

**Human Behavior Course
2004**

Substance Use Disorders

**Harry Holloway, MD
COL, MC, USA (RET)
Professor of Psychiatry
Uniformed Services University**

HUMAN BEHAVIOR COURSE 2004
SUBSTANCE USE DISORDERS - LECTURE SLIDES

LEARNING OBJECTIVES AND STUDY QUESTIONS FOR DISCUSSION.
To be distributed.

Slide 1

**SUBSTANCE RELATED
DISORDERS**

**Read: Chapter 12 in Cohen, Theory
and Practice of Psychiatry**

Harry C. Holloway MD
**Professor of Psychiatry and
Neuroscience**

Learning Objectives

- Know the “gestalt DSM criteria” for each of the basic disorders covered in this lecture.
- Describe the bio-psycho-social risk factors, prognostic factors, and epidemiology of each disorder.
- Be prepared to initial collection of appropriate data about medically significant substance use.
- Introduction to the medical/psychiatry management of these disorders.

Learning Methods

- Read and know the material in your text,
- Supplement this with the materials from this lecture,
- Seek continuing references from the medical and psychiatric literature,
- Prepare yourselves to learn from your clinical experience.

Study

- **What are drug and alcohol:**
 - **Intoxication,**
 - **Abuse,**
 - **Dependence, &**
 - **Withdrawal ?**

Study

- **What are the performance, medical & psychiatric consequences of substance misuse & dependency? (Special importance for the military?)**
- **What are the bio-psycho-social mechanisms that determine risk of substance misuse and dependency?**
- **What are the relationship of these problems to medical & surgical disorders?**

Legal vs. Illegal vs. Stigma

- **There is no scientific or biomedical distinction between illegal drugs such as heroin and cocaine and legal drugs such as alcohol and nicotine when one is discussing a dependency or “addiction”.**
- **Legal and illegal categories has a historical and social basis rather than a medical one .**

Addiction and dependency

- **The core features of addiction or dependency are compulsive drug use and loss of control over use despite serious negative consequences.**
- **Frequently but not always associated with withdrawal syndrome as distinct from rebound symptoms.**

Complex diagnostic & therapeutic challenges

- **Concurrent alcohol and poly-drug misuse is common.**
- **Lifetime prevalence of major psychiatric disorders co-occurring with substance use disorders has been estimated to be as high as 70%, e.g.**
 - Depression,
 - Bipolar Disorder,
 - Anxiety Disorders,
 - Schizophrenic Disorder
 - Conduct Disorder,
 - Antisocial Personality Disorder, &
 - Attention Deficit Disorder.

Co-Morbid medical, surgical and psychiatric conditions for example

- **Psychiatric disorder**
 - Bipolar disorder
 - Schizophrenic disorder
 - Anxiety disorders (e.g. PTSD)
 - Character & behavior disorders
- **Physical trauma and burns**
- **Interpersonal violence and abuse**
- **A variety of chronic medical conditions e.g. gastritis, cirrhosis, hypertension, & various carcinoma**

Cause of drug abuse

WE DON'T KNOW

- We can examine the bio-psycho-social factors that influence the risk of alcohol and substance abuse.
- Appreciate neurobiological mechanisms and consider how these interact with behavioral, psychological and social factors in the pathogenesis of acute and chronic disorders.

Parameters of risk

- Bio:
 - Genetic/genomic factors
 - Drug's reinforcement properties
 - Tolerance
 - Addictive properties
- Psycho:
 - Other psychiatric illness
 - Risk taking
 - Personality - extroversion
- Social:
 - Family model of drug use
 - Religious and cultural beliefs and practices
 - Peer influence on drug use, & abuse
 - Availability & cost

Risk factors for substance abuse & dependency

- **The best-established risk factors for substance abuse and dependency are family history and male sex.**
- **Twin and pedigree studies make it clear that risk of substance use disorders is genetically complex (i.e., multiple genes and non-genetic factors interact to produce risk).**

