Treatment:

Outpatient treatment, is a structured program which usually involves several long-term treatment modalities on an ambulatory basis. Detoxification may or may not be provided in this program. However, detox is usually required prior to entering the outpatient program.

Outpatient treatment facilities will usually have a medical director and employ treatment models developed by inpatient hospitalization and self-help groups. Outpatient treatment allows for the patient to continue living in their own homes and allows them to continue with their employment. Most outpatient programs have flexible hours and/or evening hours so the patient may continue to work their normal hours with taking only minimal time off from work.

This method of treatment is used mostly for those individuals who have only a "moderate" substance abuse problem. The patient is trusted to come to regular meetings and to abstain from using drugs on their own. The time commitment will vary with each program. The average outpatient program is about 2-4 months. During this time, the patient will attend three to five or more meetings per week. These meetings may include group meetings, family meetings, individual meetings (therapy), 12-step meetings, and others.

At the end of the outpatient program, the patient will often be directed to long-term follow-up, aftercare, or structured continuing care. Continuing care will usually continue for one year or more and consist of 12-step meetings, self-help group meetings, and other treatment modalities. In addition, the patient will usually be assigned a sponsor who will monitor the patient's progress. During this continuing care, the patient may also continue with occasional family therapy, group therapy, or individual therapy. Long-term continuing care often allows patients to deal with other deeper, underlying issues in recovery.

3. Other Treatment Modalities:

The following treatment modalities are commonly used today in conjunction with each other and with other options to treat substance abuse. As we previously discussed, the treatment professional will choose which options would be best suited for each individual, taking into consideration the age of the person, their financial resources, the type of drug(s) abused, etc. It is well recognized in the treatment community that long-term substance abuse usually requires long-term treatment options. Presented below are some short-term and long-term options available today.

Chemical (drug) Therapies

Some drug therapies have been shown to be effective treatment or adjuncts for treating certain addictions. For example, we have already discussed *Antabuse* therapy. This drug has been used for many years and has proven to be effective for some people. Antabuse has its side effects and not everyone will stay with this drug therapy.

Naltrexone (Trexan) has shown to be effective for some people for:

- (1) maintenance of opioid-free state
- (2) treating alcohol dependency

(1) Trexan is given orally to persons who have been detoxified from opioids (heroin, etc). Trexan reversibly blocks the subjective effects of intravenously administered opioids by occupying opioid receptor sites in the brain. In other words, it blocks the effects of heroin and other opioids. The person will not feel the "rush" of the drugs and not get "high" from them. Therefore, they tend to not take the drug any more.

(2) Trexan (and Narcan, naloxone) has recently been found useful in treating alcoholism as well. These drugs have been shown to reliably reduce alcohol consumption under a variety of circumstances.

Anti-Addiction Drug to be Tested (AP-NY-1998)

If it works on humans as well as it did on animals, a drug used in Europe to treat epilepsy could be a powerful weapon against addictions, including cocaine and nicotine. Scientists at the Brookhaven National Laboratory hope to begin human testing soon on gamma vinyl-GABA, or GVG, which appears to curb cocaine craving in rats and monkeys.

"You would no longer crave cocaine, because the pleasure would be gone," said Stephen Dewey, who led the research at the U.S. Department of Energy's facility on Long Island. He worked with other scientists for a dozen years on the research, also funded by the National Institute of Mental Health. The results were released by the Journal synapse and presented at a news conference at the New York Academy of Science.

Researchers first became interested in GVG because it reduced the level of brain chemical called dopamine, believed to "trigger" the "high" feeling from drugs. Cocaine elevates the concentration of dopamine, the brain's "feel good" chemical at the heart of drug addiction. But lab rats trained to press a bar that delivered cocaine stopped doing so after being given GVG, Dewey said. "The animals pushed the bar once, pushed it again, and then they stopped," he said. The drug "takes away the reward effect."

Before human testing begins, GVG, now being used in Europe and Canada to treat epilepsy, must be approved by the federal Food and Drug Administration for use in the United States. FDA spokeswoman Ivy Kupec said Vigabatrin (GVG), has not been approved for use in the United States by the Maryland-based agency. Dewey says he anticipates approval soon.

Volunteers for human testing are to be recruited from among cocaine addicts. Some will be given placebos, while others will receive the active test drug for three to six months. Scientists will then measure their ability to stay away from cocaine - and for how long - compared to untreated addicts.

Dewey said GVG has the potential to block addiction to substances such as nicotine, heroin,

and some amphetamines. "If this can do for humans what it did for animals, we may have opened the door for addicts around the world to kick their habits," he said. Research is now underway on the ability of the test drug to block the effects of nicotine and heroin use.

There are other drug therapies that are being used today for treating addictions. The nurse should be aware of all of the side effects and adverse effects of these drugs and monitor the patients carefully. In addition, many of these drug therapies are used in conjunction with other therapies in order to maximize the benefits. For example, Trexan is also used in conjunction with Coping Skills Therapy and 12-step programs. The nurse should closely monitor progress with these other therapies that will also be used along with the drug therapies.

Residential Treatment or Social Detoxification

Residential programs, as the name implies, require that the person reside in a treatment center. Some of these facilities require detoxification prior to entering. Many of these facilities have their own detoxification rooms in-house. This model involves the individual in the process of detoxification without direct medical supervision. However, the patient is closely monitored by nurses or other trained treatment professionals or counselors. In the case a medical emergency develops, the counselors are trained to refer the patient to a more acute facility when necessary. Upon completion of detoxification, the patient may then complete his therapeutic goals while residing in the drug-free and alcohol-free facility.

