The Clinical Presentation of Substance Abuse

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Alcoholism and Substance Abuse

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Focus

Alcoholism

Rather then cover every aspect of substance abuse, we're going to spend most of the time discussing 'alcoholism.' By the way, the word alcoholism isn't used in DSM, it would be called alcohol dependence.



A number of terms are used when we refer to substance disorders. The next slides go few a few terms we should be familiar with.

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Intoxication

- Reversible,
- Substance-specific
- physiological and behavioral changes
- due to recent exposure to a psychoactive substance.

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Tolerance

- The decline in potency
 - continued use– higher doses are needed for same effect.
- Receptor mediated
- Common

Physical Dependence

• The development of withdrawal symptoms once a drug is stopped.

Psychiatry makes this complicated: DSM uses the word "Dependence" to mean something different. Hence, the need for the adjective "physical."

physical dependence refers to a purely physical phenomena

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Withdrawal

- A physiological state
- Cessation/reduction in amount of drug
- Generally opposite of drug's normal effects.

People mistakenly associate physical dependence and tolerance with addiction. They certainly are associated but they aren't the same thing. Physical dependence and tolerance are physiologic phenomena, and they are likely to happen to anyone who uses a a medication capable of causing these phenomena.

Not everyone who gets physical dependence or tolerance is addicted. Conversely, it is possible to have an addiction without experiencing tolerance or withdrawal.

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Addiction

- Compulsion
- Psychic, rather than therapeutic, effects

DSM doesn't have a diagnosis of "addiction." this definition is from the World Health Organization who define addiction as being a compulsion to use a substance for its psychic rather than therapeutic effects.

By "compulsion" the WHO is stressing the behavioral nature of an addiction-a person who is addicted has lost control over their use of a substance. Addicts will describe using even when they don't want to, or when they know the Shouldn't (such as the person who drinks before going to the office.)

By psychic effects they mean getting high.

Slide 9 Other Terms

Alcoholism
DSM-related terms

Substance dependence
Substance Abuse

Here, I will be using the term "alcoholism" as being synonymous with addiction. The DSM-IV has avoided the words "addiction" and "alcoholism" and instead has chosen to use "dependence" and "abuse." This is somewhat confusing, as dependence usually connotes a physiological phenomenon. More on this later.



Alcoholism in particular and substance abuse in general are very common disorders and one of the more typical causes of hospitalization, emergency department visits and medical commodity,

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Some use: Alcohol: 90% Caffeine: 80% Tobacco 25% Illicit 37%

Nearly 2/3 of American adults occasionally drink. Drinkers tend to be young, prosperous, well educated and urban.





Per capita alcohol consumption by beverage type, United States, 1977–2000.In general the overall use of alcohol has declined. Most of this decline is due to the decrease in the use of hard liquor.

taken from NIAAA web site. original source: Source: Nephew, T.M.; Williams, G.D.; Yi, H.; Hoy, A.K.; Stinson, F.S.; and Dufour, M.C. Surveillance Report #62: Apparent Per Capita Alcohol Consumption: National, State, and Regional Trends, 1977–2000. Bethesda, MD: NIAAA, Division of Biometry and Epidemiology, Alcohol Epidemiologic Data System, August 2003.



Total per capita consumption in gallons of ethanol by State, United States, 2000.

Source: NIAAA web site. Original source: Nephew, T.M.; Williams, G.D.; Yi, H.; Hoy, A.K.; Stinson, F.S.; and Dufour, M.C. Surveillance Report #62: Apparent Per Capita Alcohol Consumption: National, State, and Regional Trends, 1977–2000. Bethesda, MD: NIAAA, Division of Biometry and Epidemiology, Alcohol Epidemiologic Data System, August 2003.

About 12% of Americans are heavy drinkers, and the Epidemiologic Catchment Area Study Found an almost 14% lifetime prevalence of alcohol abuse.

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Alcohol Dependence

Very common

ECA: ~14%
> 10 million Americans
Another 8 million "problem drinkers"
Only 3% "skid row"



Alcohol 13% Amphetamines 2% Cannabis 4% cocaine 0.2 % (1981) Hallucinogens 0.3% Opioids 0.7% Sedative/hypnotics (tranquilizers) 1.1%

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Overall, alcoholism is 4 times as common in men than women.