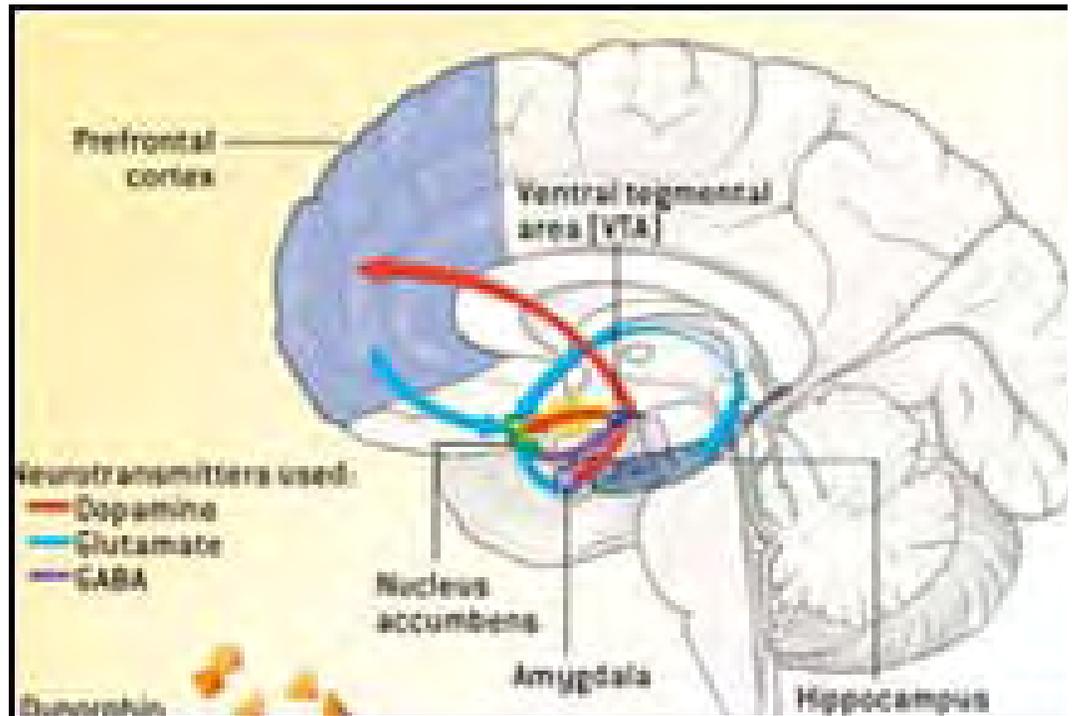
Risk factors for substance abuse & dependency

- **Drug's psycho-pharmacological properties,**
- **Availability and cost,**
- **Assessment of risk,**
- **Peer pressure,**
- **Parental drug use models and direction,**
- **Demographic factors (e.g. age) &**
- **Popular culture**

Biology of addiction

Eric J. Nestler and Robert C. Malenka The Addicted Brain Scientific American March 04

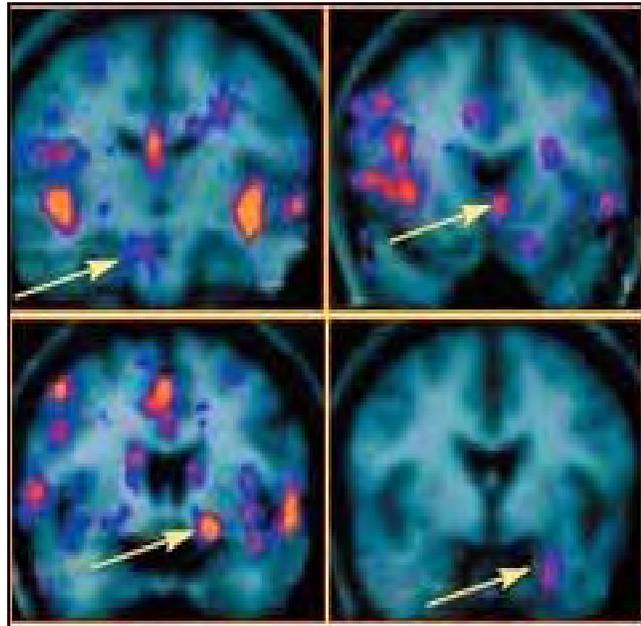
- Nicotine induced VTA cells to release dopamine into nucleus accumbens,
- Cocaine and other stimulants temporarily disable the transporter protein that returns the neurotransmitter to the VTA neuron terminals, &
- Alcohol, and opiates like heroin bind to neurons in the VTA that normally shut down the dopamine-producing VTA neurons.
- Through different mechanisms leaving excess dopamine to act on the nucleus accumbens.



Biology of Addiction: Examples of brain areas that play roles in development of drug addiction

- **Amygdala** assesses whether an experience is pleasurable or aversive
- **Dopamine pathway** from the **VTA** to the **nucleus accumbens** is critical for addiction
 - These acts as a rheostat of reward: it "tells" the other brain centers how rewarding an activity

- **Ventral tegmental area (VTA)**
- **Nucleus accumbens**
- **Sublenticular extended amygdala**
- **Amygdala**



Mechanisms of tolerance

- **The most significant aspects of tolerance to psychoactive substances have a pharmacodynamic basis. (The focus in this presentation.)**
- **There are also pharmacokinetic parameters. (e.g. induction of liver enzyme systems)**

Two Mechanisms For Tolerance

Eric J. Nestler and Robert C. Malenka The Addicted Brain Scientific American March 04