The residential program requires a stay of from one to six months. Some residential programs are long-term programs with a stay of up to 12 to 18 months. Each residential program has its own treatment philosophy, such as taking in only homeless individuals; some are gay/lesbian oriented; some are youth oriented; some are "upscale," catering only to "yuppies"; some are open to all adults and teens. Again, the type of program is matched to the individual and their resources.

Most residential programs offer a wide variety of treatment options (modalities) such as: group meetings, 12-step study, even individual and family counseling. Residential facilities are usually government or agency funded and operate on a sliding-scale to the individual. Some facilities are not sliding-scale and are very expensive to attend. Even other residential programs offer the person the opportunity to work for the fees while they are in recovery.

The residential program model of treatment and recovery is usually best suited for those individuals who have no previous history of detoxification (first-time treatment). However, some programs do offer services for persons who relapse and for repeat drug treatment. Most, but not all, residential programs are best suited to those with no other medical problems and with no psychiatric problems. Again, however, some residential programs will admit persons with these problems because they may also have some doctors/nurses on staff who can also handle these added problems.

Day Treatment Programs

Day treatment programs are very similar to inpatient and outpatient treatment programs. However, there are usually two distinct differences.

Firstly, day treatment programs usually have a philosophy such as treating women, perinatal program, etc. Whereas, outpatient programs usually admit all types of persons and youths.

Secondly, most Day Treatment programs are free-standing or they are connected with a residential-type program. Whereas, outpatient programs are usually connected to a hospital or other inpatient-type setting.

Of course, some outpatient programs may also have a philosophy. However, day treatment programs tend to be less structured than their outpatient counterparts. Day treatment programs will also have many different treatment modalities available to them. Day programs, like outpatient programs, will have group meetings, family therapy, etc. Whether you choose a day program or outpatient program depends upon your situation, the services available with each program, and your financial situation.

Self-Help Groups

The philosophy of self-help groups has been around for centuries. They have their origins in religious and social organizations that started these groups to help their members and then, the general public. The most lasting and most famous group is Alcoholics Anonymous, started in the late 1940's and early 1950's with its twelve steps and twelve traditions.

After Alcoholics Anonymous, other groups were formed to target specific drugs and/or specific populations. These include: NA-Narcotics Anonymous; Cocaine Anonymous; Marijuana Anonymous; and other groups specifically for teens.

Many self-help groups have an informal structure and they use members to run meetings and conduct business. Many of these groups also associate with other self-help groups and also with medical professionals for referrals when necessary. These groups are voluntary and self-supporting (usually). Self-help groups are used in conjunction with other treatment modalities for treating substance abuse. In many cases, these groups are very effective for continuing care during and after the person has undergone more formal treatment programs.

Family Therapy

Family therapy has long been recognized as an important part of treating the individual for substance abuse. Substance abuse affects not only the individual, but the entire family, friends, co-workers, employers, significant others, and in fact, affects the entire community and the entire society as a whole. Therefore, to further assist the individual's recovery, the family (and others) need to be included in the overall treatment program.

Today, there are many types of family groups available to be used as part of an overall treatment program for substance abuse. There are short-term family groups, long-term family groups, psychotherapy groups, informal groups, formal groups, and others.

The family is encouraged to identify their coping skills, their pathologies, and a means to develop their own recovery. As for the substance abuser, there are long-term support groups, for family members and significant others. The most prominent are Alanon and Families Anonymous, and Alateen for youth. These groups utilize essentially the same twelve steps but insert, where appropriate, words relating to control and sanity. There are also more formal family groups available for those addicts with multiple problems in addition to the substance abuse problem.

Individual Therapy

Individual psychotherapy has long been recognized by those in the treatment community as an effective augmentation to substance abuse treatment plan. Individual psychotherapy therapy is rarely *used alone* to treat substance abuse. It has been shown that addicts have a high degree of denial, manipulation, and selective discussion. Therefore, individual therapy is not very effective by itself in treating substance abuse.

Clients may require individual therapy because they either cannot or refuse to participate in group therapy. Many people are very reluctant to talk about certain issues in groups. Therefore, individual therapy may be beneficial. Still other clients participate in individual therapy because they need more in-depth education and insight than is available in groups or by other modalities. Other clients find individual therapy helpful because they have other psychological problems that need treatment in addition to the addiction problem.

Other Treatment Adjuncts:

The following are adjuncts to substance abuse treatment that are used less frequently. Some of these modalities are used merely to enhance other methods or to help the client learn new coping skills. These will be used by treatment professionals as they seem appropriate. In fact, some treatment professionals may be against using certain of these adjuncts (alternative treatments). Again, they will be used as deemed appropriate.

1. Medications--Antabuse, methadone, patches, others,
2. Acupuncture
3. Aversion therapies
4. Life Skills Training
5. Childhood Educational programs
6. Relaxation therapy
7. Coping Skills Therapy
8. Art Therapy
9. Physical Therapy
10. Equine-Assisted Therapy
11. Neurofeedback (type of biofeedback)

These are only some of the many specialized adjuncts that are being used today. Some of these are not accepted by all treatment professionals. Some of these therapies are very controversial. Again, we will emphasize that the client must be matched to the type of therapy. Also keep in mind that different therapies are used for different groups of people, such as adults, adolescents, seniors, men, women, different ethnic groups, and minorities. The nurse should inform and educate their clients as to what the therapy is supposed to accomplish and help the patient evaluate if the goals are reached. Be nonjudgmental and a good patient advocate.

