Drug Recognition Expert Course (DRE) 7-Day School

R5/13 Edition

Participant Manual
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Preface

The Drug Recognition Expert course is a series of three training phases that, collectively, prepare police officers and other qualified persons to serve as drug recognition experts (DRE). Throughout this manual, the terms “drug recognition expert” and “DRE” are used to designate an individual who is specially trained and has continued training to conduct examinations of drug-impaired drivers. This training, developed as part of the Drug Evaluation and Classification Program (DECP) under the auspices and direction of the International Association of Chiefs of Police (IACP) and the National Highway Traffic Safety Administration (NHTSA) has experienced remarkable success since its inception in the 1980s.

As in any educational training program, an instruction manual is considered a “living document” that is subject to updates and changes based on advances in technology and science. A thorough review is made of information by the DECP Technical Advisory Panel (TAP) of the Highway Safety Committee of the IACP with contributions from many sources in health care science, toxicology, jurisprudence, and law enforcement. Based on this information, any appropriate revisions and modifications in background theory, facts, examination and decision making methods are made to improve the quality of the instruction as well as the standardization of guidelines for the implementation of the Drug Recognition Expert Training Curriculum. The reorganized manuals are then prepared and disseminated, both domestically and internationally, to the DECP state coordinators.

Changes will take effect 90 days after approval by the TAP, unless otherwise specified or when so designated by a state coordinator.
A. Welcoming Remarks and Goals

Welcoming Remarks

Introductions - Representatives of Host Agencies and Other Dignitaries

Faculty Introductions
B. **Housekeeping**

*Paperwork*

*Attendance*

Attendance is mandatory at all sessions of this school.

*Breaks*

*Facility*

*Interruptions*

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**Drug Recognition Expert (DRE) Certification Phases**

You have all completed the DRE Pre-School and we look forward to working with you to successfully complete phase two of the certification process. Upon completion of this course, you will be fully proficient in checking vital signs, conducting careful examinations of the eyes, administering divided attention tests and, in general, carrying out the procedural steps of the DRE's job.
There is one essential learning experience that this classroom training cannot provide – the opportunity to practice examining subjects who are under the influence of drugs other than alcohol. For this reason, this classroom training only constitutes Phase II in the process of developing DRE skills. Phase III of the training (which commences upon the successful completion of this course) involves hands-on practice in an actual enforcement context, i.e. examining persons who are under the influence of drugs.

Although this DRE School will not conclude with the participant's immediate certification as a DRE, successful completion of this classroom training is highly important. No one can advance to Certification Training until they demonstrate a mastery of basic knowledge of drug categories and their effects on the human mind and body, and of the basic skills in administering and interpreting the examinations in the Drug Evaluation and Classification process.
Course Goal
Prevent crashes, deaths and injuries caused by drug-impaired drivers.

The ultimate goal of the Drug Evaluation and Classification (DEC) program, and of this course of instruction, is to "help you prevent crashes, deaths and injuries caused by drug-impaired drivers".

No one knows precisely how many people operate motor vehicles while under the influence of drugs, or how many crashes, deaths and injuries these people cause. But even the most conservative estimates suggest that America's drug-impaired drivers kill thousands of people each year, and seriously injure tens of thousands of others. There are numerous studies that illustrate these facts.
Upon successfully completing this session participants will be able to:

- State the objectives and goals of the course.
- Outline the major course content.
- Outline the schedule of major course activities.
- Outline the Participant Manual content and organization.
- Recognize course administrative matters

**CONTENT SEGMENTS**

A. Welcoming Remarks and Goals  
B. Housekeeping  
C. Participant Introductions  
D. Training Goals  
E. Training Objectives  
F. Overview of Content and Schedule  
G. Course Activities  
H. Overview of Participant Manual  
I. Glossary of Terms  
J. Course Pre-Test Administration

**LEARNING ACTIVITIES**

- Instructor Led Presentations  
- Participant Led Presentations  
- Knowledge Examination  
- Reading Assignments
**Drugged Driving Incidence**

**Maryland Shock Trauma Center Study (1985-1986)**
- 32% of drivers treated at the Shock Trauma Center had used marijuana prior to their crashes.

**Notes:**

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**University of Tennessee Study (1988)**
- 40% of drivers receiving emergency treatment had used drugs prior to the crash.

**Notes:**

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**Maryland Shock Trauma Center study (1985 – 1986)**
- 32% of drivers treated at the Shock Trauma Center had used marijuana prior to their crashes.

**University of Tennessee study (1988)**
- 40% of drivers treated at Trauma Center for crash injuries had drugs other than alcohol in them.
National Highway Traffic Safety Administration (NHTSA) 1992 study revealed 17.8% of 1,882 drivers involved in fatal crashes tested positive for drugs other than alcohol

NHTSA (Terhune, Ippolito, Hendricks et al., 1992)

- 1,882 operators involved in fatal crashes from 13 locations from eight states were tested for alcohol and 43 other drugs.
- Alcohol was the most prevalent drug detected in 51.5% of the crashes, while other drugs were involved in 17.8% of the crashes.


Results of blood and/or urine tests from 370 fatally injured drivers revealed the following drugs:

- Marijuana (12%)
- Benzodiazepines (5%)
- Cocaine (4.8%)
- Amphetamines (4.8%)

Washington State (Schwilke, et al., 2006)

The results of tests of blood and/or urine from 370 fatally injured drivers revealed that:

- Marijuana was the most encountered drug (12%), followed by;
- Benzodiazepines (5%)
- Cocaine (4.8%)
- Amphetamines (4.8%)
• In 2010, more than 19% of high school seniors admitted driving under the influence of marijuana.  *Source: Liberty Mutual Insurance and Students Against Destructive Decisions (Liberty Mutual Insurance and SADD) Study, 2012.*

• In 2010, 10.6 million people reported driving under the influence of an illicit drug during the past year.

We can do something to remove drugged drivers from our roads.
The Drug Evaluation and Classification (DEC) Program is based on solid medical and scientific facts.

The validity of the Drug Evaluation and Classification (DEC) Program has been tested in carefully controlled research in both the laboratory and the field.

By enrolling in Drug Recognition Expert (DRE) training, you have become part of an elite international program. DREs form one of the tightest knit fraternities in law enforcement.

DREs from many agencies and from many parts of the country work closely together to share information and other resources, and to maintain the highest standards of quality.

C. Participant Introductions
D. Training Goals

The goals of the classroom training, from the viewpoint of the law enforcement agencies participating in it, are three fold:

1. To help police officers acquire the knowledge and skills needed to distinguish individuals under the influence of
   • Alcohol
   • Other drugs
   • Combinations of alcohol and other drugs
   -or-
   • Those who are suffering from an injury or illness.

2. To enable police officers to identify the broad category or categories of drugs inducing the observable signs of impairment manifested by an individual.

3. To qualify police officers to progress to Certification Training.
Classroom Training Objectives

- Describe the involvement of drugs in impaired driving incidents
- Name the seven drug categories and recognize their effects
- Describe and properly conduct the drug influence evaluation

E. Training Objectives

When you successfully complete this school, you will be able to:

- Describe the involvement of drugs in impaired driving incidents
- Name the seven categories of drugs and recognize their effects
- Describe and properly conduct the drug influence evaluation

Classroom Training Objectives (Cont.)

- Document the results of the drug influence evaluation
- Properly interpret the results of the evaluation
- Prepare a narrative for the Drug Influence Report

• Document the results of the drug influence evaluation
• Properly interpret the results of the evaluation
• Prepare a narrative for the Drug Influence Report
• Discuss appropriate procedures for testifying in typical drug evaluation and classification cases
• Prepare and maintain a relevant and up-to-date Curriculum Vitae (C.V.)

Before you can be certified as a DRE, you will have to demonstrate that you can do each of these things.

F. Overview of Course Content and Schedule

The course will cover the following topics:
• Drugs in society and in vehicle operation
• Development and effectiveness of the Drug Evaluation and Classification (DEC) Program
• Overview of the DEC Procedures
• Eye Examinations (a major component of the DEC procedures)
• Physiology and Drugs
• Vital signs examinations (a major component of the DEC procedures)
• The seven categories of drugs
The Physician’s Desk Reference (PDR) and other reference sources
Interviewing suspects (a major component of the DEC procedures)
Curriculum Vitae (C.V.) preparation and maintenance
Case preparation and testimony
Classifying a suspect (interpreting and documenting the results of an examination)
Course Activities

- Eye examinations
- Alcohol workshop
- Interpretation of examination results
- Vital signs examinations

G. Course Activities

Hands-on practice is the principal learning activity of the course.

