SESSION X

CENTRAL NERVOUS SYSTEM STIMULANTS
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Upon successfully completing this session the student will be able to:

- Explain a brief history of the CNS Stimulant category of drugs.
- Identify common drug names and terms associated with this category.
- Identify common methods of administration for this category.
- Describe the symptoms, observable signs and other effects associated with this category.
- Describe the typical time parameters, i.e. on-set and duration of effects, associated with this category.
- List the clues that are likely to emerge when the drug influence evaluation is conducted for a person under the influence of this category of drugs.
- Correctly answer the "topics for study" questions at the end of this session.
A. Overview of Central Nervous System Stimulants

CNS Stimulants speed up the operation of the brain and spinal cord. It is important to emphasize that "speed up" does not mean "improve" or "enhance". The CNS Stimulants definitely do not make the brain work better. Rather, they cause the brain and the rest of the nervous system to work harder, and often to make more mistakes.

The "speeding up" caused by CNS Stimulants results in significantly increased heartbeat, respiration and blood pressure, all of which can lead to physical harm to the abuser. In addition, the stimulant user experiences nervousness, irritability and an inability to concentrate or think clearly.

There are three major subcategories of CNS Stimulants; Cocaine, the amphetamines and others.

**Cocaine** derives from the coca plant, an evergreen native to South America. Cocaine is made from the plant's leaves. There is archaeological evidence that natives of Peru chewed coca leaves 5,000 years ago.

**Amphetamines** are synthetic (i.e. manufactured) drugs. They were first produced near the end of the 19th Century. Amphetamines have a number of legitimate medical applications, including control of narcolepsy; control of certain hyperactive behavioral disorders in children; relief or prevention of fatigue to allow persons to perform essential tasks of long duration; treatment of mild depression; control of appetite; prevention and treatment of surgical shock; treatment of Parkinson's Disease; maintenance of blood pressure during surgery; enhancement of the action of certain analgesic drugs; and, to antagonize the effects of depressant drugs. Numerous pharmaceutical companies manufacture amphetamines that are prescribed for these purposes. But these pharmaceutical amphetamines often are abused, as well.

Examples of common pharmaceutical amphetamines include:

- **DEXEDRINE**  
  (dextroamphetamine sulfate)  
  Common street names: "Dexies"; "Hearts"

- **BENZEDRINE**  
  (amphetamine sulfate)  
  Common street names: "Bennies"; "Whites"; "Cartwheels"

- **DESOXYN**  
  (methamphetamine hydrochloride, also known desoxyephedrine)

- **ADDERALL**  
  (Combination of dextroamphetamine and amphetamine)

Pharmaceutical amphetamines are not the only source of abused amphetamines. Large quantities also are illegally manufactured in clandestine laboratories. The two most
common amphetamines are Methamphetamine and Amphetamine sulfate.

Methamphetamine is also known as methedrine. Some common street names include “speed”; “crank”; “crystal”; “ice”; “meth”; and “water”. Methamphetamine hydrochloride is a white to light brown crystalline powder, or clear chunky crystals resembling ice. Methamphetamine base is liquid. The majority of street methamphetamine is produced in clandestine laboratories (e.g. reduction of L-ephedrine or D-pseudoephedrine over red phosphorus with hydroiodic acid, or reduction with sodium or lithium in condensed liquid ammonia). Medicinally, methamphetamine is used in the treatment of narcolepsy, attention deficit disorder (ADD), and attention deficit hyperactivity disorder (ADHD). Typical doses are 10 mg/day or up to 40 mg daily, and a course of greater than six weeks is not recommended. Methamphetamine is infrequently used in the treatment of obesity, overeating disorders, and weight loss due to its abuse potential. Amphetamine is also used in ADD, narcolepsy and weight control. Recreationally, Methamphetamine is abused to increase alertness, relieve fatigue, control weight, treat mild depression and for its intense euphoric effects.