- **CREB (cAMP response element-binding protein). a transcription factor, a protein regulates the expression, or activity, of genes and the overall behavior of nerve cells. When drugs of abuse raise the dopamine concentrations in the nucleus accumbens, inducing dopamine-responsive cells to increase production of cyclic AMP (cAMP), which in turn activates CREB. After CREB is switched on, it binds to a specific set of genes, triggering production of the proteins those genes encode. target genes, that encode for proteins that then dampen the reward circuitry.**
- **CREB controls the production of dynorphin ... synthesized by a subset of neurons in the nucleus accumbens that loop back and inhibit neurons in the VTA inducing tolerance by making the same-old dose of drug less rewarding.**

Biology Of Relapse to Addiction

- Responsiveness of the VTA and nucleus accumbens to glutamate altered for days
- Changes in sensitivity to glutamate in the reward pathway enhance both the release of dopamine from the VTA promoting CREB and delta FosB activity. Drugs of abuse influence the shuttling of glutamate receptors in the reward pathway. Some findings suggest that they can also influence the synthesis of certain glutamate receptors.
- With prolonged abstinence, changes in delta FosB activity and glutamate signaling predominate. These actions may draw an addict back for more--by increasing sensitivity to the drug's effects if used again. Also eliciting powerful responses to memories of past highs and to cues that bring those memories to mind.

• Eric J. Nestler and Robert C. Malenka The Addicted Brain Scientific American March 04

Effects of alcohol

- Ethanol binds to postsynaptic GABA(A) receptors (inhibitory neurons)
- activation of these receptors results in opening of chloride channels, thus causing chloride influx, which hyperpolarizes the cell. The decrease in the firing rate of neurons produces sedation.

Delirium Tremens: Pathophysiology

Excessive CNS excitability during abstinence from alcohol is related to ETOH effect on number and function of brain receptors. E.G. after chronic ETOH use withdrawal results in:

- Loss of GABA-A receptor stimulation causes a reduction in chloride flux and is associated with tremors, diaphoresis,
- After chronic suppression of excitatory neurotransmission there is increased synthesis of excitatory neurotransmitters (e.g. norepinephrine, serotonin, and dopamine) following drug withdrawal tachycardia, anxiety, and seizures.
- EtOH inhibits *N*-methyl *D*-aspartate (NMDA) (glutamate-subtype) receptors, withdrawal of inhibition of the NMDA receptors may also lead to seizures and delirium.

Delirium Tremens

- Occurs in 5% of patients with alcohol withdrawal
- the current mortality for patients with DTs ranges from 5-15%.
- *Most common Rx Benzodiazepines* -- By acting on the GABA receptor, benzodiazepines produce a cross-tolerance to alcohol, thus reducing the hemodynamic and peripheral symptoms of alcohol withdrawal.
- Clonidine and beta-blockers have been used to treat the hyperadrenergic state of alcohol withdrawal.

Slide 24

Critical issues in military, community and preventative psychiatry

- **Alcohol Abuse and Dependency Disorders**
- **Substance Abuse and Dependency Disorders**

Slide 25

Substance-induced Disorders

- Substance Intoxication
- Substance Abuse
- Substance Dependence
- Substance Withdrawal
- Substance Intoxication Delirium
- Substance Withdrawal Delirium

Substance-induced Disorders

Specify if intoxication or withdrawal
induced

- Substance-Induced Psychotic Disorder
- Substance-Induced Mood Disorder
- Substance-Induced Anxiety Disorder
- Substance-Induced Sexual Dysfunction
- Substance-Induced Sleep Disorder

Substance-induced Disorders

- **Substance-Induced Persisting Dementia**
- **Substance-Induced Persisting Amnesic Disorder**
- **Hallucinogen Persisting Perception Disorder (Flashbacks)**

Historical epidemiology military drug abuse

ERA	DRUG ABUSED
<ul style="list-style-type: none"> • 19th Century • War of Philippine Insurrection 	ethanol opiates
<ul style="list-style-type: none"> • Canal Zone 06-30's • WWI 	cannabis opiate use claimed
<ul style="list-style-type: none"> • China in 20's 	cocaine

Historical epidemiology military drug abuse

ERA	DRUG abused
<ul style="list-style-type: none"> • WWII 	minor local problems
<ul style="list-style-type: none"> • Japan (45-50) 	methamphetamine use
<ul style="list-style-type: none"> • Korea(50-54) (URINALYSIS-BEGUN) 	heroin epidemic
<ul style="list-style-type: none"> • NE Asia(54-80) 	endemic poly-drug use
<ul style="list-style-type: none"> • SE Asia(64-69) 	poly-drug use and some heroin use