Eye Examinations Practice:
- Nystagmus, Lack of Convergence, Pupil Size, and Reaction to Light

Alcohol Workshop:
- Psychophysical testing practice
- Volunteer drinkers from outside the class will be recruited for this session.

Practicing interpretation of the examination results:
- Several sessions will be devoted to this allowing the participants to review drug evaluation reports and identify the probable drug category or combinations of categories.

Vital signs examinations:
- Pulse, Blood Pressure, Body Temperature
Course Activities (Cont.)

- Administration of drug influence evaluation
- Simulated drug impaired subject examinations

Practicing administration of the drug influence evaluation:
- Several sessions will be devoted to this. In each, participants will practice administering the drug influence examinations to each other. No hands-on practice with actual drugged subjects is included in the classroom portion of DRE training.

Simulated drug impaired subject examinations:
- Participants will work in teams to conduct and document examinations of instructors who will be simulating the indicators of drug-impaired subjects.

Schedule

Notes: __________________________________________
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Schedule
H. Overview of Participant Manual

- The Participant manual is the basic reference document for this course.
- The manual contains thumbnails of each instructor presentation per session that includes key messages for each frame.
- Read each session prior to each day's classes.
- Use the manual to review the material prior to taking the final exam.

By taking good notes, and by studying the manual carefully, participants should have no trouble in passing the course.
- There will be numerous quizzes during the class.
I. Glossary of Terms

The Glossary of Terms used in the course is located at the end of this manual.

J. Course Pre-Test Administration

QUESTIONS?

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GLOSSARY OF TERMS

ACCOMMODATION REFLEX
The adjustment of the eyes for viewing at various distances. Meaning the pupils will automatically constrict as objects move closer and dilate as objects move further away.

ADDITION
Habitual, psychological, and physiological dependence on a substance beyond one's voluntary control.

ADDITIVE EFFECT
One mechanism of polydrug interaction. For a particular indicator of impairment, two drugs produce an additive effect if they both affect the indicator in the same way. For example, cocaine elevates pulse rate and PCP also elevates pulse rate. The combination of cocaine and PCP produces an additive effect on pulse rate.

AFFERENT NERVES
See: "Sensory Nerves."

ALKALOID
A chemical that is found in, and can be physically extracted from, some substance. For example, morphine is a natural alkaloid of opium. It does not require a chemical reaction to produce morphine from opium.

ANALGESIC
A drug that relieves or allays pain.

ANALOG (of a drug)
An analog of a drug is a chemical that is very similar to the drug, both in terms of molecular structure and in terms of psychoactive effects. For example, the drug Ketamine is an analog of PCP.

ANESTHETIC
A drug that produces a general or local insensibility to pain and other sensation.

ANTAGONISTIC EFFECT
One mechanism of polydrug interaction. For a particular indicator of impairment, two drugs produce an antagonistic effect if they affect the indicator in opposite ways. For example, heroin constricts pupils while cocaine dilates pupils. The combination of heroin and cocaine produces an antagonistic effect on pupil size. Depending on how much of each drug was taken, and on when they were taken, the suspect's pupils could be constricted, or dilated, or within the DRE Average range of pupil size.

ARRHYTHMIA
An abnormal heart rhythm.
ARTERY
The strong, elastic blood vessels that carry blood away the heart.

ATAXIA
A blocked ability to coordinate movements. A staggering walk and poor balance may be caused by damage to the brain or spinal cord. This can be the result of trauma, birth defect, infection, tumor, or drug use.

AUTONOMIC NERVE
A motor nerve that carries messages to the muscles and organs that we do not consciously control. There are two kinds of autonomic nerves, the sympathetic nerves and parasympathetic nerves.

AXON
The part of a neuron (nerve cell) that sends out a neurotransmitter.

BAC
(Blood Alcohol Concentration) - The percentage of alcohol in a person's blood.

BrAC
(Breath Alcohol Concentration) - The percentage of alcohol in a person’s blood as measured by a breath testing device.

BLOOD PRESSURE
The force exerted by blood on the walls of the arteries. Blood pressure changes continuously, as the heart cycles between contraction and expansion.

BRADYCARDIA
Abnormally slow heart rate.

BRADYPNEA
Abnormally slow rate of breathing.

BRUXISM
Grinding the teeth. This behavior is often seen in person who are under the influence of cocaine or other CNS Stimulants.

CANNABIS
This is the drug category that includes marijuana. Marijuana comes primarily from the leaves of certain species of Cannabis plants that grow readily all over the temperate zones of the earth. Hashish is another drug in this category, and consists of the compressed leaves from female Cannabis plants. The active ingredient in both Marijuana and Hashish is a chemical called delta-9 tetrahydrocannabinol, usually abbreviated THC.

CARBOXY THC
A metabolite of THC (tetrahydrocannabinol).

CHEYNE- STOKES RESPIRATION
Abnormal pattern of breathing. Marked by breathlessness and deep, fast breathing.
CNS (Central Nervous System)
A system within the body consisting of the brain, the brain stem, and the spinal cord.

CNS DEPRESSANTS
One of the seven drug categories. CNS Depressants include alcohol, barbiturates, anti-anxiety tranquilizers, and numerous other drugs.

CNS STIMULANTS
One of the seven drug categories. CNS Stimulants include Cocaine, the Amphetamines, Ritalin, Desoxyn, and numerous other drugs.

CONJUNCTIVITIS
An inflammation of the mucous membrane that lines the inner surface of the eyelids caused by infection, allergy, or outside factors. May be bacterial or viral. Persons suffering from conjunctivitis may show symptoms in one eye only. This condition is commonly referred to as "pink eye", a condition that could be mistaken for the bloodshot eyes produced by alcohol or Cannabis.

CONVERGENCE
The "crossing" of the eyes that occurs when a person is able to focus on a stimulus as it is pushed slowly toward the bridge of their nose. (See, also, "Lack of Convergence").

CRACK/ROCK
Cocaine base, appears as a hard chunk form resembling pebbles or small rocks. It produces a very intense, but relatively short duration "high".

CURRICULUM VITAE
A written summary of a person's education, training, experience, noteworthy achievements and other relevant information about a particular topic.

CYCLIC BEHAVIOR
A manifestation of impairment due to certain drugs, in which the suspect alternates between periods (or cycles) of intense agitation and relative calm. Cyclic behavior, for example, sometimes will be observed in persons under the influence of PCP.

DELIRIUM
A brief state characterized by incoherent excitement, confused speech, restlessness, and possible hallucinations.

DENDRITE
The part of a neuron (nerve cell) that receives a neurotransmitter.

DIACETYL MORPHINE
The chemical name for Heroin.

DIASTOLIC
The lowest value of blood pressure. The blood pressure reaches its diastolic value when the heart is fully expanded, or relaxed (Diastole).

DIPLOPIA
Double vision.
DISSOCIATIVE ANESTHETICS
One of the seven drug categories. Includes drugs that inhibits pain by cutting off or disassociating the brain's perception of pain. PCP and its analogs are considered Dissociative Anesthetics.

DIVIDED ATTENTION
Concentrating on more than one thing at a time. The four psychophysical tests used by DREs require the suspect to divide attention.

DOWNSIDE EFFECT
An effect that may occur when the body reacts to the presence of a drug by producing hormones or neurotransmitters to counteract the effects of the drug consumed.

DRUG
Any substance that, when taken into the human body, can impair the ability of the person to operate a vehicle safely.

DYSARTHRIA
Slurred speech. Difficult, poorly articulated speech.

DYSPEPSEA
Shortness of breath.

DYSMETRIA
An abnormal condition that prevents the affected person from properly estimating distances linked to muscular movements.

DYSPHORIA
A disorder of mood. Feelings of depression and anguish.

EFFERENT NERVES
See: "Motor Nerves".

ENDOCRINE SYSTEM
The network of glands that do not have ducts and other structures. They secrete hormones into the blood stream to affect a number of functions in the body.

EXPERT WITNESS
A person skilled in some art, trade, science or profession, having knowledge of matters not within knowledge of persons of average education, learning and experience, may assist a jury in arriving at a verdict by expressing an opinion on a state of facts shown by the evidence and based upon his or her special knowledge. (NOTE: Only the court can determine whether a witness is qualified to testify as an expert.)

FLASHBACK
A vivid recollection of a portion of an hallucinogenic experience. Essentially, it is a very intense daydream. There are three types: (1) emotional -- feelings of panic, fear, etc.; (2) somatic -- altered body sensations, tremors, dizziness, etc.; and (3) perceptual -- distortions of vision, hearing, smell, etc.
GARRULITY
Chatter, rambling or pointless speech. Talkative.