Methamphetamine abusers often inject or smoke the drug. However, it can also be snorted or taken orally.

The smokeable forms of methamphetamine are known as "Crystal Meth" or "Ice." They contain the same active chemical compound as powdered methamphetamine, but undergo a re-crystallization process in which some impurities are removed. It is abused in much the same way as "Crack", i.e. small bits of "Ice" are placed in the bowl of a pipe and flame from a lighter is applied to vaporize the drug; the smoker then draws the vapor into the lungs.

Other non-Cocaine and non-amphetamine CNS Stimulants include the prescription drugs Ritalin, Preludin, and the non-prescription drug Caffeine. Some CNS Stimulants are legally manufactured and distributed without prescription.

Ephedrine is a legally manufactured stimulant which is commonly used in diet aids and body building supplements. Ephedrine can also be found in some herbal preparations and numerous over the counter (OTC) substances. All have legitimate medical applications, but they also have the potential to be abused.

Other CNS Stimulants that are illicit and have no legitimate uses are Cathine and Cathinone. They are two psychoactive chemicals derived from the Khat plant, which originated from the sub-Sahara regions of Africa. Methcathinone is an illicitly manufactured stimulant made from common household chemicals. Its effects are very similar to methamphetamine.

There are various ways in which CNS stimulant abusers ingest their drugs. Cocaine and methamphetamine are commonly insufflated (snorted), smoked, injected or taken orally. Snorting may still be the most common method of ingesting Cocaine, although smoking has become increasingly popular.

In order to be smoked, a pure form of Cocaine is needed. Various chemical processes can be used to "free" the Cocaine from other elements to which it is chemically bonded. The pure
Cocaine sometimes is called "freebase", and the practice of smoking it sometimes is called "freebasing".

One of the processes used to produce "freebase" produces the pure Cocaine in the form of small, hard chunks. The chunks are often called "Crack" or "Rock Cocaine". The term "Crack" derives from the cracking sound the chunks produce when they are smoked.

The pharmaceutical amphetamines are produced in the form of tablets, capsules and liquid elixirs, and so they are ingested orally. Illicitly manufactured amphetamine sulfate usually is produced in tablet form (the tablets sometimes are called "mini beans"), and ingested orally.

B. Possible Effects of CNS Stimulants

Cocaine, Methamphetamine and the amphetamines produce euphoria, a feeling that there are no problems. A feeling of super strength and absolute self confidence may also be present. With Cocaine, but not with the amphetamines, there is also an anesthetic effect, i.e. a dulling of pain.

Stimulant users tend to become hyperactive, e.g. nervous, extremely talkative and unable to stand still. CNS Stimulants also tend to release the user's inhibitions, and to impair the user's ability to perceive time and distance. Persons under the influence of CNS Stimulants become easily confused and lose the ability to concentrate or to think clearly for any length of time.

C. Onset and Duration of CNS Stimulants' Effects

1. Cocaine

In general, Cocaine is a fairly fast acting, but short duration drug.

When smoked, or "freebased", Cocaine goes very quickly to the brain. The smoker almost immediately feels a "rush", or very intense euphoria. However, the effects continue to be felt for only about 5-10 minutes.

When injected, the effects also begin very quickly, usually within just a few seconds, and the onset of effects is very intense. The effects usually continue to be felt for 45-90 minutes.

When insufflated or snorted, the onset of effects is still fairly rapid, although not so fast as with smoking or injection. The user generally feels the onset within about 30 seconds. A "rush" occurs, although it is not quite as intense as when the Cocaine is smoked or injected. The user generally continues to feel the effects for 30-90 minutes after snorting the Cocaine.

When taken orally, the user generally does not start to feel the effects of the Cocaine for 3-5 minutes, and, the effects are not as intense as they are with other methods of ingestion. For these reasons, oral ingestion is the least preferred method of using
Cocaine. However, the effects of Cocaine taken orally may last 15-30 minutes longer than they do when other methods of ingestion are used.