HISTORICAL EPIDEMIOLOGY MILITARY DRUG ABUSE

- **Global 60's poly-drugs epidemic –**
 - MJ + opioids + stimulants
 - No unique epidemic in Vietnam
 - Combat goes down & drug use goes up
 - Drug urinalysis becomes standard tool in 1971
 - Drug and alcohol programs are standard.
- **Epidemic drug abuse continues ending in early 1980s**

Historical epidemiology military drug abuse

- **All epidemic illicit drug use occurs in the context of endemic alcohol abuse & dependency & poly-drug abuse is common.**
- **Alcohol abuse exceeds that of matched civilian population.**
- **Service people obtain drugs from friends and usual commercial establishments near installations or from civilian friends.**

HISTORICAL EPIDEMIOLOGY MILITARY DRUG ABUSE – 1971- 1973

- **Korea had high rates of barbiturate use and higher hospitalization rates than the Vietnam theater**
- **Ft. Lee had heroin use rate comparable to Vietnam**
- **Marijuana used with alcohol 70%+ use with other drugs common**
- **PCP used by approx. 12% at some US bases**

Historical epidemiology military drug abuse

- **Vietnam 1972 - 43% E1-E5 heroin users - no relationship to combat experience noted**
- **21% E1-E4 addicted**
- **Upon return to us 95% of user stopped use of opiate drugs &**
- **Of heaviest users - 9% continued heroin use after return civil life.**
- **Heavy alcohol use & depression in heroin users who stopped.**

Historical epidemiology military drug abuse

- **Pandemic drug abuse through out the military from 1969 to 1980 with varying attention to the problem after 1973.**
- **Wide spread endemic misuse of alcohol is defined as a military medical and command concern.**
- **Fundamental changes in selection and organization in navy, marine, and army (Problem least in USAF).**

HISTORICAL EPIDEMIOLOGY MILITARY DRUG ABUSE

- **1974 B-hepatitis in 1 in 5 E1-E5**
- **Incidence rose from 1/1000 in the late 1960's 27/1000 in march 1974 in us forces in Europe**
- **(Hepatitis C risk ?)**
- **Excessive cost and injury 2° to the related accidents continue.**
- **Crashes of air craft with drug positives in crew in 1970 show continuing risks.**

Military drug abuse: factors influencing military programs

- **Congressional interest**
- **Presidential interest**
- **Allies**
- **Commander's values**
- **Medical commitment**

HISTORICAL EPIDEMIOLOGY MILITARY DRUG ABUSE

- **Alcohol recognized as disease causing and as threatening military performance.**
- **Alcohol and drug abuse prevention programs that included treatment were established.**

Drug and alcohol use: performance consequences

- **Critical issue for the military**
- **Critical issue for industrial base**
- **Legal and illegal drug's side effects**
- **Can drugs improve performance?**
- **How do drugs lead to performance "short fall"?**

Historical epidemiology military drug abuse

- **Command moved from a passive to active stance.**
- **Law enforcement, drug urinalysis, drinking policies, were better coordinated.**
- **Higher induction standards**
- **Users could self identify and be treated but continued use not tolerated.**

HISTORICAL EPIDEMIOLOGY MILITARY DRUG ABUSE

- **Attention to command presence with troops and sailors on duty and off .**
- **Attempt to stabilize residence in group to allow**
- **Cohesion - with peers and with mission leaders in training and deployment.**

Epidemiology military drug abuse

- **Being in the service puts a person at increased risk for substance use and abuse (Least true for the USAF).**
- **Younger males less gifted males are at greatest risk.**
- **Slightly higher risk for Caucasian and Hispanic individuals.**
- **Less risk for women.**

Epidemiology military drug abuse

- **Risk for young males was increased by living in the barracks,**
- **Command presence decreased risk,**
- **Supply was principally from other users &**
- **Gateway drugs were tobacco, alcohol and marijuana.**

Epidemiology military drug abuse

- **Early, the user, abuser & dependent who continued to perform well.**
- **Usually, the family and off duty personal relationships suffered first.**
- **Used by those performing well assures a profitable drug market.**
- **Only by reducing multiple risk factors the causes of drug and alcohol abuse could be reduced.**

Military drug abuse: prevention

- **Reduce “at risk” population size**
 - Reduce users at induction
 - Encourage long enlistments
 - Reward commitment to future commitments (e.g. Offer payment for college as incentive)
 - Encourage marriage.
- **Drug urinalysis used to monitor at induction and to find cases.**
- **Command presence in barracks increased.**