GENERAL INDICATOR
Behavior or observations of the subject that are observed and not specifically tested for. (Observational and Behavioral Indicators)

HALLUCINATION
A sensory experience of something that does not exist outside the mind, e.g., seeing, hearing, smelling, or feeling something that isn't really there. Also, having a distorted sensory perception, so that things appear differently than they are.

HALLUCINOGENS
One of the seven drug categories. Hallucinogens include LSD, MDMA, Peyote, Psilocybin, and numerous other drugs.

HASHISH
A form of cannabis made from the dried and pressed resin of a marijuana plant.

HASH OIL
Sometimes referred to as “marijuana oil” it is a highly concentrated syrup-like oil extracted from marijuana. It is normally produced by soaking marijuana in a container of solvent, such as acetone or alcohol for several hours and after the solvent has evaporated, a thick syrup-like oil is produced with a high THC content.

HEROIN
A powerful and widely-abused narcotic analgesic that is chemically derived from morphine. The chemical, or generic name of heroin is “diacetyl morphine”.

HIPBUS
A rhythmic change in the pupil size of the eyes, as they dilate and constrict when observed in darkness independent of changes in light intensity, accommodation (focusing), or other forms of sensory stimulation. Normally only observed with specialized equipment.

HOMEOSTASIS
The dynamic balance, or steady state, involving levels of salts, water, sugars, and other materials in the body's fluids.

HORIZONTAL GAZE NYSTAGMUS (HGN)
Involuntary jerking of the eyes occurring as the eyes gaze to the side.

HORMONES
Chemicals produced by the body's endocrine system that are carried through the blood stream to the target organ. They exert great influence on the growth and development of the individual, and that aid in the regulation of numerous body processes.

HYDROXY THC
A metabolite of THC (tetrahydrocannabinol).
HYPERFLEXIA
   Exaggerated or over extended motions.

HYPERGLYCEMIA
   Excess sugar in the blood.

HYPERPNEA
   A deep, rapid or labored breathing.

HYPERPYREXIA
   Extremely high body temperature.

HYPERREFLEXIA
   A neurological condition marked by increased reflex reactions.

HYPERTENSION
   Abnormally high blood pressure. Do not confuse this with hypotension.

HYPOGLYCEMIA
   An abnormal decrease of blood sugar levels.

HYPOPNEA
   Shallow or slow breathing.

HYPOTENSION
   Abnormally low blood pressure. Do not confuse this with hypertension.

HYPOTHERMIA
   Decreased body temperature.

ICE
   A crystalline form of methamphetamine that produces a very intense and fairly long-lasting "high".

INHALANTS
   One of the seven drug categories. The inhalants include volatile solvents (such as glue and gasoline), aerosols (such as hair spray and insecticides) and anesthetic gases (such as nitrous oxide).

INSUFFLATION
   See "snorting".

INTEGUMENTARY SYSTEM
   The skin and accessory structures, hair and nails. Functions include protection, maintenance of body temperature, excretion of waste, and sensory perceptions.

INTRAOCULAR
   "Within the eyeball".
KOROTKOFF SOUNDS
A series of distinct sounds produced by blood passing through an artery, as the external pressure on the artery drops from the systolic value to the diastolic value.

LACK OF CONVERGENCE
The inability of a person's eyes to converge, or "cross" as the person attempts to focus on a stimulus as it is pushed slowly toward the bridge of his or her nose.

MAJOR INDICATORS
Physiological signs that are specifically assessed and are, for the most part, involuntary reflecting the status of the central nervous system (CNS) homeostasis (Physiological Indicators)

MARIJUANA
Common term for the Cannabis Sativa plant. Usually refers to the dried leaves of the plant. This is the most common form of the cannabis category.

MARINOL
A drug containing a synthetic form of THC (tetrahydrocannabinol). Marinol belongs to the cannabis category of drugs, but marinol is not produced from any species of cannabis plant.

MEDICAL RULEOUT
A determination made by a DRE that the condition of a suspected impaired driver is more likely related to a medical issue that effected the person's ability to operate a vehicle safely.

METABOLISM
The sum of all chemical processes that take place in the body as they relate to the movements of nutrients in the blood after digestion, resulting in growth, energy, release of wastes, and other body functions. The process by which the body, using oxygen, enzymes and other internal chemicals, breaks down ingested substances such as food and drugs so they may be consumed and eliminated. Metabolism takes place in two phases. The first step is the constructive phase (anabolism) where smaller molecules are converted to larger molecules. The second steps is the destructive phase (catabolism) where large molecules are broken down into smaller molecules.

METABOLITE
A chemical product, formed by the reaction of a drug with oxygen and/or other substances in the body.

MIOSIS
Abnormally small (constricted) pupils.

MOTOR NERVES
Nerves that carry messages away from the brain, to be body's muscles, tissues, and organs. Motor nerves are also known as efferent nerves.

MUSCULAR HYPERTONICITY
Rigid muscle tone.
MYDRIASIS
Abnormally large (dilated) pupils.

NARCOTIC ANALGESICS
One of the seven drug categories. Narcotic analgesics include opium, the natural alkaloids of opium (such as morphine, codeine and thebaine), the derivatives of opium (such as heroin, dilaudid, oxycodone and percodan), and the synthetic narcotics.

NERVE
A cord-like fiber that carries messages either to or from the brain. For drug evaluation and classification purposes, a nerve can be pictured as a series of "wire-like" segments, with small spaces or gaps between the segments.

NEURON
A nerve cell. The basic functional unit of a nerve. It contains a nucleus within a cell body with one or more axons and dendrites.

NEUROTRANSMITTER
Chemicals that pass from the axon of one nerve cell to the dendrite of the next cell, and that carry messages across the gap between the two nerve cells.

NULL EFFECT
One mechanism of polydrug interaction. For a particular indicator of impairment, two drugs produce a null effect if neither of them affects that indicator. For example, PCP does not affect pupil size, and alcohol does not affect pupil size. The combination of PCP and alcohol produces a null effect on pupil size.

NYSTAGMUS
An involuntary jerking of the eyes.

"ON THE NOD"
A semi-conscious state of deep relaxation. Typically induced by impairment due to Heroin or other narcotic analgesics. The suspect's eyelids droop, and chin rests on the chest. Suspect may appear to be asleep, but can be easily aroused and will respond to questions.

OVERLAPPING EFFECT
One mechanism of polydrug interaction. For a particular indicator of impairment, two drugs produce an overlapping effect if one of them affects the indicator but the other doesn't. For example, cocaine dilates pupils while alcohol doesn't affect pupil size. The combination of cocaine and alcohol produces an overlapping effect on pupil size: the combination will cause the pupils to dilate.

PALLOR
An abnormal paleness or lack of color in the skin.

PARANOIA
Mental disorder characterized delusions and the projection of personal conflicts, that are ascribed to the supposed hostility of others.
PARAPHERNALIA
Drug paraphernalia are the various kinds of tools and other equipment used to store, transport or ingest a drug. Hypodermic needles, small pipes, bent spoons, etc., are examples of drug paraphernalia. The singular form of the word is "paraphernalium". For example, one hypodermic needle would be called a "drug paraphernalium".

PARASYMPATHETIC NERVE
An autonomic nerve that commands the body to relax and to carry out tranquil activities. The brain uses parasympathetic nerves to send "at ease" commands to the muscles, tissues, and organs.

PARASYMPATHOMIMETIC DRUGS
Drugs that mimic neurotransmitter associated with the parasympathetic nerves. These drugs artificially cause the transmission of messages that produce lower blood pressure, drowsiness, etc.

PDR (Physician's Desk Reference)
A basic reference source for drug recognition experts. The PDR provides detailed information on the physical appearance and psychoactive effects of licitly-manufactured drugs.

PHENCYCLIDINE
A contraction of PHENYL CYCLOHEXYL PIPERIDINE, or PCP. Formerly used as a surgical anesthetic, however, it has no current legitimate medical use in humans.

PHENYL CYCLOHEXYL PIPERIDINE (PCP)
Often called "phencyclidine" or “PCP”, it is a specific drug belonging to the Dissociative Anesthetics category.

PHYSIOLOGY
Physiology is the branch of biology dealing with the functions and activities of life or living matter and the physical and chemical phenomena involved.

PILOERECTION
Literally, "hair standing up", or goose bumps. This condition of the skin is often observed in persons who are under the influence of LSD.

POLYDRUG USE
Ingesting drugs from two or more drug categories.

PSYCHEDELIC
A mental state characterized by a profound sense of intensified or altered sensory perception sometimes accompanied by hallucinations.