There are probably at least 2 types of alcohol dependence. One type is found in both genders, generally begins in adulthood, and is not necessarily associated with a family history of alcoholism (though other psychiatric disorders, such as depression and anxiety may be found). The second type begins earlier, often in adolescence, is primarily found in men, and has a strong familial association in the male line. The outcomes are often different in the two, with the first often being intermittent and having significant periods of sobriety, the second being more chronic and unremitting. About ³/₄ of alcoholics are in the 1st category.



Alcoholism usually begins between 16-30 years, and is on the younger side in men.

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Alcohol Dependence: Social Factors

- More common
- Rural
 Undereducated
- Low socioeconomic
- Less likely to drink
- More likely to abuse

In addition to these factors, it should be noted that alcoholism rates are high in certain countries (Russia, France, Ireland, Korea) and lower in others (China, Islamic nations).

Certain occupations are prone to alcoholism: waitpersons, bartenders, longshoremen and writers.

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Alcohol Dependence: Socioeconomics

Associated with

 Unstable marriages
 Increase risk divorce 3X
 Unstable work

Alcoholics don't just hurt themselves, they affect their families, friends and coworkers.

Slide 20	Alcohol Dependence: Medical Ramifications
	 20-50% hospital admissions May be unrecognized ~20% ER visits 80% of cirrhosis 33% of suicides

Alcohol is the 3rd leading cause of death in the US.





A lot is understood about the physiological of acute addictive phenomenon: tolerance and withdrawal are, of course, receptor effects, and is already covered in Dr. Swift's lecture. However, these acute phenomenon do not explain the craving and addictive behaviors, which may be occurring at a different level of the brain (perhaps dopamine). This may explain why, though intoxication and withdrawal phenomena are substance specific, the addictive behaviors are rather similar across different substances.

Slide 22 Etiology This is covered in Dr. Swift's lecture as well. I just want to emphasize that the more we learn about alcoholism and substance abuse the more we appreciate the role of genetics and other predisposing factors. There is a real mismatch between the way alcoholism is still perceived by society – as a moral failing, and how it really is.

Slide 23	Social Influences

Social influences clearly account for use of a substance (or lack of use for example people living in Islamic countries are less likely to ever drink, and this is presumably independent of any genetic factors.. Probably less in whether the person goes on to abuse.



DSM-IV has several substance related diagnoses. Here, we are going to concentrate on "dependence" and "abuse".

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Diagnosis
Substance Dependence
 Maladaptive pattern of substance use
 3 or more (1 year):
Tolerance
Withdrawal
larger amounts
Desire/Cut down
Time spent
Activities
Continued use

Though dependence is often used to connote a physiological effect of chronic drug use, here we can see that DSM is choosing to use this word to describe a combination of physiological effects, and behavioral effects. The behaviors include compulsive behaviors associated with drug use (using larger amounts than planned, continued use despite knowing it is bad for you) and psychosocial results of substance use (time spent on obtaining drug, neglect of other activities as a result of drug use).

Slide Diagnosis Substance Abuse

Maladaptive pattern

- >1 (1 year)
- recurrent use/failed obligations
 hazardous use
- Legal problems
- Continued use despite causing interpersonal or social problems.
- R/O: Substance dependence

Substance abuse is meant to convey a somewhat more minor disorder, in which there is a misuse or maladaptive use of a substance, with some impairment or distress as a result of the use. However, the use hasn't reached the point of the pattern of behaviors necessary to call it dependence.

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Other Diagnoses

Substance Intoxication

· Substance Withdrawal

Substance Intoxication Reversible, substance-specific Maladaptive behaviors/psychological changes Not other medical/mental condition

Substance Withdrawal Substance-specific syndrome: cessation/reduction Distress/impairment Not other medical/mental condition.

Slide	Diagnoses:	
28	Other substances	
	 Alcohol Amphetamines and related Caffeine Cannabis Cocaine Hallucinogens Inhalants Nicotine Opioids Phencyclidine and related Sedatives Polysubstance Abuse (∞ 3) Other 	

A number of substances are considered potential objects of addiction. Here are the "official ones" listed by DSM.

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Diagnosis

Other Schemas for Alcohol
 – Greek letters
 – Typologies

It should be noted that there are various patterns of alcohol use, ranging from rare but problematic drinking to constant daily drinking without obvious intoxication (perhaps more common in France) to the out of control drinking behaviors we associate with American alcoholics. These have been grouped into schematic categories, some using Greek letters to designate, though we won't concentrate on that here, except to acknowledge that not all alcoholics are alike, and we, as physicians, shouldn't dismiss a drinker's behavior simply because he doesn't fit some image we have of the "skid-row" alcoholic.