Military drug abuse: prevention

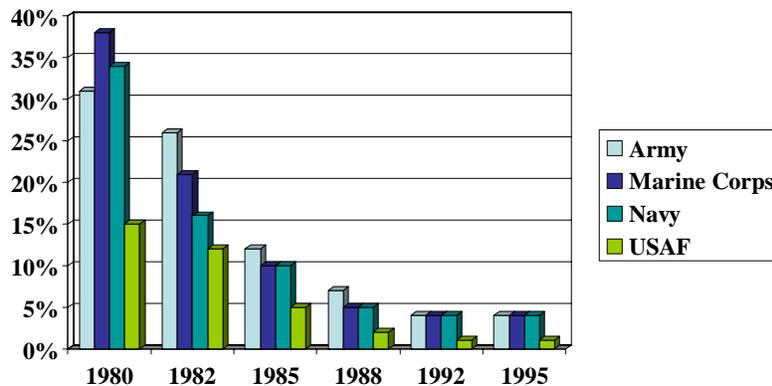
- **Increased unit cohesion with command/mission focus.**
- **The command, the unit, the medical system & the individual are critical to making it work. It’s a team effort!**
- **Monitor success with repeated surveys &**
- **Keep the problem & its solution visible.**

EPIDEMIOLOGY MILITARY DRUG ABUSE

- Law enforcement could identify agents and their users but could not control access to intoxicant; their role was critical.
- Physician could play a critical role by helping those with problems seek treatment – could not reduce incidence.
- Command action the key,
- Coerced treatment works.

Illicit drug use in last 30 days by service by year

Data from 1985 DOD Survey of Health Related Behaviors Among Military Personnel



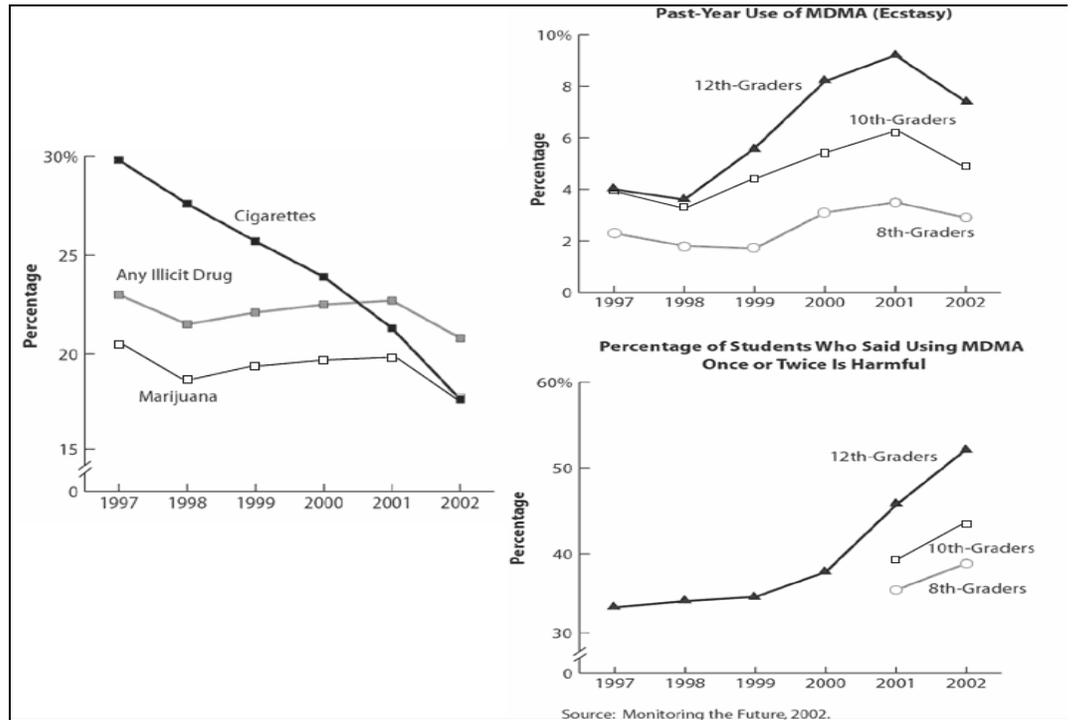
WHAT MADE THE DIFFERENCE?

**THESE ARE SOME OF THE
THINGS**

- **Decrease of denial at the top**
- **Smarter, more educated service people**
- **Older, more officers**
- **More married force**
- **More family support**
- **Provide help**
- **No tolerance of abuse**
- **More women on active duty**
- **More support for healthier life style**
- **Better leadership**
- **Treatment available for motivated**