4. Other Considerations in Substance Abuse

Relapse Prevention

Relapse is defined simply as a return to drinking or drug use after the patient has stopped those same behaviors. Many treatment programs address this issue of relapse by providing follow-up care after the program has been completed. Relapse prevention assists the patient to improve his adaptive, coping, and problem-solving skills, and thus his confidence and self-efficacy.

The initial step in relapse prevention is to educate the individual and family to the potential warning signs of relapse. Support groups and treatment centers utilize an easy to remember acronym, "HALT," meaning, "don't get too Hungry, Angry, Lonely, or Tired."

Some determinants include high-risk situations that cause the client to lose a sense of control. This might include walking into a room where people he used to drink with are drinking or doing drugs. Negative emotions such as anger, depression, and anxiety are high risk for relapse as are interpersonal conflicts and social pressure. Less obvious stressors are lifestyle imbalances; for example, "the workaholic," that lead the individual to rationalize that he deserves to indulge in drugs/alcohol.

Intervention strategies include *self-monitoring* whereby the client keeps a complete record of his drug use, and if abstinent, keeps a record of cravings thus increasing self-awareness. Another strategy is the *Situational Confidence Questionnaire* which involves the client imagining himself in each of 100 situations and reporting his level of confidence in resisting drinking/using. One of the most effective tools is *labeling and detaching*, accomplished by verbalizing cravings and the reason for them. *Behavioral Contracting* is another tool and is designed to limit a relapse. Carrying a "reminder card" with suggestions on how to handle a slip is used by some. Of all the techniques and strategies, coping skills are the most important along with stress management (AA slogans such as "one day at a time," "easy does it," "live and let live," "keep it simple stupid"). Other stress management techniques are flexibility, getting help, exercise, time alone, humor, and good nutrition.

If a relapse does occur, the client will be more likely to recover if he reminds himself that the relapse does not mean he is a failure or a bad person, but uses it as a learning tool to avoid future

relapses (Lewis et al. 1988).

Confidentiality

The nurse should remember that confidentiality is an important issue in treatment of substance abuse. Federal and state laws protect the medical records of those clients in a substance abuse program. Each facility with which you associated will have its own policies that should follow these guidelines for confidentiality. Always be sure not to discuss client's situation outside the professional confines of your program. Breaching confidentiality of your clients is not only illegal but it also undermines treatment since trust in therapy is important.

Dual Diagnosis

Dual diagnosis means that your substance abuse client has one or more diagnoses in addition to his addiction. In fact, it is quite common for a client in treatment to have other issues to deal with. These issues may be medical problems such as diabetes, AIDS, and others, or they may be psychiatric, such as depression, ADD (attention deficit disorder), and others.

The nurse should carefully obtain a detailed history from the patient in order to discover any other diagnoses that could affect treatment. Always question the patient as to any other medical and psychiatric conditions, hospitalizations, and treatments. Dual diagnosis is becoming a very prominent issue today in the substance abuse field. The treatment professional, just as the medical professional, must treat the whole patient. This very often means dual diagnosis considerations.

Prison/jail population treatment

Substance abuse treatment in the jailed population is becoming increasingly prevalent. It is widely recognized that a large number of people in jails/prisons also have a substance abuse problem. Many people in jails continue to use drugs while in jail and/or immediately return to drugs as soon as they get out of jail. Therefore, it is important to have treatment programs in the penal institutions or as alternatives to incarceration.

Overcoming Barriers to Drug Abuse Treatment in the Community (NIDA, 1998)

The cocaine addiction crisis of the past few years and the spread of AIDS among intravenous drug users have focused attention on the increasing need for drug abuse treatment services in the local community. But responding to this need is not always easy, even when financial resources are available. Communities often resist building new drug abuse treatment facilities despite the fact that many individuals in those communities need local, affordable treatment for themselves or a loved one.

The goal of this NIDA project is to develop a flexible education model for use by communities that have funding and want to establish drug treatment facilities. Local drug treatment personnel can receive NIDA-sponsored training to learn techniques that will help encourage support for and acceptance of drug treatment programs in their communities.

For further information about the project, contact project officer Susan Lachter David,

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CHAPTER XIII

Impaired Health Care Professionals

Chapter XIII

Chapter XIII Behavioral Objectives:

At the end of this Chapter, Each nurse will be able to:

1. Discuss the risks for health care professionals and drug abuse
 2. Name and discuss at least 5 signs and symptoms of the impaired nurse
 3. Name and discuss at least 4 interventions used for the impaired nurse
-

Study Questions:

- 90. In 1982 the ANA adopted a policy that treatment be offered to the:**
A. nursing assistant B. staff nurse C. impaired nurse
- 91. Indicators of increased risk for substance abuse include:**
A. family history B. pregnancy C. friend is addicted
- 92. The Johnsonian Intervention group includes the employee's:**
A. spouse B. children C. friends D. employer E. a,b,c,&d
- 93. The Peer Intervention model includes:**
A. recovering spouse B. children C. employer D. recovering nurse
- 94. Employee-related intervention includes the employee _____ person.**
A. personnel B. staff C. assistance D. mediator E. security
- 95. Guidelines for intervention includes confronting the nurse in a kind,:**
A. caring manner B. yet harsh manner C. disciplinary manner
- 96. Nurses have been successfully treated in both inpatient and:**
A. day-care centers B. outpatient C. peer setting D. prison program
- 97. Federal law specifies that drug dependent individuals are _____ and cannot be discriminated against.**
A. rehabilitated B. handicapped C. recovering D. diseased
- 98. Some employers will allow the recovering nurse to work in their former nursing unit, but with _____.**
A. leg monitor B. a police officer C. stipulations D. a supervisor
- 99. The state board of nursing decides on a disciplinary action based on violation of the _____.**
A. state law B. hospital policy C. federal law D. nurse practice act

- 100. Nurses with substance abuse problems can enlist the help of the:**
A. State Peer Assistance Program B. allow the problem to get worse

The Impaired Health Care Professional

Introduction:

Health care professionals are just as much at risk for chemical dependency as the general public, in fact they are at higher risk. In 1975 the AMA, American Medical Association held its first biennial national conference focusing on disabled doctors, and subsequently began publishing the "impaired Physician" newsletter and began providing backup services for state committees.