Because Cocaine's effects are of relatively short duration, a Cocaine user can present some difficulty to a DRE. The suspect may have been markedly impaired when first contacted by the arresting officer, but by the time the subject is brought to the DRE, the effects of Cocaine may have worn off to the point that the indicators of stimulant influence are no longer apparent. The DRE may be understandably frustrated when this occurs, but his or her conclusions as to the probable categories of drugs involved must reflect the observable evidence gleaned from the drug influence evaluation. The DRE should never "force" a conclusion as to an impairment that might have existed 30 minutes or an hour ago when he or she has no personal, credible basis for that conclusion.

Subjects who have ingested both Cocaine and alcohol will produce a metabolite know as "Cocaethylene". This has a half-life of four hours, that possibly extends the effects of Cocaine longer than norm.

2. Methamphetamine

Methamphetamine also is a fairly fast acting drug, and its effects are very similar to Cocaine's. However, Methamphetamine's effects last a good deal longer.

When injected, Methamphetamine's effects begin to be felt within a very few seconds. The user experiences an intense "rush", which lasts at the high level of intensity for 5-30 seconds. Subsequently, the user stays "high" or "wired' for 4-8 hours, with residual effects lasting up to 12 hours.

When smoked, the "rush" is very rapid and intense, much like the "rush" produced by "Crack". However, the smoker usually will remain impaired for at least several hours.

When Methamphetamine is taken orally, the onset of effects is delayed, the "rush" is much less intense and the effects last longer.

When Methamphetamine is snorted, the onset of effects is not quite as rapid as with smoking or injecting. The onset of effects are within 30 seconds, the rush is not as intense and the effects last between 30 and 90 minutes.

D. Signs and Symptoms of Stimulant Overdose

The euphoria expected by a stimulant user can be replaced by panic if an overdose is taken. The user may become very confused, and suddenly aggressive. They can suffer convulsions, and possibly faint or pass into a coma. Heartbeat will increase, possibly dramatically, and heart arrhythmia (irregular beating) may develop. This may lead to cardiac arrest. Death can also occur from sudden respiratory failure.

Another danger is that users may attempt to counteract a stimulant overdose with barbiturates, possibly leading to an overdose of CNS Depressant.
Overdoses of Cocaine or Amphetamines can cause the pleasurable effects to turn into panic and often violent behavior. If the overdose is caused by Cocaine, it is commonly referred to as, Cocaine Psychosis or Cocaine Delirium. Hallucinations may occur and many overdose victims complain of the feeling that bugs are crawling under their skin. This is commonly known as “coke bugs”.

E. Expected Results of the Evaluation

When a person under the influence of CNS Stimulants is evaluated by a DRE, the following results can generally be expected:

- **Horizontal Gaze Nystagmus** - none
- **Vertical Gaze Nystagmus** - none
- **Lack of Convergence** - none
- **Pupil Size** - dilated
- **Reaction to light** - slow
- **Pulse Rate** - up
- **Blood Pressure** - up
- **Temperature** - up
- **Muscle tone** - rigid

**Injection Sites** might be found, e.g., on the arms, wrists, neck, etc., especially with Methamphetamine users but also with some Cocaine users. Other Cocaine users who routinely snort their drug may exhibit severe redness in the nasal area, and possibly scarring or erosion of the nasal septum.

General indicators:

- anxiety
- body tremors
- bruxism (grinding of the teeth)
- dry mouth
- euphoria
- exaggerated reflexes
- excited
- eyelid and leg tremors
- irritability
- increased alertness
- insomnia
• redness to nasal area
• restlessness
• runny nose
• talkative
Topics for Study

1. Why is it sometimes difficult for a DRE to obtain evidence of CNS Stimulant influence when examining a Cocaine user?

2. What kinds of illicitly manufactured Amphetamines are most commonly abused?

3. Name two CNS Stimulants other than Cocaine or the Amphetamine compounds.

4. How do CNS Stimulants usually affect the blood pressure and pulse rate?

5. True or false: A person under the influence of a CNS Stimulant alone usually will not exhibit Horizontal Gaze Nystagmus?