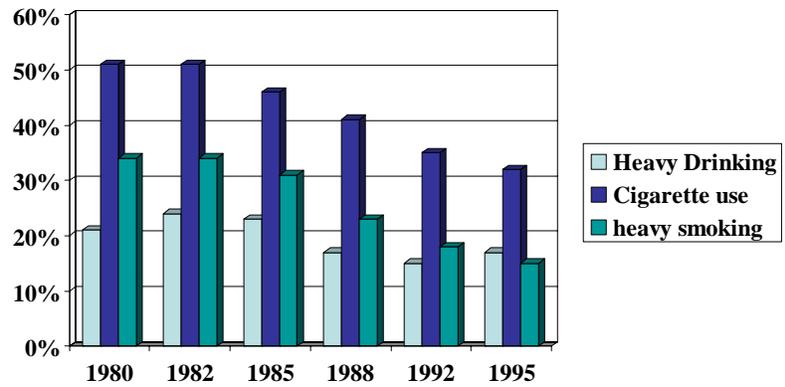
SOME OPEN ISSUES

- The reserve not addressed in same detail
- Under-funded programs
- Conflicts concerning commitment to encourage unit cohesion
- New drugs on the scene for younger people in the services for example Ecstasy (methylenedioxy-n-methylamphetamine - MDMA)



Heavy drinking & cigarette use in past 30 days

Data from 1985 DOD Survey of Health Related Behaviors Among Military Personnel



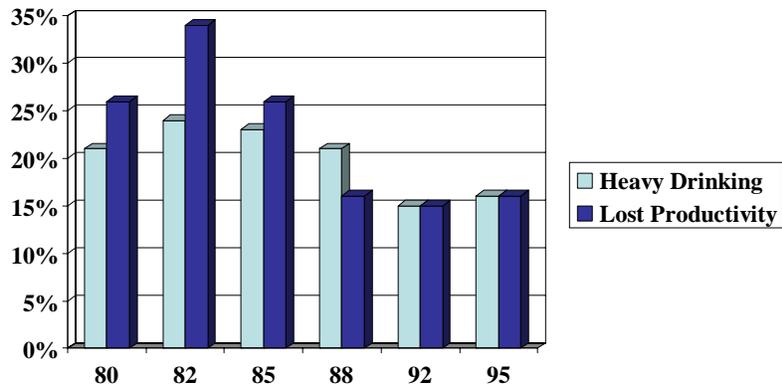
Alcohol use - consequences

Data from 1985 DOD Survey of Health Related Behaviors Among Military Personnel

DRINKING LEVEL	SERIOUS CONSEQUENCES
Infrequent/light	04.3
Moderate	03.7
Moderate heavy	07.8*
Heavy	23.8 **

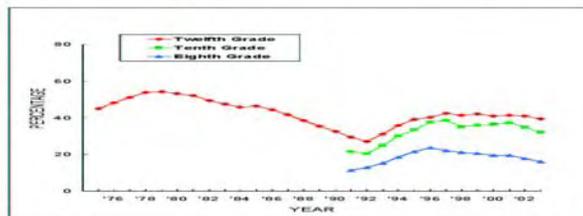
Last 12 months: heavy drinking & lost productivity 2° to alcohol

Data from 1985 DOD Survey of Health Related Behaviors Among Military Personnel



Over all drug abuse in high school students is stable or trending slightly downward

FIGURE 2
Trends in Annual Prevalence of an Illicit Drug Use Index
Eighth, Tenth, and Twelfth Graders



But

- **Heroin is very cheap on city streets and in non-metropolitan areas,**
- **It is relatively pure, &**
- **Widely available.**
- **Stay vigilant.**

Denial of abuse and dependency is a major problem

- **Abusing & addicted patients are in denial concerning the consequence chosen substance.**
- **Patients who are dependent on drugs, including alcohol and tobacco, are frequently ashamed of their inability to control their behavior.**
- **Many abusing & addicted patients deny significant use or loss of control.**
- **They become defensive or overtly angry when pressed, and**
- **Others, including physicians and loved ones, support the denial of these patients**

Clinical evaluation

- **General Questions to Be Asked of All Patients**
 - Do you drink alcohol (ever or currently)?
 - Do you have a family history of alcoholism?
- **Questions Concerning Quantity and Frequency of Alcohol Use**
 - What type(s) of alcohol (beer, wine, spirits) do you use? How often do you drink?
 - How much do you usually drink on a typical drinking day?
 - Do you ever drink more (if so, how much) than your usual amount?

Clinical evaluation 2

- **Screen for alcohol problems,**
- **Screen for other drug problems,**
- **Educate about risky drinking, drug abuse and its consequences, and**
- **Perform a detailed alcohol and drug use history for all patients who may have problem drinking or a drug problem.**

Drugs use history

- Drug or drugs of choice
- Subjective effect of drug
- Frequency, amount, and method of use (route of administration)
- Usual and preferred social occasion for use
- Problems associated with drug use (e.G. Arrests or injuries)
- Detoxifications,
- Concomitant use of other substances especially alcohol
- Date and age of first use, and
- Time interval from last use.