In 1982, the ANA, American Nurses Association adopted a policy stating that treatment be offered to the impaired nurse before disciplinary action is taken. In 1984, the ANA published a position paper "Addictions and Psychological Dysfunctions in Nursing: The Profession's Response to the Problem," which defined impairment due to drug and alcohol dependency. The ANA definition is: "When alcohol or drug use is causing continuing problems in one or more areas of an individual's life, such as problems at home, on the job, physically, or legally, and individual is said to be dependent on that drug." A task force was formed to set up assistance programs for chemically dependent nurses, and in 1985 the ANA held its first national biennial conference on the impaired nurse.

In 1987, the AMA declared chemical dependency a disease and defined dependency to all psychoactive drugs, from cocaine to alcohol, as a bona fide medical entity termed *chemical dependency*.

Substance abuse results in costs to both the individual and society in decreased productivity, absenteeism, tardiness, poor interaction with patients, poor decisions, decreased staff morale, and mistakes and accidents that might lead to legal issues.

Because, of the secretive nature of abuse, and the many opportunities to abuse chemical substances in a medical setting, it is very difficult to determine how widespread substance abuse is among healthcare professionals.

A survey of 300 medical students in 1987 showed drug use to include alcohol, marijuana, cocaine, and tobacco. A smaller survey of 68 medical students reported the use of these drugs as well as amphetamines and unprescribed sedatives.

A 1989 survey of 260 former anesthesiology residents showed that 77.2% had used alcohol while in residency, 20% had used marijuana, 15.7% had used cocaine and 43 of the 178 respondents had used unprescribed psychoactive drugs. 15.8% admitted they had been problem users while in residency.

Dentists have been linked with drug abuse of volatile gases such as nitrous oxide. Healthcare professionals, especially physicians and nurses are thought to be the most frequent abusers of analgesic medications of any middle-class population. Other studies have shown drug use among pharmacists and nurses with the American Nurses Association reporting in 1994 that 68% of all state board actions over a 12-month period resulted from impaired functioning related to

drug or alcohol use. Psychologists and social workers are less likely to be reported to their professional regulatory boards for substance abuse than are nurses, pharmacists, and physicians, who, when reported, are more likely to be disciplined for stealing drugs from work than for using alcohol or illicit drugs.

Currently, each state has a nursing board consisting of political appointees whose primary purpose is to ensure the public safety through setting standards and granting approval to nursing schools, determining the eligibility for licensure and relicensure, and taking disciplinary action against individuals in violation of the nurse practice acts.

Specialty organizations also exist in nursing to assist nurses with addiction problems, and nearly every state medical association has developed an assistance program for the substance abuse impaired physician.

Although healthcare workers do appear to have a higher abuse rate of certain drugs, and are over-represented in the treatment populations, research does not support the belief that they have a higher prevalence of substance abuse than the general population of whom, it is believed, about 10% abuse alcohol and 2% abuse drugs.

Identification of the impaired nurse:

When signs and symptoms of the addiction process appear in combination, seem to form a pattern. Those who recognize it may assist the nurse to seek evaluation from a professional

- **History**-indicators of increased risk for substance abuse include: a family history of substance abuse, a medical condition that requires pain medication, or frequent job changes
- **Physical Symptoms**--Tremors, staggering, slurred speech, watery eyes, constricted or dilated pupils, diaphoresis, runny nose, nausea, vomiting, diarrhea, and increasing lack of personal care
- **Emotional Symptoms**--rapid mood swings from depression to euphoria, irritability in a formerly stable individual, suicidal threats or attempts
- **Mental Symptoms**--loss of memory, confusion, blackouts
- **Behavioral changes**--complaints of marital and family problems, complaints of illness and accidents or other emergencies, complaints from others about work performance and/or substance use, excuses for tardiness or absence, difficulty meeting schedules, eating alone, increasing isolation from the staff, requests to work night shifts or for assignments facilitating access to drugs, a strong interest in pain control medications, disappearance into a bathroom right after assessing the narcotics' cabinet and unexplained absences and trips to the bathroom, illogical or sloppy charting, wearing long-sleeve clothing continuously, appearance on unit during days off.
- **Narcotics Discrepancies**--Drug diversion should be suspected if there are frequent incorrect narcotic counts, apparent alteration of narcotic vials, increased number of patient reports of ineffective pain medication, discrepancy between patient reports and hospital records of pain medications being given, discrepancies in physician's orders, progress notes, and narcotics records, unusual amounts of narcotics wasted, frequent

corrections and erratic patterns of corrections on narcotic records, unusual variation of quantity of drugs needed on a unit

- **Prescribed Medications**--Addicted nurses have reported getting prescribed drugs from a number of doctors, simultaneously, by complaining of fictitious symptoms, or by stopping a doctor in the hallway and asking for a prescription. Some report that they have been given pre-signed prescription blanks for their use.
- **Hospital Drugs**--Addicted nurses may falsify patient records or the narcotic records by charting that a dose was given when it was diverted partly or entirely for the nurse's use; or the nurse may sign out medications and report spillage or medication errors, or make substitutions (e.g., a tube of saline in place of a tubex of meperidine). Some nurses report siphoning out the drug and replacing it partly, or entirely with water. Nurses have also reported stealing drugs from the patient's bedside following drug supply accounting at change of shifts. Some nurses have taken an entire delivery of drugs along with sign-out sheet so that it looks like an accounting error.
- **Alcohol**--Since alcohol is a legal drug, most hospitals do not have a written policy about drinking off the premises unless the work performance is affected.