For the record though: The so-called "alpha" pattern is one of continual excessive use when under stress, with no dependence and no loss of control. The "beta" pattern is one of heavy social drinking with physical complications, such as cirrhosis, but no dependence. The "delta" pattern is that of heavy daily drinking, but no loss of control. This is more common type in Europe, for example in France. The "epsilon" pattern is defined as binge drinking, and the "gamma" pattern is that of physical dependence with loss of control. This is a more common type in US.

Diagnosis

- CAGE Questionnaire • Have you ever felt the need to Cut down on drinking
 - Have you ever felt Annoyed by criticisms of drinking
 - drinkingHave you ever had Guilty feelings about drinking
 - Have you ever taken a morning Eye opener

It is useful to screen patients for possible alcoholism. The above, the "CAGE" questionnaire is one useful set of questions. Even one positive answer here suggests a problem, 2 or more is highly indicative of alcoholism. A defensive response by a patient ("How dare you ask me" etc.) is also suspicious.

Clinical Presentation of Substance Abuse



Many alcoholics will not announce themselves. Some are truly unaware of the extent of their problem. There are a number of clues from the history, examination and laboratory workup which should make one suspicious of a substance problem.

This might include a pattern of unexplained job changes, vague, defensive or evasive about alcohol questions, DUI convictions, and multiple unexplained traffic accidents. Also, patients with alcoholism may have a history of impulsive behavior, fighting, or falls and scrapes, blackouts, binge drinking, or DT's. A history of drinking to relax or sleep is significant, as is a history of family chaos and instability.

Relevant physical data to collect include the obvious stigmata of alcohol or drug use. For alcohol use, this may be spider angiomas, ruddy nose and face, peripheral neuropathies, liver disease, or cerebellar dysfunction. For drugs, this may be cutaneous abscesses and track marks, or nasal lesions.

Relevant laboratory data to collect for diagnostic purposes in alcoholism include a complete blood count and liver enzymes. Lab abnormalities may relate to malnutrition and organ damage, and may be expressed as leukopenia, macrocytic anemia, target cells, thrombocytopenia, and bone marrow suppression. CAMP (cyclic adenosine monophosphate) levels in WBCs of alcoholics are 3 X normal. Liver enzymes are abnormal in chronic alcoholism. Substance use can be easily detected via tox screens. It is important to directly observe the sample collection process. Also, it is important to note the risk of false positives. One needs to confirm findings with second test on the same sample using different analytic method (Poppy seeds and opiates, for example). Informed consent is crucial in tox screens.



If $\frac{3}{4}$ of Americans drink, how do we decide when it's a problem. There are various pearls, some in the text are worth reading. From my point of view, the answer here is the same as all of the psychiatric disorders and harkens back to those "Global Criteria": when the alcohol or substance use causes a problem in functioning, be it social, occupational etc., then it is a disorder.

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Comorbid Disorders and Complications

- Alcohol Withdrawal
 - Uncomplicated
 - SeizuresHallucinosis
 - Hallucinos
 DT's

Most cases of alcohol withdrawal are uncomplicated: they occur 12-18 hours after cessation of drinking, and peak at 1-2 days. It can last for 5-7 days. Symptoms include anxiety, tremors, nausea, vomiting. Autonomic functions, such as increased HR and BP can be found. Though unpleasant, it is usually relatively benign/

Alcohol seizures ("rum fits") occur from 7 hours to 38 hours, and peak from 1-2 days. They consist of a generalized seizure, usually only 1, rarely more than 6, hardly even become status epilepticus. They are associated with chronic alcoholism. They themselves are not part of DT's, but do precede DT's in a third of cases.

Alcoholic hallucinosis consists of hallucinations, usually auditory, that occur in the presence of a clear sensorium. They can begin within 2 days of cessation from drinking, and last about a week. Occasionally they are chronic. They are associated with chronic alcoholism.