PSYCHOPHYSICAL TESTS
Methods of investigating the mental (psycho-) and physical characteristics of a person suspected of alcohol or drug impairment. Most psychophysical tests employ the concept of divided attention to assess a suspect's impairment.
PSYCHOTOGENIC
Literally, "creating psychosis" or "giving birth to insanity". A drug is considered to be psychotogenic if persons who are under the influence of the drug become insane, and remain so after the drug wears off.

PSYCHOTOMIMETIC
Literally, "mimicking psychosis" or "impersonating insanity". A drug is considered to be psychotomimetic if persons who are under the influence of the drug look and act insane while they are under the influence.

PTOSIS
Droopy eyelids.

PULSE
The expansion and contraction of the walls of an artery, generated by the pumping action of blood.

PULSE RATE
The number of expansions of an artery per minute.

PUPILLARY LIGHT REFLEX
The pupils of the eyes will constrict and dilate depending on changes in lighting.

PUPILLARY UNREST
The continuous, irregular change in the size of the pupils that may be observed under room or steady light conditions.

REBOUND DILATION
A period of pupillary constriction followed by a period of pupillary dilation where the pupil steadily increases in size and does not return to its original constricted size.

RESTING NYSTAGMUS
Jerking of the eyes as they look straight ahead.

SCLERA
A dense white fibrous membrane that, with the cornea, forms the external covering of the eyeball (i.e., the white part of the eye).

SENSORY NERVES
Nerves that carry messages to the brain, from the various parts of the body, including notably the sense organs (eyes, ears, etc.). Sensory nerves are also known as afferent nerves.

SINSEMILLA
The unpollenated female cannabis plant, having a relatively high concentration of THC.
SFST
Standardized Field Sobriety Testing. There are three SFSTs, namely Horizontal Gaze Nystagmus (HGN), Walk and Turn, and One Leg Stand. Based on a series of controlled laboratory studies, scientifically validated clues of alcohol impairment have been identified for each of these three tests. They are the only Standardized Field Sobriety Tests for which validated clues have been identified.

SNORTING
One method of ingesting certain drugs. Snorting requires that the drug be in powdered form. The user rapidly draws the drug up into the nostril, usually via a paper or glass tube. Snorting is also known as insufflation.

SPHYGMOMANOMETER
A medical device used to measure blood pressure. It consists of an arm or leg cuff with an air bag attached to a tube and a bulb for pumping air into the bag, and a gauge for showing the amount of air pressure being pressed against the artery.

STETHOSCOPE
A medical instrument used, for drug evaluation and classification purposes, to listen to the sounds produced by blood passing through an artery.

SYMPATHETIC NERVE
An autonomic nerve that commands the body to react in response to excitement, stress, fear, etc. The brain uses sympathetic nerves to send "wake up calls" and "fire alarms" to the muscles, tissues and organs.

SYMPATHOMIMETIC DRUGS
Drugs that mimic the neurotransmitter associated with the sympathetic nerves. These drugs artificially cause the transmission of messages that produce elevated blood pressure, dilated pupils, etc.

SYNAPSE (or Synaptic Gap)
The gap or space between two neurons (nerve cells).

SYNESTHESIA
A sensory perception disorder, in which an input via one sense is perceived by the brain as an input via another sense. An example of this would be a person "hearing" a phone ring and "seeing" the sound as a flash of light. Synesthesia sometimes occurs with persons under the influence of hallucinogens.

SYSTOLIC
The highest value of blood pressure. The blood pressure reaches its systolic value when the heart is fully contracted (systole), and blood is sent surging into the arteries.

TACHYCARDIA
Abnormally rapid heart rate.

TACHYPNEA
Abnormally rapid rate of breathing.
THC (Tetrahydrocannabinol)
The principal psychoactive ingredient in drugs belonging to the cannabis category.

TOLERANCE
An adjustment of the drug user's body and brain to the repeated presence of the drug. As tolerance develops, the user will experience diminishing psychoactive effects from the same dose of the drug. As a result, the user typically will steadily increase the dose he or she takes, in an effort to achieve the same psychoactive effect.

TRACKS
Scar tissue usually produced by repeated injection of drugs, via hypodermic needle, along a segment of a vein.

VERTICAL GAZE NYSTAGMUS
An involuntary jerking of the eyes (up-and-down) which occurs as the eyes are held at maximum elevation. The jerking should be distinct and sustained.

VOIR DIRE
A French expression literally meaning “to see, to say.” Loosely, this would be rendered in English as “To seek the truth,” or “to call it as you see it.” In a law or court context, one application of voir dire is to question a witness to assess his or her qualifications to be considered an expert in some matter pending before the court.

VOLUNTARY NERVE
A motor nerve that carries messages to a muscle that we consciously control.

WITHDRAWAL
This occurs in someone who is physically addicted to a drug when he or she is deprived of the drug. If the craving is sufficiently intense, the person may become extremely agitated, and even physically ill.
Upon completion of this session, participants will be able to:

- Define the term “drug” in the context of this course.
- Name the seven drug categories relevant to the Drug Evaluation and Classification program.
- State in approximate, quantitative terms the incidence of drug use among various segments of the American public.

CONTENT SEGMENTS

A. Definition and Categories of Drugs
B. Incidence and Characteristics of Drug Use in America
C. Incidence of Drug Impaired Driving

LEARNING ACTIVITIES

Instructor Led Presentations
Reading Assignments
Learning Objectives (Cont.)
• State in approximate, quantitative terms the incidence of drug involvement in motor vehicle crashes and other driving incidents.
• Correctly answer the “topics for study” questions at the end of this session.

Working Definition of “Drug”
Any substance that, when taken into the human body, can impair the ability of the person to operate a vehicle safely

A. Definition and Categories of Drugs

• Medicines? Are all drugs medicines? Are all medicines drugs?
• Narcotics? Are all drugs Narcotics?
• Habit forming substances? Are all drugs habit forming? Are all habit forming substances drugs?
• A simple, law enforcement oriented definition.
• This definition is derived from the California Vehicle Code.
  “Any substance that, when taken into the human body, can impair the ability of the person to operate a vehicle safely.”
• Within this simple, law enforcement oriented definition; there are seven categories of drugs.

• Each category consists of substances that impair a person’s ability to drive.

• The categories differ from one another in terms of how they impair driving ability and in terms of the kinds of impairment they cause.

• Because the categories produce different types of impairment, they generate different signs and symptoms.

• With training and practice, you will be able to recognize the different signs of drug influence and determine which category is causing the impairment you observe in a subject.
Central Nervous System Depressants

The category of CNS Depressants includes some of the most commonly abused drugs. Alcohol remains the most familiar drug. In 2011, 51.8 % of the population aged 12 and older were current drinkers of alcohol.

Source: National Survey on Drug Use and Health (NSDUH) 2011.

CNS Depressants:

- Slow down the operation of the Central Nervous System (i.e., the brain, brain stem and spinal cord).
- Cause the user to react more slowly.
- Cause the user to process information more slowly.
- Relieve anxiety and tension.
- Induce sedation, drowsiness and sleep.
- In high doses, CNS Depressants will produce general anesthesia. i.e., depress the brain’s ability to sense pain.
- In very high doses, induce coma and death.
Central Nervous System Stimulants

CNS Stimulants constitute another widely abused category of drugs.

There appears to be approximately 1.4 million Cocaine users in the U.S.  
*Source: NSDUH Survey, 2011.*

Cocaine is one of the most frequently reported drugs in overdose cases treated at hospital emergency rooms.

Estimates of drug use vary widely, especially for illicit drugs such as Cocaine, Methamphetamines, etc.

- In 2011, 6.1 million Americans aged 12 or older admitted using psychotherapeutic drugs non-medically at least once in their lifetime.  
  *Source: NSDUH Survey, 2011.*

- In 2010, 1.1 million persons aged 12 or older reported they had used methamphetamines at least once in their lifetime.  
  *Source: 2010 National Survey on Drug Use and Health.*

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<tr>
<th>Examples:</th>
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<tr>
<td>Amphetamine</td>
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<td>Cocaine</td>
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<td>Methamphetamine</td>
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<td>Ritalin</td>
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</table>
Central Nervous System Stimulants (Cont.)

Examples:
- Amphetamine
- Cocaine
- Methamphetamine
- Ritalin

CNS Stimulants:
- Speed up the operation of the Central Nervous System, and of the various bodily functions controlled by the Central Nervous System
- Cause the user to become hyperactive, extremely talkative
- Speech may become rapid and repetitive
- Heart rate increases
- Blood pressure increases
- Body temperature rises, user may become excessively sweaty
- Induce emotional excitement, restlessness, irritability
- Can induce cardiac arrhythmia (abnormal beating of the heart), cardiac seizures and death

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Hallucinogens

Hallucinogens are also widely abused.