CAGE Screen for Dx alcoholism

Have you ever:

- C CUT BACK on your drinking?
- A felt ANNOYED by people criticizing your drinking?
- G felt GUILTY or bad about your drinking?
- E had a morning EYEOPENER to relieve a hangover or nerves?

CAGE Screen for Dx alcoholism

- **Cage sensitivity ranges from 60% to 95%,**
- **Cage specificity ranges from 40% to 95%.**
- **It is poor in detecting women with alcohol problem and is**
- **Not as good a detector with elderly people.**
- **It is effective but flawed.**

Added to the CAGE to identify risk in women and older drinkers

1. "Do you ever carry an alcoholic beverage in your purse?"
2. "How has your drinking changed during pregnancies?"
3. "What effect do you feel your drinking has had on your children?"

Added to the CAGE to identify risk in women and older drinkers

- 4. Ask elderly women (and you can profitably ask older men), "did you find your drinking increased after someone close to you died? (A yes may indicate a cultural norm in the patient's group)**
- 5. Does alcohol make you sleepy so that you often fall asleep in your chair?"**

Alcohol use disorder identification test (AUDIT)

- See hand out for example of AUDIT**
- Score of eight or more provides sensitive test for the identification of at risk drinkers of alcohol.**
- The Health Evaluation and Assessment Review (HEARS) for service people includes a AUDIT**

For at-risk drinkers

- **Assess patients for alcohol-related medical, psychiatric, and behavioral problems**
- **Advise nondependent at-risk problem drinkers to decrease their alcohol consumption to an amount below at-risk levels (e.g., brief intervention therapy)**
- **Advise those at-risk drinkers who cannot decrease their alcohol use to recommended levels to abstain from alcohol**
- **Monitor and assess drinking behavior over time**

For alcohol-dependent patients

- Advise alcohol-dependent drinkers to abstain from alcohol;
- Refer them to appropriate alcohol treatment services for detoxification (if needed) and prevention of relapse;
- Identify and manage alcohol-related medical, psychiatric, and behavioral problems (Management of co-morbidly is critical);
- Monitor patients in recovery to promote abstinence and assess for relapse.

Acute treatment challenges

- **Opiate overdoses – respiratory suppression (ventilation & naloxone),**
- **Stimulants (e.G. Cocaine methamphetamine and amphetamine derivatives) - irritability, paranoia, and assaultiveness, as well as high fever and seizures,**
- **Phencyclidine (angel dust), ketamine, and related drugs assaultive behavior and psychotic symptoms,**
- **Alcohol & sedative intoxication &**
- **Adverse reactions to LSD and other hallucinogens.**

TREATMENT OF SUBSTANCE ABUSE

- **12 step programs with goal of alcohol/drug free life (E.G. AA, some faith based programs, Synanon and others)**
- **Functional recovery with possible pharmacological assistance or maintenance**

TREATMENT OF SUBSTANCE ABUSE

- **Relapse avoidance** (provides support for continuing alcohol remission, naltrexon, behavioral therapy)
- **Drug substitution & maintenance** (e.g. Methadone. LAAM maintenance)
- **Treatment of co-morbid condition and complications**
- **Identification, prevention & treatment of medical complications** (e.g. Needle exchange)

Brief interventions

- **Motivating patients to change their behavior and lifestyles;**
- **Teaching patients coping skills to avoid alcohol use;**
- **Encouraging patients to develop activities that do not reinforce drinking and that reward abstinence;**
- **Helping patients to improve interpersonal interactions; and**
- **Promoting compliance with pharmacotherapy and medical care.**

Evidence based pharmacological treatments

- Naltrexone decreased alcohol-induced dopamine response in a dose-dependent manner and
- Reduces the pleasurable effects associated with alcohol ingestion and
- Patients consumed less alcohol with good compliance on 50 (mg/day).
- 1/3 relapse in 12 wks & those who do not relapse likely to be abstinent.

Evidence based pharmacological treatments

- **Methadone Maintenance (may use LAAM)**
- **Opioid antagonists (Naltrexone) ?**
- **Buprenorphine (Subutex) (mu agonist & kappa antagonist) followed by Buprenorphine + Naloxone (Suboxone) maintenance.**
- **Community verses Pt. Acceptance ?**

Evidence based pharmacological treatments

- **Acamprosate affects two transmitter systems - glutamate system and the gamma-aminobutyric acid system**
- **Decreases voluntary alcohol intake with no effects on food and water consumption**
- **Patients on acamprosate experienced higher abstinence rates in 10 of the studies, those who relapse drink less**
- **Currently being studied in major trials in US finding indicate significantly higher rates of abstinence and treatment attendance than those on the placebo.**