Delirium tremens (DT's) are relatively rare (about 5% of hospitalized alcoholics), but severe forms of withdrawal, that consist of delirium, fever, and autonomic hyperarousal. They usually begin after 2-3 following decrease or cessation of alcohol use, and peak at 4-5 days after. Typically they last a few days, but can occasionally go on for weeks. Mortality rates of 15% have been reported. The best treatment is prevention (by aggressively treating uncomplicated withdrawal). Failing that, supportive care is best: there is no specific treatment, though generally people use similar treatments to that used for uncomplicated withdrawal.

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Comorbid Disorders and Complications - Comorbid Medical Disorders

Comorbid Medical Disorders
 Comorbid Psychiatric Illnesses

: traumatic injuries (including motor vehicle accidents), GI disorders (gastritis, bleeding, pancreatitis, liver disease, nutritional deficiencies, cardiovascular disorders (Cardiomegaly, hypertension), predisposition to infectious disease, cancer (various parts of GI tract), endocrine disorders (feminization, impotence), and neurological disorders (Wernicke-Korsakoff syndrome, neuropathies, myopathies, dementia).

It is often seen with a number of psychiatric disorders, including depression and anxiety. The direction of causation is arguable and probably bidirectional. Arguing which came first: whether the patient is merely "selfmedicating", is largely irrelevant as psychiatric disorders such as depression and anxiety rarely respond to appropriate treatment for those disorders if a substance problem is ignored. Usually, before proper treatment of a psychiatric disorder can take place, the substance abuse has to be dealt with.

Percent distribution of principal (first–listed) diagnoses among discharges with any (all– listed) mention of an alcohol–related diagnosis, 2001.

Source: NIAAA. Original source: Chen, C.M.; Yi, H.; and Dufour, M.C. Surveillance Report #64: Trends in Alcohol–Related Morbidity Among Short-Stay Community Hospital Discharges, United States, 1979–2001. Bethesda, MD: NIAAA, Division of Biometry and Epidemiology, Alcohol Epidemiologic Data System, August 2003.



Areas of the brain vulnerable to damage by alcohol

Schematic drawing of the human brain, showing regions vulnerable to alcoholism-related abnormalities.

Source: NIAAA. original source: Oscar-Berman, M. and Marinlovic, K. Alcoholism and the brain: An overview. Alcohol Research & Health 27(2):125–133, 2003

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Images comparing a healthy control man with an alcoholic man

Images displayed in the coronal orientation from MRI and DTI studies of a 61-year-old healthy man (upper images) and a 60-year-old alcoholic man (lower images). The highresolution MRI slices are at the same locations as the fractional anisotropy images of the DTI panels. Note on the MRI the thinner corpus callosum displaced upward by enlarged ventricles and, on the DTI, less well delineated white matter tracts in the alcoholic man compared with the healthy man.

Source: NIAAA. Original source: Rosenbloom, M., Sullivan, E.V., and Pfefferbaum, A. Using magnetic resonance imaging and diffusion tensor imaging to assess brain damage in alcoholics. Alcohol Research & Health 27(2):146–152, 2003.



A heart in dilated cardiomyopathy compared with a normal heart at en-systole (end of contraction).

Source: NIAAA. Original source: Alcohol Health & Research World, Vol. 14, No. 4, 1990.

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Fetal alcohol syndrome (FAS) is a result of significant maternal alcohol abuse during pregnancy. It is not the result of normal drinking during pregnancy. Usually it requires binge drinking during pregnancy. The details of this will not be covered in class as you have this elsewhere, but it includes facial anomalies (small head, epicanthic folds, indistinct philtrum, small midface) low IG, and behavioral problems.

Alcoholism causes a wide variety of medical problems, including the following



In a large review of treated and untreated cases, about 2-3% of alcoholics became abstinent per year, and about 1% return to "normal drinking."



Percentage of alcohol involvement among drivers in fatal traffic crashes, according to age, United States, 1977 and 2001.

Source: NIAAA. Data from: Yi, H.; Williams, G.D.; and Dufour, M.C. Surveillance Report #65: Trends in Alcohol–Related Fatal Traffic Crashes, United States, 1977–2001. Bethesda, MD: NIAAA, Division of Biometry and Epidemiology, Alcohol Epidemiologic Data System, August 2003.

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Average annual deaths per 100,000 population from causes with explicit mention of alcohol by county, United States, 1986-90

Source: NIAAA. The map is based on data from U.S. Alcohol Epidemiologic Data Reference Manual, Vol. 3, Fourth Edition, July 1994