6. What is "bruxism"?
DRUG INFLUENCE EVALUATION

Evaluator: Sat, Ross Batson, Arkansas H.P.

Criminal History: "None"

Case #: 07-44580

Date of Birth: 7/10/63

Race: W

Arresting Officer (Name, ID #): TFC Jeff Hust

Heldlund, James R.

Date Examined / Time / Location: 02-08-07 2230 Pulaski Co. Jail

Breath Results: 0.00

Test Refused: 

Chemical Test: Urine □ Blood □

Test or tests refused: 

Medical Warning Given: Yes □ No □

Given by: TFC Hust

Candy bar About 6 pm

Time last 8 pm / 10-45 pm

Do you take insulin?: Yes □ No □

Do you have any physical defects?: Yes □ No □

Are you taking any medication or drugs?: Yes □ No □

Attitude: Talkative, Cooperative

Coordination: Poor, Quick, Unsteady

Speech: Quick, Slurred at times

Breath Odor: Normal

Pupil Size: Equal

Unequal (explain):

Pulse and time:

1. 102 / 2240

2. 100 / 2253

3. 100 / 2235

KHN

Lack of Smooth Pursuit

Left Eye

Right Eye

Convergence

Maximum Deviation

Heterophoria

Angle of Crest

None

None

Right eye

Left eye

Cannot keep balance

Starts too soon

XX

NINE • NINE

Missed heel-toe

Steps off line

Havers raises

Actual steps taken

XXX • XXX

9 • 9

L

R

Sways while balancing (1/1)

Uses arms to balance (2/2)

Hopping (2/0)

Puts foot down (1/1)

Counted quickly

Describe Turn:

Quick spin around

Cannot do test (explain):

Type of footwear:

Naked

Nasal area:

White powder left nostril

Oral cavity:

Clear

Draw lines to spots touched:

PUPIL SIZE

Room Light

Darkness

Direct

2.5 – 5.0

5.0 – 8.5

2.0 – 4.5

Left Eye

6.0

9.0

5.5

Right Eye

6.0

9.0

5.5

REBOUND DILATION

Yes □ No □

REACTION TO LIGHT: Slow

RIGHT ARM

LEFT ARM

Quick movements

Blood pressure

142/96

Temperature

99.8

Nothing observed

Muscle tone:

Normal

Flaccid

Rigid

Comment:

What drugs or medications have you been using? "Nothing"

How much?

N/A

Time of use?

N/A

Where were the drugs used? (Location)

Precinct / Station:

North Precinct

Officer’s Signature:

DRE # 7883

Reviewed/approved by / date:

Opinion of Evaluator:

Rule Out □ Alcool □ CNS Stimulant □ Dissociative Anesthetic □ Inhaled

Medical □ CNS Depressant □ Hallucinogen □ Narcotic Analogues □ Cannabis

Revised: 06/07

HS172A R01/10

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DRUG INFLUENCE EVALUATION NARRATIVE

Suspect: Hedlund, James R.

1. LOCATION: The evaluation of James Hedlund was conducted at the Pulaski County Jail.

2. WITNESSES: Arresting Officer, TPC Jeff Hust, Arkansas State Police and Pam Mays of the Arkansas Criminal Justice Institute.

3. BREATH ALCOHOL TEST: Hedlund’s breath test was a 0.00%.

4. NOTIFICATION AND INTERVIEW OF THE ARRESTING OFFICER: The writer was contacted by Trooper Hust requesting a drug evaluation. Writer contacted Trooper Hust at the County Jail where it was determined that he had stopped the suspect for driving 100 mph and for driving without headlights on I-30 East. The suspect was excited, talkative and very restless. He performed poorly on the roadside SFST’s and was arrested for DUI.