LSD and Peyote are only two examples of Hallucinogens. There are many other Hallucinogens.

In recent years, significant increases in the abuse of both LSD and “Ecstasy” (MDMA) have been reported.

Hallucinogens:
• Create perceptions that differ from reality. These perceptions are often much distorted, so that the user sees, hears, and smells things in a way quite different from how they really look, sound, and smell.
• Hallucinogens cause the nervous system to send strange or false signals to the brain.
• Clarification: Hallucinogens confuse the Central Nervous System (as well as speeding it up, like CNS Stimulants).
• Produce sights, sounds, odors, feelings and tastes that aren’t real.
• Induce a temporary condition very much like psychosis or insanity.
• Can create a “mixing” of sensory modalities, so that the user “hears colors,” “sees music.”

This mixing of the senses is called Synesthesia. With all of these false and distorted perceptions, a person under the influence of hallucinogens would be a very unsafe driver.
Dissociative Anesthetics

PCP, its analogs and Dextromethorphan are examples of Dissociative Anesthetics. PCP is considered by the medical community to be a Hallucinogen. However, because of the symptomatology it presents, it is in a separate category.

- Phencyclidine is a short form of the chemical name Phenyl Cyclohexyl Piperidine, from which we get the abbreviation “PCP.”

PCP is a synthetic drug, i.e., it does not occur naturally but must be produced in a laboratory-like setting.

PCP has many analogs, or “chemical cousins” that are very similar to PCP in chemical structure, and that produce essentially the same effects.

- Analogs of PCP include Ketamine, Ketalar and Ketajet.
- PCP is also a very powerful pain killer, or anesthetic.

Dextromethorphan (DXM) is found in many over-the-counter anti-tussive cold medications such as Robitussin, Coricidin Cough and Cold, and Dimetapp. DXM is typically abused by school age children, teenagers or young adults to achieve impairment.

- DXM is normally used in liquid or pill form.
- In high doses, DXM impairment is similar to the effects of PCP or Hallucinogens.
Narcotic Analgesics

There are two subcategories of Narcotic Analgesics:

1. Natural Opiates: are derivatives of Opium.
2. Synthetics: are produced chemically in the laboratory. The synthetics are not derived in any way from Opium, but produce similar effects.

The word “Analgesic” means pain reliever. All of the drugs in this category reduce the person’s reaction to pain.
- Heroin is one of the most commonly abused of the Narcotic Analgesics.
- Heroin is highly addictive.

Many addicts support their habit by stealing property and converting it to cash.

In addition to reducing pain, Narcotic Analgesics produce euphoria, drowsiness, apathy, lessened physical activity and sometimes impaired vision.

Persons under the influence of Narcotic Analgesics often pass into a semi-conscious type of sleep or near-sleep. This condition is often called being “on the nod.” They often are sufficiently alert to respond to questions effectively. Higher doses of Narcotic Analgesics can induce coma, respiratory failure and death.
Inhalants

Inhalants are the fumes of certain substances. Inhalant abuse is on the rise. These substances are found in many common products:

- Gasoline
- Oil-based paints
- Glue
- Aerosol cans
- Varnish remover
- Cleaning fluids
- Etc.

Examples:

- Volatile Solvents (Glue, Gasoline, Paint, etc.)
- Aerosols (Hairspray, Insecticides, etc.)
- Anesthetic Gases (Nitrous Oxide, Amyl Nitrite, etc.)

Different Inhalants produce different effects.

- Many produce effects similar to those of CNS Depressants.
- A few produce stimulant-like effects.
- Some produce hallucinogenic effects.

The Inhalant abuser’s attitude and demeanor can vary from inattentive, stuporous and passive to irritable, violent and dangerous. The abuser’s speech will often be slow, thick and slurred.
Cannabis

The category “Cannabis” includes the various forms and products of the Cannabis Sativa plant and other species of Cannabis plants.

The primary active ingredient in Cannabis products is the substance known as “Delta-9 Tetrahydrocannabinol,” or “THC.”

Apart from alcohol, marijuana is the most commonly abused drug in this country. In a household survey from 2011, marijuana was listed as the most common illicit drug used in the U.S. There were 18.1 million Americans over the age of 12 reporting use in the past month.

Source: National Household Drug Use and Health Survey, 2011.

Cannabis appears to interfere with the attention process. Drivers under the influence of Marijuana often do not pay attention to their driving.

Cannabis also produces a distortion of the user’s perception of time, an increased heart rate (often over 100 beats per minute) and reddening of the eyes.
Drug Combinations

Many drug users appear to be “chemical gluttons.” They often ingest drugs from two or more drug categories.

The term for this is “polydrug use.”

Some very common examples of polydrug use include:

• Alcohol with virtually any other drug
• Marijuana and PCP - A common way to ingest PCP is to sprinkle it on a Marijuana “joint” and smoke it.
• Cocaine and Heroin, sometimes called a “speedball.”
• Heroin and Amphetamine, sometimes called a “poor man’s speedball.”
• Heroin and PCP, sometimes called a “fireball.”
• “Crack” Cocaine and PCP, sometimes called a “space base.”
• “Crack” Cocaine and Marijuana, sometimes called a “primo.”
• “Crack” and Methamphetamine, sometimes called “croak.”
Sometimes, people take two different drugs (such as Heroin and Cocaine) that produce some opposite effects.

Example: Heroin tends to lower blood pressure. Cocaine tends to elevate blood pressure.

Different drug combinations may produce unique, interactive effects. When a person has ingested multiple drugs, that person will experience multiple drug effects.

Under proper medical supervision, specific drugs often are used to reverse overdose conditions. However, it is important to bear in mind that, in a polydrug situation, some of the signs of a particular drug may not be evident even though the person is under the influence of that drug.
B. Incidence and Characteristics of Drug Use in America

- In 2011, 22.5 million Americans (8.0% of the population) aged 12 years or older were current illicit drug users.
  
  Source: 2011 National Survey on Drug Use and Health.

- Marijuana was the most commonly used illicit drug in 2011, with 18.1 million users reporting use.
  
  Source: 2011 National Survey on Drug Use and Health.

- In 2011, 6.1 million people were users of prescription type psychotherapeutic drugs taken non-medically.
  
  Source: 2011 National Survey on Drug Use and Health.

- In 2011, there were an estimated 1.4 million Cocaine users in the U.S.
  
  Source: 2011 National Survey on Drug Use and Health.

- In 2008, there were an estimated 1.5 million users of Heroin.
  
  Source: 2008 National Survey on Drug Use and Health.

- Data from the 2008 NSDUH report shows that there were 2.2 million new users of pain relievers in 2008, with an average age of first use of 21.2 years.
  
C. Incidence of Drug Impaired Driving

Accurate data on the frequency with which people drive while under the influence of drugs is somewhat limited.

This is due to the various reasons that include:

• Many impaired drivers are never detected.
• Many drug users also consume alcohol, when they are stopped for impaired driving they may be arrested (and tabulated in statistics) as alcohol impaired drivers only.

Fact: About 9.4 million people aged 12 years and older admitted driving under the influence of illicit drugs in the past year (2010).

Source: SAMHSA, Results from the 2011 National Survey on Drug Use and Health.

When they are involved in crashes, they may not be tested for drugs.
Fact: A study in California of young male (15-34 years old) drivers killed in crashes in the early 1980’s revealed that more than half (51%) tested positive for drugs other than alcohol. The most prevalent drug (other than alcohol) was Cannabis at 37%. 30% of all cases had both alcohol and Cannabis.


Fact: University of Tennessee (1988) found 40% of crash injured drivers had drugs other than alcohol in them.

Fact: A NHTSA study of various locations in seven states revealed that alcohol was present in more than 50% of the drivers. Drugs other than alcohol were present in 18% of the drivers.

NHTSA undertook a comprehensive study of the prevalence of potentially-impairing drug use by drivers in 2007.


Approximately 11,000 drivers were asked to provide an oral fluid and blood sample. Samples were tested for legal prescription, illegal and OTC products.

Fact: Based on the oral fluid results, more nighttime drivers (14.4%) were drug positive than daytime drivers (11.0%).

Fact: Based on the blood test results administered only at nighttime, 13.8% of the drivers were drug-positive.

Fact: Using the combined results, 16.3% of the nighttime drivers were drug-positive.


The facts are unmistakable: Drug use is common among many Americans. So is drug impaired driving.

