STREET DRUG PHARMACOLOGY: Module I

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ESSENTIAL ISSUES IN UNDERSTANDING STREET DRUG PHARMACOLOGY

- Psychoactivity
- Dependence
- Tolerance
- Toxicity
- Psychiatric Impairment
- Set and setting
- Substance misrepresentation/misidentification

Psychoactivity = ability to affect mood, thinking and/or behavior

CONTROLLED SUBSTANCES

Schedules I-V

 Schedule I: High potential for abuse, tendency to produce dependence, no accepted medical use in US

 Schedules II-V: Potential for abuse, tendency to produce dependency, does have accepted medical application

SCHEDULE I SUBSTANCES

LSD
Heroin
Cannabis
PCP

SCHEDULE II SUBSTANCES

Morphine

Cocaine

Short-acting barbiturates
 Amphetamines

DESIGNATED PRODUCTS: State of Illinois

- Schedule II substances with a higher potential for abuse and addiction
 - amphetamines
 - cocaine
 - short-acting barbs
 - methadone
 - morphine
 - OxyCodone

DRUG NAMES

Chemical (7-chloro-1,3-dyhydro-1-methyl-5phenyl-2H-1,4-benzodiazepin-2-one

Generic: diazepam

Brand : Valium

Street: No common street names for Valium

DRUG MEASUREMENT

• metric: • micro = 1/1,000,000. Microgram (mcg./µ, also called a "gamma") = 1/1,000,000 gram) Street nickel/nickel bag & dime/dime bag = \$5 or \$10 worth of drug

eightball = 1/8 oz. (3.75 grams)

DRUG MEASUREMENT

Street

sixteenth = either 1/16 oz (1.875 gm) or 1/16 gm (62.5 mg, about three lines of cocaine)
line = an elongated pattern of powdered drug. Quantity = whatever the user decides.
joint = a marijuana cigarette.

DRUG FORMS

- In plant/botanical matter (marijuana, opium poppies, khat, coca, peyote, psilocybin mushrooms, jimsom weed).
- liquids (alcohol, pure LSD, injectable pharmaceuticals)
- powders (cocaine hcl., heroin, PCP, methamphetamine)

DRUG FORMS

pills (tablets, capsules, caplets of either pharmaceutical or illicit origin)

other forms (ex: "rocks" of crack cocaine).

Potency, purity & misrepresentation of street drugs

potency = strength, compared to some other drug of a similar type.
purity = the major determinant of potency.
The more pure the drug, the more potent.
Street drugs are seldom pure, but are commonly misrepresented in one of three ways

DRUG MISREPRESENTATION

- adulteration: (to adulterate = to "step on"/"hit"/"dance on" "cut" a drug).
- Substitution/misrepresentation-1: None of the alleged drug is present, but another drug/drugs is/are.
- substitution/misrepresentation -2: None of the alleged drug is present, and neither is any other drug or active substance.

The Problem with Pill Identifications:



New York City May 2000 Amphetamine

Chicago May 2000 MDMA

Portland Oct 2000 MDMA

Tucson AZ July 2000 PMA

TIME FACTORS

Onset of action: How quickly does the drug produced it's effect?

• Duration of action: How long does the drug's effect last?

Residual effects: After-effects, extended drug reaction, flashbacks

The route of circulation.

- Blood flows in a circle according to this pattern:
 - Capillaries
 - vena cava
 - Lungs
 - Aorta

- veins
- right side of the heart
- left side of the heart
- body (capillaries, etc.)

Route of Circulation



METHOD OF ADMINISTRATION

- Ingestion (oral): slower onset/longer duration
- Insufflation (sniffing/snorting): faster onset/shorter duration
- Intravenous (I.V.) Injection: faster onset (seconds)/shortest duration
- Smoking: fastest onset/shortest duration



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THE "RUSH" OR "FLASH"

A highly pleasurable sensation produced by the instantaneous effect of i. v. injection or smoking*

* If entire dose administered at once

METABOLISM AND EXCRETION

The break-down of a drug into simpler substances

The removal of the drug from the body

TOLERANCE

<u>Homeostasis</u>

The human body's natural tendency to move toward a state of equilibrium or constancy

SET POINT RESPONSE TO DRUG USE



TOLERANCE

- Need to increase the dose of a drug in order to obtain the desired effect
- Decreased effect of drug after repeated administration
- Dependent on prior dosage level
- Develops in hours (cocaine), days (LSD), or weeks

TOLERANCE

Effective dose (ED)
Intoxicating dose (ID)
Lethal dose (LD)

TYPES OF TOLERANCE

- Enzyme induction
- Pharmacodynamic
- Behavioral Need to increase the dose of a drug in order to obtain the desired effect

DEPENDENCE

Addiction

Physical dependence

ADDICTION POTENTIAL

What percentage of first-time users will enjoy the effect of the drug enough that they will seek it out again?

If an individual uses the drug on a regular basis, how likely is it that s/he will become dependent on the substance?

ADDICTION POTENTIAL

 After being introduced to the drug, do sub-human animals (e.g., monkeys, rats, mice) seek out opportunities to self-administer the substance? Do they do so to the exclusion of eating, consuming water and engaging in reproductive behavior?

ADDICTION POTENTIAL CAN ALSO BE PREDICTED IN PART BY OBSERVING ANIMAL SELF-ADMINISTRATION









prefrontal cortex

nucleus accumbens

VTA

5000

ADDICTION POTENTIAL

Ability to stimulate the brain's reward circuits

Ability to meet a individualized neurochemical need

Physical dependency potential

Intensity of withdrawal symptoms

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dopamine

dopamine receptor





NEUROTRANSMITTERS

Naturally-occurring brain chemicals

Many psychoactive drugs resemble neurotransmitters:

NEUROTRANSMITTERS





LSD

Serotonin

Methamphetamine Norepinepherine

heroin

Endorphins

NEUROTRANSMITTERS



NEUROTRANSMITTER

THC

Anandamide

PCP

Receptor site identified but not associated neurotransmitter

ADDICTION

- Compulsive drug-taking
- Loss of control
- Continued use despite negative consequences
- Tolerance and physical dependence not required but may be part of the addiction picture

TOXICITY

Ability to produce physical damage to the human body

Long-range = months, years
Short-range = days, weeks
Physical vs behavioral

TOXICITY

Physical

Behavioral

Acute Vs Long-Term

PSYCHIATRIC IMPAIRMENT

 Ability of drug to produce negative changes in thinking, learning, perception, mood or behavior

Acute vs chronic

PSYCHIATRIC IMPAIRMENT

Short-term

Long-term

Affective Disorders

Thought Disorders