5. INITIAL OBSERVATION OF SUSPECT: Writer first observed the suspect in the interview room with Trooper Hust. The suspect was rocking back in forth in his chair and could not remain still. His speech was fast and his reflexes were quick and exaggerated.

6. MEDICAL PROBLEMS AND TREATMENT: None observed and none stated.

7. PSYCHOPHYSICAL TESTS: Romberg Balance: Suspect swayed approximately 3” front to back and estimated 30 seconds in 22 seconds. Walk & Turn: Suspect started too soon, lost his balance twice during the instructions, raised his arms for balance and made an abrupt quick turn. One Leg Stand: Suspect swayed, raised his arms, hopped and put his foot down once standing on the left foot and once while standing on the right foot. Finger to Nose: Suspect missed the tip of his nose on four of the six attempts.

8. CLINICAL INDICATORS: The suspect’s pulse, blood pressure and temperature were above the normal ranges. His pupils were dilated in all three lighting levels and they reacted slowly to light.

9. SIGNS OF INGESTION: White powder residue was located in the suspect’s left nostril.

10. SUSPECT’S STATEMENTS: The suspect denied using any drugs.

11. DRE’S OPINION: In my opinion Hedlund is under the influence of a CNS Stimulant and unable to operate a vehicle safely.

12. TOXICOLOGICAL SAMPLE: The suspect provided a urine sample.

13. MISCELLANEOUS:

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DRUG INFLUENCE EVALUATION NARRATIVE

Suspect: Kohlhepp, Kim J.

1. LOCATION: The evaluation was conducted at the Oklahoma County Jail.

2. WITNESSES: The evaluation was witnessed by the arresting officer; Officer David Steiner and by Sergeant Charlie Phillips of the Oklahoma City P.D.

3. BREATH ALCOHOL TEST: Kohlhepp’s breath test was 0.00%.

4. NOTIFICATION AND INTERVIEW OF THE ARRESTING OFFICER: The writer was contacted by Officer Steiner requesting a drug evaluation. After arriving at the County Jail, Officer Steiner reported that he had stopped the suspect for driving 65 mph in a 30 mph zone and for failing to stop at a traffic signal. The suspect was very talkative and restless. She was unable to perform the SFST's as directed and was arrested for DUI.

5. INITIAL OBSERVATION OF SUSPECT: Writer first observed the suspect in the interview room standing next to Officer Steiner. She was very fidgety and could not stand still. When told to sit down she would sit for a few seconds and then quickly get back up.

6. MEDICAL PROBLEMS AND TREATMENT: None observed and none stated.

7. PSYCHOPHYSICAL TESTS: Romberg Balance: Suspect swayed approximately 2” side to side and estimated 30 seconds in 20 seconds. Walk & Turn: Suspect stepped off the line twice, raised her arms for balance and turned using an abrupt swivel-like movement. One Leg Stand: Suspect swayed, raised her arms, hopped once when standing on the left foot, and put her foot down one time while standing on each foot. Finger to Nose: Suspect missed the tip of her nose on each attempt and had eyelid tremors.

8. CLINICAL INDICATORS: The suspect’s pulse, blood pressure and temperature were above the normal ranges. Her pupils were dilated in all three lighting conditions.

9. SIGNS OF INGESTION: The suspect’s nostrils were red and ulcerated.

10. SUSPECT'S STATEMENTS: She denied using drugs, stating “I don’t use drugs anymore.”

11. DRE'S OPINION: In my opinion, Kohlhepp is under the influence of a CNS Stimulant and unable to operate a vehicle safely.

12. TOXICOLOGICAL SAMPLE: The suspect provided a blood sample.

13. MISCELLANEOUS: There was an outstanding warrant for the suspect for failure to appear on a charge of possession of methamphetamine.

Rev.03/08