Consult national and local resources for updated data on drugs and driving.
Topics for Study Questions

1. What does the term “drug” mean, as it is used in this course?

2. What are the seven categories of drugs? To which category does alcohol belong? To which category does Cocaine belong?

3. What does “polydrug use” mean?

4. What is a “Speedball”? What is a “Space Base”?

5. In the 2007 National Roadside Survey of Alcohol and Drug Use by Drivers, what percentage of nighttime drivers, using both blood tests and oral fluids, tested positive for drugs?
Participant Manual DRE 7-Day Session 3 – Development and Effectiveness of the Drug Evaluation and Classification Program

Session 3
Development and Effectiveness of the Drug Evaluation and Classification Program

Learning Objectives

• State the origin and evolution of the Drug Evaluation and Classification program
• Describe research and demonstration project results that validate the effectiveness of the program
• State the impact of legal precedents established by case law
• Correctly answer the "topics for study" questions at the end of this session

Upon successfully completing this session the participant will be able to:
• State the origin and evolution of the Drug Evaluation and Classification Program.
• Describe research and demonstration project results that validate the effectiveness of the program.
• State the impact of legal precedents established by case law.
• Correctly answer the “topics for study” questions at the end of this session.

CONTENT SEGMENTS
A. Origin and Evolution of Drug Evaluation & Classification Program
B. Evidence of Program Effectiveness
C. Case Law Review

LEARNING ACTIVITIES
Instructor Led Presentations
Reading Assignments
The DEC program was developed by personnel of the Los Angeles Police Department.

Development of the DEC program began in the early 1970’s, in response to a growing awareness that many people apprehended for impaired driving were under the influence of drugs rather than alcohol.

Dick Studdard (Traffic Officer):

- Sergeant Studdard retired from the LAPD in June, 1990.

- Sgt. Studdard and his fellow officers often encountered many impaired drivers whose BACs were zero or very low.

They occasionally succeeded in having physicians examine some of these low BAC subjects, resulting in diagnosis of drug influence.

- Note: examining physicians subsequently would be subpoenaed to testify in contested cases.

- For various reasons, physicians were often reluctant or unwilling to conduct these examinations and offer opinions.
Some reasons why doctors may be reluctant:

- They typically receive little training in the recognition of specific signs of drug impairment, particularly at street level doses.

- They may not see the subject until hours after the drugs were used, by which time the signs and symptoms often have changed.

As a result, some drivers whom Studdard and other officers were certain were impaired were not prosecuted or convicted for DWI.

Studdard concluded that it was essential to develop appropriate procedures that officers could use when confronted with persons suspected of drugs.

Len Leeds (Narcotics Officer) and deceased in 1995:

- Was approached by Studdard and asked to collaborate in the development of a program to help identify drug-impaired subjects.

- Initiated some independent research by consulting with physicians, enrolling in relevant classes, studying text books, technical articles, etc.

- Secured management level support within the department to continue research and program development.

As time went on, many other key persons both within and outside LAPD contributed to the development and refinement of the program.
In 1979, the program was officially recognized by LAPD.

Note: The LAPD program was referred to as the Drug Recognition Expert (DRE) program.

B. Evidence of Program Effectiveness

LAPD began to work with the National Highway Traffic Safety Administration (NHTSA) on issues relating to this program in the early 1970’s.

The first step was to develop and validate a battery of standardized field sobriety tests for investigating alcohol impaired driving.

LAPD personnel played a major role in the research that led to the wide spread use of Horizontal Gaze Nystagmus, the Walk and Turn test, and the One Leg Stand test.

By the early 1980’s, NHTSA completed its validation of the standardized tests for DWI enforcement.

At this time, NHTSA began to assist LAPD in validating the Drug Recognition Expert program.
### Three-Step Drug Evaluation Process

1. Establish that the subject is impaired
2. Rule out medical impairment
3. Determine the category of drugs involved

The DEC program evolved into what is essentially a three-step process.

- First, establish that the subject is impaired and verify that his or her alcohol level is not consistent with the degree of impairment that is evident.

Clarification: the first portion of the drug influence evaluation is devoted principally to Standardized Field Sobriety Testing of the subject, and to the administration of a breath test.

Inconsistency between the observed impairment and the BAC suggests the presence of some other drug(s), or some other complicating factor such as an illness or injury.

- Second, use some simple evaluation procedures to determine whether the impairment may stem from illness or injury, requiring medical attention.

- Third, use evaluation procedures to determine what category (or categories) of drugs are the likely cause of the impairment.

**Key Point**

The entire evaluation process is standardized.

- Administered the same way to all subjects.
- Administered the same way by all officers.
The Need for Reliable Standardized Assessment Procedure

- One reason for needing a reliable standardized assessment procedure is that we may be called upon to submit evidence of an articulable suspicion of drug influence to support our request for a chemical test of the subject.

- Some courts or motor vehicle hearings officers may find that a low BAC result, by itself, does not provide adequate basis for requesting the subject to submit to a 2nd chemical test.

- Another reason is that the subject may refuse to submit to the chemical test, denying us of scientific evidence of drug influence. In that case, conviction or acquittal may hinge on the officer’s observations and expertise as a DRE.

- A third reason is that chemical tests usually disclose only that the subject has used a particular drug recently. The chemical test usually does not indicate whether the drug is psychoactive at the present time.

- Thus, the DRE procedures are needed to establish that the subject not only has used the drug, but also that he or she is under the influence.
• A fourth reason is that it can be expensive and require a large sample of blood or urine to perform a broad analysis for any or all drugs. Practical constraints require that we be able to point the laboratory technician toward those types of drugs most likely to be found in the sample.

It is always possible that a person suspected of drug impairment is actually suffering from some medical problem. If a sample is collected, and the subject is not examined by someone who is qualified, evidence of medical problems may not come to light until it is too late.
Two Stages of Validation

NHTSA assisted LAPD in a two-phase validation study.

- Laboratory validation, using volunteers who ingested selected drugs.
  
  The Johns Hopkins validation was conducted in 1984.

- Field validation, using persons actually arrested in Los Angeles on suspicion of drug influence.
  
  The LAPD Field Validation Study was conducted in 1985.
1. Laboratory Validation Study

The Laboratory Validation took place at Johns Hopkins University in Maryland. The drug examiners were senior DREs from LAPD. The LAPD participants: Dick Studdard; Jerry Powell; Pat Russell; and Doug Laird.

The laboratory experiments were planned and conducted by researchers from Johns Hopkins.

Volunteers each took a “pill” and smoked a “cigarette.”

The “pill” contained either no drug (placebo) or one of the following drugs:

- Secobarbital (CNS Depressant)
- Valium (i.e., Diazepam – CNS Depressant)
- d-amphetamine (CNS Stimulant).
Note: Secobarbital, diazepam and d-amphetamine were the pharmaceuticals used in the study. All were administered in identical gelatin capsules and were not brand name drugs.

A common brand name for secobarbital is Seconal; a common brand name for diazepam is Valium and a common brand name for d-amphetamine is Dexedrine.

The “cigarette” contained either THC or no drug (placebo). Neither the volunteers nor the LAPD officers knew what the volunteers had taken.

Note: this condition is known as a “double blind” experiment. The people being tested and the people doing the testing are kept uninformed of the test condition.

Two different dose levels of Marijuana, Diazepam and d-amphetamine were used.

Clarification: some of the Diazepam and d-amphetamine pills were “weak,” some were “strong.” Similarly, some of the Marijuana cigarettes were “weak,” some “strong.” All of the Secobarbital pills were “strong.”

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Normal daily dose for therapeutic purposes:
- Secobarbital: approx. 100 mg.
- Diazepam: 4-40 mg.
- d-amphetamine: 15 mg.

Doses administered for this study:
- Secobarbital: 300 mg.
- Diazepam: weak – 15mg, strong – 30mg.
- d-amphetamine: weak – 15 mg, strong – 30 mg.
- Marijuana: weak – 12 puffs or 1.3% THC cigarettes, strong – 12 puffs of 2.8% THC cigarettes.