If the addicted nurse is discovered, employers will often find a different reason for termination in order to avoid the inconvenience of assisting the nurse with recovery or reporting it to the board of nursing as required by law, and many times the nurse goes out to find employment elsewhere, allowing the addiction to progress.

Intervention

Early on in the addiction, a pattern of the signs and symptoms just described may not be easily discerned. However, objective documentation by the nursing supervisor of unsatisfactory or deteriorating job performance will eventually make such a pattern obvious. The supervisor can then set a conference time to present the data to the nurse who is suspected of substance abuse.

After the data are presented, the nurse is given an opportunity to explain their behavior. An agreement is made detailing a plan for correcting the situation within a specific time frame. A clear set of procedures for approving and monitoring the plan or taking further administrative action is established. If referrals are made for treatment, the nurse has the responsibility to comply.

Intervention can take a number of other approaches, but all of them should have the element of surprise to prevent the nurse from finding an excuse to avoid participation or to manipulate the confrontation so that it is ineffective.

Johnsonian Intervention. A professional counselor prepares a group of people significant in the nurse's life (spouse, children, friends, parents, colleagues, employer) to confront the nurse with their observations of his/her drug-related behavior that concern them. The group meets in advance, rehearses the material to be presented, decides on goals, sets the time and place for the intervention, decides where the nurse will receive treatment, and what each member of the group will do if the intervention is rejected. People who are too upset are eliminated from the group in

order to keep a therapeutic atmosphere. The counselor facilitates the group in the intervention.

This may seem to be a very "confrontive" and/or "sneaky" approach. However, the element of surprise is very important and confrontation sometimes is necessary in order to be therapeutic. It is important to be very direct and yet give the nurse the option of treatment. He/she may hate you at the time, but hopefully they will thank you later.

Peer Intervention. This is a colleague-to-colleague approach, usually conducted by two volunteer members of a peer assistance committee (in some states) from the state nurse's association who tell the nurse, without revealing their source, information that has been given them regarding his/her unprofessional and possibly illegal drug-related behavior. The volunteers, one of whom is usually a recovering nurse, give the nurse information about the disease and treatment available, and may threaten to report to the nurse's employer or the state board if their recommendations of treatment are not followed through. Vindictive use of the procedure is avoided by requiring two verifications of the problem before intervention is planned.

Employment-Related Intervention. The employee assistance person and a group of recovering employees confront the nurse on drug-related problems that they have observed in the areas of job performance, patient relations, co-workers, theft, and others. Documentation is important prior to this intervention. The goal is to express concerns about the person and the job performance and to arrange for an evaluation with a professional counselor.

Combined Approaches. In some states, a hospital representative contacts the state nurses' association peer assistance committee and arranges for two of their members to work with the hospital to plan an intervention once just cause is demonstrated. This committee does not have the authority to investigate, but does threaten further reporting if the nurse refuses to be evaluated and follow treatment recommendations. The nurse is offered their support and opportunity to become involved in the peer assistance program.

Guidelines for intervention are: conduct the intervention shortly after the precipitating event; have written documentation; state the goal and consequences if it is rejected; confront in a kind, caring manner; follow through after the intervention by going with the nurse to the treatment center immediately for evaluation; do not allow an intoxicated individual to drive; document the intervention.

Acute Intoxication. When a nurse is intoxicated on the job, the nursing supervisor documents the behavior before, during, and after the interview, as well as the time, extent of impairment, and action taken. A urine specimen is collected for analysis if possible as part of documentation. The nurse is confronted in private, and placed on personal leave. A relative, friend, or co-worker can provide transportation home, or directly to a treatment center for evaluation if the nurse is willing.

Treatment of the Healthcare Professional

Nurses have been successfully treated in both inpatient and outpatient substance abuse

treatment programs with a multidisciplinary team approach, where trained therapists have an understanding of the dynamics of nursing and are familiar with the professional and regulatory environment to which recovering nurses will return. The curriculum should include education in disease concepts of substance abuse, individual and group therapy, support system development with both AA (NA, CA) and groups for the impaired nurse, and a minimum of one year of continuing care. Documentation of patient progress may be provided to the state board of nursing upon their request and with the patient's written permission, as well as other needed verification of the abstinence.

Most employers might not wish to hire a recovering nurse. However, federal law specifies that drug dependent individuals are handicapped and cannot be discriminated against. Consequently, the employer must hire solely on the potential for job performance.

Although federal law also protects the confidentiality of treatment records, licensing agencies may place sanctions on a nurse's license revealing chemical dependency. Since these records are open to the public, an employer can obtain information of past disciplinary action as well as the nurse's responses to questions regarding dependency.

Some employers will allow the recovering nurse to work in the former unit, but with stipulation that mood-altering medications are to be administered to the nurse's patients by a designated nurse. The nurse is monitored for continued abstinence in order to protect the patients and the employer, as well as to provide the nurse with documentation of continuing abstinence.