Drug	Starting Dose	Maintenance Dose	Interval	Comments
Disulfiram	500 mg	125-500 mg	Every morning for 1-2 wk	Requires careful patient education about disulfiram-alcohol interaction [lack convincing efficacy studies]
Naltrexone	50 mg	50 mg	Once a day	Contraindicated in patients with severe liver disease; side effects generally infrequent, mild, and self-limited (e.g., nausea)
Acamprosate	1.3-2.0 g	-	Every day in three divided doses	Not approved by the FDA; side effects generally infrequent, mild, and self-limited (e.g., diarrhea)

Evidence based pharmacological treatments

- **SSRI , do they help the non-depressed**
- **Disulfiram,s usefulness not demonstrated in an evidence based evaluation.**

TREATMENT OF SUBSTANCE ABUSE: OPIATES & VALUES

- **Religious & political values rather than data on efficacy dominate the regulation of Rx**
- **Drug free Rx favored politically**
- **For opiates methadone maintenance & needle replacement superior for harm reduction**
- **20% of the opiate addicted receive methadone maintenance.**

One method for approaching the Substance abuse and dependent patient:

**Provide excellent medical care
Establish yourself as the patient's physician friend and as such raise the issue of drinking as a health issue.**

Arrange a confrontation with the help of significant others - people who love and respect the patient.

This confrontation should be able to offer a pre-arranged treatment option or options.

If at first you don't succeed, try and try again.

Approach the patient with optimism and realism.

The critical step in treatment is the patient's decision that he/she must take charge of his/her life with the realization that it is a matter of life or death.

Inhalant Abuse – Risk factors

- **Economically disadvantaged youth (13-15)**
- **Younger users (e.g. eighth graders)**
- **Higher rates among Mexican, Indian, and Native American youth**
- **Nitrous oxide among medical personnel**

On-line sources

- National Institute on Alcohol Abuse and Alcoholism (<http://www.niaaa.nih.gov>)
- *National Institute on Drug Abuse* <http://www.nida.nih.gov>
- National Clearinghouse for Alcohol and Drug Information (<http://www.health.org>)
- Alcoholics Anonymous (<http://www.alcoholics-anonymous.org>)
- *The Substance Abuse and Mental Health Services Administration* <http://www.samhsa.gov>
- *The National Center on Addiction and Substance Abuse at Columbia University* <http://www.casacolumbia.org>

Don't forget the LRC for example

On line texts:

- **The Scientific American Text Book Of Medicine**
- **E-Medicine**

HUMAN BEHAVIOR COURSE 2004

ALCOHOL USE DISORDER IDENTIFICATION TEST (AUDIT)

1. How often do you have a drink containing alcohol?
 - NEVER...0
 - MONTHLY OR LESS...1
 - 2 OR 4 TIMES A MONTH...2
 - 2 OR 3 TIMES A WEEK...3
 - 4 OR MORE TIMES A WEEK...4

2. How many drinks containing alcohol do you have on a typical day when you are drinking?
 - 1 OR 2...0
 - 3 OR 4...1
 - 5 OR 6...2
 - 7 OR 8...3
 - 10 OR MORE...4

3. How often do you have six or more drinks on one occasion?
 - NEVER...0
 - LESS THAN MONTHLY...1
 - MONTHLY...2
 - WEEKLY...3
 - DAILY OR ALMOST DAILY...4

4. How often during the last year have you found that you were unable to stop drinking once you had started?
 - NEVER...0
 - LESS THAN MONTHLY...1
 - MONTHLY...2
 - WEEKLY...3
 - DAILY OR ALMOST DAILY...4

5. How often during the last year have you failed to do what was normally expected from you because of drinking?
 - NEVER...0
 - LESS THAN MONTHLY...1
 - MONTHLY...2
 - WEEKLY...3
 - DAILY OR ALMOST DAILY...4

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?
 - NEVER...0
 - LESS THAN MONTHLY...1
 - MONTHLY...2
 - WEEKLY...3
 - DAILY OR ALMOST DAILY...4

7. How often during the last year have you had a feeling of guilt or remorse after drinking?
 - NEVER...0
 - LESS THAN MONTHLY...1
 - MONTHLY...2
 - WEEKLY...3
 - DAILY OR ALMOST DAILY...4

8. How often during the last year have you been unable to remember what happened the night before because you had been drinking?
 - NEVER...0
 - LESS THAN MONTHLY...1
 - MONTHLY...2
 - WEEKLY...3
 - DAILY OR ALMOST DAILY...4

9. Have you or someone else been injured as a result of your drinking?
 - NEVER...0
 - YES, BUT NOT IN THE LAST YEAR...2
 - YES, DURING THE LAST YEAR...4

10. Has a relative, friend, or doctor or other health worker been concerned about your drinking or suggested you cut down?
 - NEVER...0
 - YES, BUT NOT IN THE LAST YEAR...2
 - YES, DURING THE LAST YEAR...4