Results
- The DREs were excellent in identifying subjects who received only placebo doses: they classified 95% of the drug free subjects as "not impaired."
- Similarly, they were excellent in identifying the high dose subjects.
- They classified as “impaired” 98.7% of the subjects who received Secobarbital or strong doses of Marijuana, Diazepam or d-amphetamine.
• They correctly identified the category of drug for 91.7% of those strong dose subjects.
• The DREs were less successful in identifying the weak dose subjects.
• Only 17.5% of the subjects who received the weak dose of d-amphetamine were classified as “impaired.”
• Only 32.5% of the subjects who smoked the “weak” Marijuana cigarettes were classified as “impaired.”
• The results of the laboratory validation study were considered to be extremely positive.
• The DRE procedures correctly identified the category of drugs in more than 90% of the subjects who were impaired.
• The procedures only rarely indicated that unimpaired subjects were under the influence of drugs.
• Laboratory studies can only allow certain dose levels of drugs, which are much lower than those seen at street levels. Therefore, participants in laboratory studies may not show many of the signs of impairment that are seen with subjects ingesting street level doses of drugs.
2. Field Validation Study

The field validation study was based on one hundred seventy-three people actually arrested on suspicion of driving under the influence of drugs.

Point out that during the study period, many other drugged driving arrests were made by LAPD officers.

None of the 173 cases involved a crash. In all of the cases, the arrested subjects agreed to submit to a blood test.

Twenty-eight different DREs from LAPD and the L.A. area participated in the examinations of these one hundred seventy-three subjects.

The researchers excluded all cases where the subjects refused to give blood, since it would have been impossible to check the DREs accuracy in those cases. Similarly, they excluded all cases that involved crashes, since the subjects’ injuries could have confounded the drug examination. Also excluded were subjects who were found in possession of drugs or had any charges other than the drugged driving charge.
Field Validation Study (Cont.)
Los Angeles

Blood tests confirmed:
• One suspect had no drugs or alcohol
• 10 had alcohol only
• 37 (21%) had one drug
• 82 (47%) had two drugs
• 43 (25%) had three or more drugs

Results of the Field Study

Based on the independent blood tests, only one of the one hundred seventy-three subjects was found to have no alcohol or other drugs. Another ten subjects were found to have only alcohol in them.

Thirty-seven (21%) of the subjects were found to have only one drug other than alcohol. Eighty-two had two drugs other than alcohol (47%) and forty-three (25%) had three or more drugs other than alcohol.

This means that one hundred twenty-five of the one hundred seventy-three subjects had ingested two or more drugs other than alcohol: that is more than 72% of the subjects.

PCP was the drug most often found among these one hundred seventy-three subjects: more than half of them (56%) had used PCP.
Field Validation Study (Cont.)
Los Angeles

Blood tests confirmed the presence of at least one “predicted” category of drugs for more than 90% of the suspects

The key finding of this study was the following:

- For more than nine out of ten of the subjects (92.5%), the blood test confirmed the presence of at least one drug category “predicted” by the DREs.

Confirmation Rates for Specific Categories

92%: Phencyclidine (PCP)
85%: Narcotic Analgesics
78%: Cannabis
50%: CNS Depressants

The confirmation rates for specific categories:

PCP: blood tests confirmed DREs’ predictions in 92% of the cases.
Narcotic Analgesics: blood tests confirmed 85% of the DREs’ predictions.
Cannabis: blood tests confirmed 78% of DREs’ predictions.
CNS Depressants: blood tests confirmed 50% of DREs’ predictions.
CNS Stimulants: blood tests confirmed 33% of DREs’ predictions.

Numerous states have conducted comparisons of laboratory analysis and DRE opinions. The correlation rates exceeded 80% in those studies.

A Study conducted in 1990 by the Arizona Department of Public Safety Central Regional Crime Laboratory compiled records of the toxicological analysis corresponding to Arizona DREs were analyzed showing that a laboratory confirmation rate of 86.5% had been achieved.

The overall conclusion of the laboratory and field studies is that the DEC Program is an effective tool for law enforcement.
D. Case Law Review

Court Rulings

Favorable Court Rulings on DEC Procedures.

Courts in various states have ruled favorably on the DEC Program. American courts employ either the Frye or Daubert Standard for determining the admissibility of scientific evidence.

The Frye standard is the traditional test for admissibility of “new” scientific evidence.

The Frye standard: “Is the procedure or principle espoused, accepted by the relevant scientific community?”

Frye standard was set by the US Supreme Court in 1923.
In Daubert, courts serve as a gatekeeper for all scientific evidence. Daubert standard requires a showing of reliability before scientific evidence can be admitted.

Courts assess evidence by considering four factors:

- Opinions are testable.
- Methods/principles have been subject to peer review.
- Known error rate can be identified.
- Opinions rest on methodology that is generally accepted within the relevant scientific/technical community.
Case Law Review (Cont.)

“Frye” Standard

• Arizona v Johnson
• Washington v Baity
• Minnesota v Klawitter
• Colorado v Hernandez

State of Arizona v. Dayton Johnson and Samuel Rodriguez, et al, NOS 90056865 and 90035883, (1990). An Arizona court (Tucson Municipal Court) ruled that the Frye Standard was met. However, upon appeal, the Arizona State Supreme Court ruled that the Frye Standard did not apply to the DEC Program.

Washington v. Baity, 991P.2d, 1151, 140 Wn. 2d 1 (2000). A Washington Supreme Court ruled that the DRE protocols are the application of traditional techniques.

State of Minnesota, City of Minneapolis v. Larry Michael Klawitter, 518 N.W.2d 577, (1993). A Minnesota Court (City of Minneapolis) ruled that outside of nystagmus, the DEC Program is not subject to the Frye Standard.

State of Colorado v. Daniel Hernandez, 92M 181, (1992). The Colorado Supreme Court determined that the Frye Standard applies to the protocol because the process has “scientific elements.” A Colorado Court (Boulder County Court) ruled that the procedures used by DREs are not new or novel and the Frye Standard did not apply.

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Case Law Review (Cont.)

“Daubert” Standard

• New Mexico v Aleman
• Nebraska v Cubrich

• New Mexico v. Mariam Aleman, Dona Ana County, 3rd District (2003). A New Mexico Court ruled the DRE’s opinion was correct and that the DRE protocol is admissible.

• Nebraska v. Cubrich, Case No. CR03-8203 Sarpy County Court (2004).
  In this case, the court used the Daubert Standard. In many jurisdictions, it will not be necessary to have expert scientific testimony to secure admissibility of a DRE’s examination of a subject.

The DEC Program is gaining acceptance in many courts.
In fact, testimony based on DRE investigation has been accepted by courts for years.

Expert testimony regarding drug influence has long been accepted by numerous courts. The components of DRE evaluation are generally accepted in the scientific community.

The DEC Program simply combined those components into a systematic and standardized procedure. Thus, many prosecutors believe that FRYE standards do not apply to DRE evaluations and testimony.
HGN Case Law

One key element of DEC – namely, Horizontal Gaze Nystagmus – has been recognized as meeting the Frye standard by several State Supreme Courts. First to do so was Arizona, in the case known as State vs. Blake.

Point out that additional court rulings on HGN are summarized in the participant’s Manual.

Summary of HGN Case Law

The prevailing trend is for courts to admit HGN as evidence of impairment, with the proper scientific foundation.

But courts consistently reject all attempts to introduce HGN as evidence of a quantitative BAC.

The court ruled that in cases where there is no chemical test to determine a BAC level, HGN test results can be admitted the same as of Standardized Field Sobriety Tests to show a “neurological dysfunction,” one cause of which could be the ingestion of alcohol.
Topics for Study Questions

1. State four reasons why it is important not to rely simply on a chemical test to establish a subject's drug impairment.

2. What categories of drugs were included in the Johns Hopkins Laboratory Study?

3. In what percentage of cases in the Los Angeles Field Validation Study did blood tests confirm the DREs' opinion that PCP was present?

4. What percentage of subjects were found to be polydrug users in the LAPD Field Validation Study?

5. What was the landmark State Supreme Court case that upheld the use of HGN as evidence of impairment?

6. What do we call the standards for admissibility of scientific evidence, set by the U.S. Supreme Court?

7. Which State first found the Drug Evaluation and Classification procedures met the standards of scientific evidence?
“Frye” Decisions Regarding Admissibility of Drug Recognition Expert Testimony

“Frye” refers to a United States Federal Court opinion dealing with the admissibility of scientific evidence. The court established that new or novel scientific evidence, or the novel application of scientific principles, must be shown to have met with general acceptance in the relevant scientific community before it can be admitted.

1990
The Municipal Court of the City of Tucson, County of Pima, State of Arizona

“Virtually all the witnesses agreed that the scientific procedures utilized by trained drug recognition experts are reliable and are generally accepted in the scientific community. The methodology in place, used by trained law enforcement personnel in the field, has been shown to produce reasonably reliable and uniform results that will contribute materially to the ascertainment of the truth.”

On May 7, 1992, the Arizona Supreme Court heard oral arguments in a special proceeding regarding this case. The Justices uniformly rejected the application of “Frye” to the DRE procedures. The Chief Justice observed that the component examination procedures had been established for fifty years.