Monitoring consists of the recovering nurse signing a contract upon return to work agreeing to (1) consistently attend self-help groups including a nurse's support group if available and provide documentation (2) provide documentation of continuing care as recommended by the therapist (3) attend sessions with the EAP counselor or administrator on a regular basis (4) continue to report to the former employer after resignation, or until a new employer is found and notified of the contract and its provisions. If the contract is not honored, or relapse occurs, the recovering nurse may be terminated and the state board of nursing informed.

Other monitoring devices include frequent random drug screens conducted over a long period of time, and paid for by the nurse or employer, and occasionally the use of naltrexone HCL (Trexan) or disulfiram (Antabuse).

Monitoring is conducted by the designated monitor only. If the staff becomes aware that the nurse is recovering from drug dependency, they should be reassured that the disease is treatable though chronic, and that management is responsible for the supervision. Confidentiality is important in the monitoring situation. The impaired nurse should be scheduled to work the same hours as the monitor thereby diminishing the number of people that need to know that the nurse is recovering from drug dependency.

The recovering nurse may face a variety of legal, career, and ethical problems that may be more easily addressed and resolved with the support and encouragement of the state nurses' association peer assistance program, the hospital employee assistance program, or both.

Disciplinary Action

Steps for disciplinary action will differ greatly from state to state, but basically follow this format: The employer files a complaint with the state board of nursing that the nurse is in violation of the nurse practice acts (which varies from state to state and are legally binding definitions of the practice of professional nurses).

This complaint is thoroughly investigated for probable cause, sometimes by a committee called a "probable cause panel" composed of nurses as well as attorneys. Upon finding probable cause an official administrative complaint is filed and the nurse is notified of impending prosecution, and given an opportunity to be heard by an administrative hearing officer (formal hearing) if he/she chooses to dispute the charges, or by the board of nursing at one of their regular meetings (informal hearing) if he/she does not dispute the allegations. The administrative hearing office makes recommendations to the board of nursing which they may accept, reject, or modify. The nurse may testify, be represented by an attorney, and provide witnesses whether his/her hearing is formal or informal.

The state board of nursing decides on a disciplinary action based on violation of the nurse practice act. Discipline may involve a fine, reprimand, probation, suspension, or revocation of the nurse's license, or a combination of any of these, and it becomes a permanent part of the individual's record.

State boards of nursing generally consist of political appointees who may be uneducated in the disease concept of drug dependency, and whose primary purpose is to protect the health and welfare of the public rather than rehabilitation of the impaired nurse. To address issues of rehabilitation many state boards have established peer assistance programs.

Summary

There is no conclusive evidence that healthcare workers are more likely to develop substance abuse because of their stressful work and lifestyle. They do appear to have a family history of substance abuse and are more likely to use alcohol than other drugs.

Nurses with substance abuse problems can enlist the help of the State Peer Assistance Program. More education in the area of substance abuse is currently needed by the healthcare professionals. There is need to update the curriculum for both nurses and doctors to provide adequate education on drug addiction including prescription medications. A survey of 298 nurses showed a lack of knowledge about alcoholism, with 66% unable to answer correctly questions regarding social aspects of alcohol and 93% unable to define and identify the pharmacological characteristics of alcohol. Physicians need to increase their awareness of prescription drugs of abuse and avoid prescribing them for an addicted individual.

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Post Examination

You may wish to mark your answer on this copy of the exam before returning to the computer to take the online exam.

Chapter I

1. The broadest definition of a drug is: any substance that enters the human body and can change either the function or:

A. physiology B. structure C. prevention D. psychology

2. Drug problems lead to many other problems, including:

A. sudden death B. happier life C. enhanced family life

3. Estimates of women of childbearing age, ____ are substance abusers.

A. 15% B. 25% C. 45% D. 7% E. 10%

4. Cocaine can precipitate miscarriage or premature:

A. delivery B. bleeding C. false labor D. stroke

5. At 4 months of age, cocaine-exposed infants are at risk for:

A. SIDS B. AIDS C. seizures D. pneumonia E. motor dysfunction

Chapter II

6. All members of the opiod group provide analgesia and depress:

A. vomiting B. respiration C. diarrhea D. smooth muscle E. nausea

7. _____ is one of the most addictive drugs on earth.

A. Demerol B. Heroin C. Dilaudid D. Morphine E. Marijuana

8. In the 1960's and 1970's, heroin use increased among:

A. adults B. teens C. young adults D. older adults E. the elderly

9. Tolerance to the more potent opioids develops:

A. very slowly B. slowly C. rapidly D. does not occur at all

10. Opioids _____ the placenta to affect the fetus.

A. never cross B. sometimes cross C. do cross D. constrict

11. The severity of withdrawal from opioids depends upon many factors, including:

A. amount used B. length of addiction C. how abruptly withdrawn D. a, b,& c

12. The medical abusers of prescription opioids are predominantly women, middle-class, the elderly, and:

- A. young male B. Black/Latino C. teens D. health-care professionals

Chapter III

13. Alcohol in low doses causes suppression of inhibitory centers and produces:

- A. coughing B. apparent stimulation C. respiratory arrest D. flatus

14. After ingestion, ethanol is absorbed primarily from the stomach and the:

- A. esophagus B. small intestine C. tongue D. buccal membranes

15. There is no doubt that (alcohol) intoxication produces an altered state of:

- A. consciousness B. awareness C. confusion D. sleep E. alertness

16. Escape drinking is the use of alcohol to escape:

- A. reality B. problems C. children D. family E. work problems

17. Approximately _____ deaths a year are directly attributed to alcohol abuse.

- A. 240,000 B. 40,000 C. 500,000 D. 640,000 E. 95,000

18. The alcoholic tends to drink in secret in order to hide the:

- A. bottle B. side effects C. cost D. label E. consumption level

19. When sober, the alcoholic may regret what was said or done while:

- A. at home B. at work C. "partying" D. drinking E. vomiting

20. Some alcoholics will experience withdrawal symptoms that may last up to a:

- A. year B. month C. week D. day or two E. full 3 months

Chapter IV

21. At higher doses, most sedative drugs will eventually produce:

- A. sedation B. sleep C. hypnosis D. amnesia E. drug abuse

22. The combined effects of sedative-hypnotics can be described as:

- A. fatal B. repetitive C. potentiating D. interchangeable

23. Dependency on sedative-type psychoactive drugs has become known as:

- A. addiction B. additive C. synergism D. hypnotism E. sedativism

24. Stopping the use of CNS depressants result in rebound dreaming and:

- A. drowsiness B. depression C. excitability D. nightmares

25. **This drug is now commonly known as the "date rape" drug:**
A. Rohypnol B. Nembutal C. Tuinal D. Valium E. THC

Chapter V

26. _____ **remains the most commonly used illicit drug in the U.S.**
A. heroin B. marijuana C. alcohol D. LSD E. methamphetamine
27. **THC changes the way sensory information gets into the _____.**
A. ear canal B. medulla C. hippocampus D. spinal cord
28. **Smoking marijuana while shooting up cocaine has potential to cause:**
A. diabetes B. infection C. hypotension D. hypertension
29. _____, **memory and learning are impaired among heavy users of marijuana.**
A. Retention B. Environment C. Balance D. Attention
30. **Studies indicate that marijuana is used to avoid dealing with their:**
A. difficulties B. parents C. co-workers D. job E. friends
31. _____ **is the legal process of reducing the penalty for a behavior.**
A. service B. decriminalization C. prosecution D. avoidance
32. **THC has been found to reduce intraocular pressure of _____.**
A. blindness B. detached retina C. glaucoma D. hypertension
33. **THC has been proven somewhat effective for some people as a(an):**
A. antibiotic B. depressant C. stimulant D. hypotensive E. antiemetic

Chapter VI

34. _____ **is one of the most powerfully addictive drugs of abuse.**
A. THC B. marijuana C. heroin D. morphine E. cocaine
35. **The number of cocaine-related ER incidents was highest for persons aged:**
A. 35+ B. 25+ C. 20+ D. 18-20 E. Less than 20
36. **This mixture of cocaine and heroin is referred to as a:**
A. freebase B. speedball C. crack cocaine D. basuco
37. **Mixing cocaine and alcohol for consumption forms a third, very dangerous substance called:**

A. basuco B. cocaethylene C. freebase D. dopamine E. serotonin

38. _____ cocaine treatment can be successful; from 30% to 90% of abusers remaining in this type of treatment program cease cocaine use.

A. inpatient B. residential C. outpatient D. aversion

Chapter VII

39. Psychedelics tend to distort the user's perception of objective:

A. illusions B. hallucinations C. motion D. reality

40. A psychological hazard (of the psychoactives) is the _____ reaction.

A. flashback B. biological C. stress D. euphoria E. mood

41. Using LSD today involves consuming powder pellets called:

A. windowpanes B. blotter C. units D. cubes E. microdots

42. Physical effects of LSD include dilated pupils, hyperthermia, and:

A. bradycardia B. hypotension C. drowsiness D. tremors

43. _____ is the major psychoactive ingredient of the peyote cactus.

A. LSD B. Psilocybin C. Mescaline D. PCP E. MDA

44. MDMA, methylenedioxyamphetamine is commonly known as:

A. LSD B. ecstasy C. Angel dust D. mace E. mushrooms

45. Phencyclidine was developed in 1959 as an anesthetic, later used as a:

A. horse tranquilizer B. local anesthesia C. anti-anxiety drug

46. Patients on PCP often became agitated, delusional, and:

A. uncooperative B. calm C. drowsy D. jaundice E. irrational

47. The victim of PCP overdose may experience muscle incoordination, vomiting, skin flushing, noticeable perspiration and:

A. jaundice B. psychotic episodes C. anti-social behavior

Chapter VIII

48. Inhalants are breathable chemical vapors that produce _____ effects.

A. medical B. sedative C. psychoactive D. stimulating

49. Examples of solvents are: paint thinners, degreasers, and:

A. gasoline B. rubber cement C. toluene D. anti-freeze

- 50. The first cases of volatile substance abuse appeared in:**
A. 1891 B. 1951 C. 1990 D. 1880 E. 1900
- 51. Non-therapeutic methods of inhalation include inhaling from an open container and:**
A. spray into mouth B. filling a bag C. spray into nose
- 52. Continuous inhalation of vapors will eventually result in loss of:**
A. control B. bowel function C. consciousness D. equilibrium
- 53. High concentrations of inhalants also cause death from:**
A. toxicity B. acidosis C. suffocation D. alkalosis

Chapter IX

- 54. A designer drug is an analog, that is similar (to another drug of abuse) in structure and _____.**
A. design B. color C. price D. function E. effect
- 55. Control of these new designer drugs is now strictly _____.**
A. priced B. controlled C. sold D. legal E. tested
- 56. Use of designer drugs presents some major health risks, such as:**
A. overdose B. nausea C. vomiting D. over-stimulation
- 57. Without any quality control, designer drugs are often sold on the street contaminated with:**
A. dirt B. lidocaine C. other drugs D. impurities E. heroin
- 58. Fentanyl analogs are marketed as potent _____ alternatives.**
A. heroin B. analgesic C. LSD D. PCP E. amphetamine
- 59. "China White" is an analog for which common, medically approved drug?**
A. Fentanyl B. Demerol C. both Fentanyl & Demerol D. PCP

Chapter X

- 60. Cigarette smoking has been the most popular way of taking:**
A. tranquilizers B. nicotine C. marijuana D. cocaine
- 61. Nicotine is both a transient stimulant and a:**
A. amphetamine B. vasodilator C. depressant D. sedative
- 62. Pregnant women who smoke cigarettes run an increased risk of having:**

A. hypertension B. nausea C. premature infants D. overweight infants

63. Research suggests that smoking cessation should be a _____ process.

A. rapid B. withdrawal C. gradual D. psychological

64. Anabolic steroids are synthetic derivatives of the male hormone:

A. testosterone B. anaboloid C. androgen D. TST E. HGH

65. Anabolic steroids produce increases in lean muscle mass and:

A. strength B. bulk C. definition D. muscle tissue

66. Major side effects of anabolic steroids are liver tumors and:

A. hypotension B. hypertension C. diaphoresis D. enuresis

Chapter XI

67. The most frequent users of OTC drugs tends to be white, middle-class:

A. men B. women C. children D. adults E. elderly

68. Elderly women are far more likely to self-medicate with:

A. narcotics B. analgesics C. antiemetics D. prescriptions E. OTC drugs

69. The continuing demand for OTC drugs reflects a national ethic of impatience and of insistence on (a)an:

A. cheaper drug B. effective drug C. lasting cure D. instant fix

70. Drug misuse involves taking medications in excess of recommended:

A. time interval B. label directions C. dose D. a, b, & c

71. Some OTC drugs may cause kidney or liver damage that have:

A. no symptoms B. lasting symptoms C. severe symptoms D. jaundice

72. _____ are most susceptible to adverse reactions to OTC analgesics.

A. adults B. infants & children C. elderly D. women E. men

73. Phenylpropanolamine, PPA is a mild stimulant as well as a:

A. decongestant B. antidepressant C. analgesic D. antipyretic

74. Most OTC sleep aids now contain _____ as the main ingredient.

A. Nembutal B. Benadryl C. Benzocaine D. Ibuprofen E. Aspirin

75. Most OTC stimulants are composed primarily of:

A. amphetamine B. ephedrine C. benzocaine D. Benadryl E. caffeine

76. Overdose with caffeine is possible, resulting in mood changes and:

A. depression B. backache C. insomnia D. dilated pupils

Chapter XII

- 77. One of the most significant considerations in substance abuse is the:**
A. person B. nurse C. type of drug D. diverse populations
- 78. There are many psychosocial factors that affect treatment, these are:**
A. depression B. stress C. family issues D. a,b,&c
- 79. Treatment of drug abuse today is progressing toward a _____ approach.**
A. inpatient B. outpatient C. medical D. multi-disciplinary
- 80. Treatment today is also focusing on identifying the _____ individual.**
A. dependent B. adolescent C. elderly D. adult E. abused
- 81. The _____ is still a very important part of the treatment process.**
A. assessment B. testing C. family D. social aspect
- 82. Drug and alcohol abuse are medical problems that respond to:**
A. sympathy B. medications C. therapy D. medical treatment
- 83. About _____ percent of people who need treatment can't get it.**
A. 5% B. 10% C. 15% D. 20% E. 30%
- 84. _____ is usually the first step in the treatment of substance abuse.**
A. imprisonment B. detoxification C. medication D. nutrition
- 85. Most inpatient programs include group therapy, family therapy, and:**
A. outpatient B. drug education C. drug therapy D. equine-therapy
- 86. Inpatient programs almost always include some type of aftercare or:**
A. drug therapy B. psychotherapy C. follow-up D. day-care
- 87. Outpatient treatment is a structured program which usually involves:**
A. drug therapy B. long-term treatment C. day-care treatment
- 88. Relapse is defined as a return to drug use after the patient has:**
A. gone into treatment B. tried drugs C. changed drugs D. stopped
- 89. The nurse should carefully obtain a detailed history from the patient in order to discover any other diagnoses that could affect _____.**
A. treatment B. payment C. admission D. his health

Chapter XIII

90. In 1982 the ANA adopted a policy that treatment be offered to the:
A. nursing assistant B. staff nurse C. impaired nurse
91. Indicators of increased risk for substance abuse include:
A. family history B. pregnancy C. friend is addicted
92. The Johnsonian Intervention group includes the employee's:
A. spouse B. children C. friends D. employer E. a,b,c,&d
93. The Peer Intervention model includes:
A. recovering spouse B. children C. employer D. recovering nurse
94. Employee-related intervention includes the employee _____ person.
A. personnel B. staff C. assistance D. mediator E. security
95. Guidelines for intervention includes confronting the nurse in a kind,;
A. caring manner B. yet harsh manner C. disciplinary manner
96. Nurses have been successfully treated in both inpatient and:
A. day-care centers B. outpatient C. peer setting D. prison program
97. Federal law specifies that drug dependent individuals are _____ and cannot be discriminated against.
A. rehabilitated B. handicapped C. recovering D. diseased
98. Some employers will allow the recovering nurse to work in their former nursing unit, but with _____.
A. leg monitor B. a police officer C. stipulations D. a supervisor
99. The state board of nursing decides on a disciplinary action based on violation of the _____.
A. state law B. hospital policy C. federal law D. nurse practice act
100. Nurses with substance abuse problems can enlist the help of the:
A. State Peer Assistance Program B. allow the problem to get worse