The prosecutors in this case were Tom Rankin (Tucson) and Cliff Vanell (Phoenix).

1992
County Court, Boulder, Colorado
Case No. 92M181 (Unpublished Opinion)
People of the State of Colorado v. Daniel Hernandez

“The DRE methods are accepted within the scientific community because they have found to be reliable.”

“The Court finds that the expert does have sufficient specialized knowledge to assist the jurors in better deciding whether the defendant drove his car when under the influence of a specific drug. The DRE testimony can be used at trial provided a sufficient foundation is laid.” Overall, this court ruled that the procedures used by DRE’s are not new or novel scientific techniques that must meet the “Frye” standard.

The prosecutor in this case was David Archeluta (Boulder County). Expert witnesses for the prosecution include: Sergeant Thomas Page, LAPD, Zenon Zuk, M.D., Marcelline Burns, Ph.D., Rick Abbott, M.D., and Laurel Farrell (chemist).
1993
(Unpublished Opinion)
State of Minnesota, City of Minneapolis vs. Larry Michael Klawitter, 518 N.W.2d 577 (1994)

“Given proper foundation and subject to other qualifications, opinion testimony by experienced police officers trained in use of so-called drug recognition protocol is generally admissible in evidence in a trial of a defendant for driving while under the influence of a controlled substance.”

The Court determined that the gaze nystagmus test satisfies the requirements of “Frye”.

“We agree with the trial court that the officer should be allowed to give an opinion based on the officer’s training and experience and his or her observations following the 12-step drug recognition protocol, as long as (a) there is sufficient foundation for the specific opinion expressed, (b) the state does not attempt to exaggerate the officer’s credentials by referring to the officer as a “Drug Recognition Expert” or to unfairly suggest that the officer’s opinion is entitled to greater weight than it deserves, and...” “We add only that it should be obvious that the mere fact that such opinion testimony by itself will be sufficient to support a guilty verdict.”

The court also determined that, outside of nystagmus, the components of a DRE examination are not scientifically new and are not subject to the “Frye” test.

The trial court stated, “…there is nothing scientifically new, novel, or controversial about any component of the DRE protocol itself. The symptomatology matrix used by DRE’s to reach their conclusions is not new and is generally accepted in the medical community as an accurate compilation of signs and symptoms or impairment by the various drug categories.”

The prosecutor in this case was Karen Herland (City of Minneapolis). Expert witnesses for the prosecution included: Sergeant Thomas Page, LAPD, Dr. Marcelline Burns (psychologist), Dr. David Peed (optometrist), Dr. Zenon Zuk (medical doctor), Eugene Adler (criminalist), Dr. S.J. Jejurikar (Minnesota Bureau of Criminal Apprehension), and Robert Meyer (toxicologist).

1994
11th Judicial Circuit in and for Dade County, Florida
Case No. 256998,9-I (Unpublished Opinion)
State of Florida v. Frederick Williams
Judge Maxine Cohen Lando
Original filed January 19, 1995

“Given proper foundation and subject to other qualifications, opinion testimony by an experienced police officer trained in the use of the drug recognition protocol is generally admissible in evidence in a trial of a defendant charged with driving under the influence of a controlled or chemical substance. Furthermore, Horizontal Gaze Nystagmus
(HGN) test results are generally admissible to establish (1) that the defendant was impaired; and/or (2) that the defendant was over the legal limit; and/or (3) the defendant’s specific breath or blood alcohol level at the time he performed the test.”

This court found that the “Frye” standard is inapplicable to the DRE Protocol because neither the protocol nor any of its subsets (including HGN, VGN, and Lack of Convergence) are “scientific”.

Further, these tests are neither new nor novel. The Court also state that “Frye” is inapplicable to HGN, VGN, and LOC because none of them are new or novel. “None of these tests or the theories and procedures they encompass, are new, novel, or emerging scientific techniques. The medical and psychological professions have acknowledged the tests’ underlying theories and procedures for decades.”

The Court concluded:

“Drug recognition training is not designed to qualify police officers as scientists, but to train them as observers. The training is intended to refine and enhance the skill of acute observation...and to focus that power...in a particular situation.”

This court followed the Klawitter (Minnesota) decision, that it requires the state to “lay a proper predicate before referring to a DRE as anything other than a DRE or Drug Recognition Examiner or Examining.”

“The real issue is not the admissibility of the evidence, but the weight it should receive. That is a matter for the jury to decide.”

The prosecutor in this case was Steve Talpins (Dade County). Expert witnesses for the prosecution in this case included: Marcelline Burns, Ph.D., Zenon Zuk, M.D., Robert Dobie, M.D., Sergeant Thomas Page, LAPD, and others.

2000
Case No. 66876-1
State of Washington vs. Michael Baity
Judge J. Talmadge, WA Supreme Court
Original filed 2000

In this case, the court was asked to determine if a drug recognition protocol, used by trained drug recognition officers to determine if a suspect’s driving is impaired by a drug other than alcohol, meets the requirements of Frye v. United States, 293 F. 1013, 34 A.L.R. 145 (1923), for novel scientific evidence.

The issue brought before the court was; Is a drug recognition program novel scientific evidence generally accepted in the scientific community, thus satisfying the Frye test for admissibility?

The facts in this case were:

The state charged Baity with one count of DUI, in violation of RCW 46.61.502 (l) (b) (c), and one count of driving while license suspended in the third degree, in violation of RCW 46.20.342(l)(c), after he failed roadside SFST’s and showed signs of drug impairments.
In a pretrial motion in Baity's case, the State sought to qualify the DREs as experts and to obtain a ruling on the admissibility of DRE evidence with respect to the defendant's drug impairment and the evaluation process used to determine that impairment. Specifically, the State sought to admit testimony that Baity's impairment was consistent with the symptoms associated with one of seven categories of drugs. Additionally, the state moved to admit testimony regarding the use of the horizontal gaze nystagmus (HGN) test, both for the detection of alcohol and for the detection of drugs. Baity moved to suppress all DRE evidence, including the HGN test, on the basis that the DRE program and protocol constitute novel scientific evidence subject to the Frye test for admissibility.

On May 19, 1998, the Pierce County District Court judges issued their opinion titled, “Opinion Regarding Admissibility of HGN and DRE.” In that opinion, they denied the defendants’ motions to suppress the field sobriety tests (SFSTs) as to their alcohol impairment, holding those tests are “reasonably understandable to the ordinary person” and therefore not subject to Frye. Clerk’s Papers at 56. The court also noted some features of the DRE protocol were either not of a scientific nature or were scientific, but not novel.

The court ruled that after analyzing the DRE protocol and the approach of other courts to its admissibility, that the DRE protocol and the chart used to classify the behavioral patterns associated with seven categories of drugs have scientific elements meriting evaluation under Frye. They also found that the protocol to be accepted in the relevant scientific communities. However, the court ruled that there is confined situations where all 12-steps of the protocol have been undertaken. Moreover, an officer may not testify in a fashion that casts an aura of scientific certainty to the testimony. The officer also may not predict the specific level of drugs present in a suspect. The DRE officer, properly qualified, may express an opinion that a suspect's behavior and physical attributes are or are not consistent with the behavioral and physical signs associated with certain categories of drugs.

The court also held that the protocol meets the mandate of Frye. An officer may testify concerning such drug impairment, subject to the limitations set forth in this opinion, upon meeting the requirements of ER 702 and 703 for the admission of expert opinion testimony. The court reversed the suppression orders of the Pierce County District Court and remanded the cases for further proceedings consistent with this opinion.

2003
Case No. CR-2003-00025
State of New Mexico vs. Miriam Aleman
State of New Mexico, County of Dona Ana
Third Judicial District
Judge Silvia E. Cano-Garica

Defendant made a motion In Limine to exclude the testimony of the DRE officer. They heard the testimony of various witnesses and reviewed the State’s Brief in support of the DRE testing. Testimony and other applicable documents found that:
The DRE officer was recognized as an expert of DRE testing based upon his specialized knowledge and experience, the DRE evaluation method is generally accepted in the particular scientific field of forensic toxicology, the DRE evaluation provides critical information which assists the toxicologist in forming an opinion as to whether the driver was impaired by the use of drugs at or near the time the driver was driving the motor vehicle.

The DRE protocols are the application or incorporation of traditional techniques in the biology, physiology, anatomy, chemistry, pharmacology and toxicology fields, and the ultimate decision as to the driver’s alleged impairment, based on all of the testimony received, rests with the jury.

2004
Case No. CR 03-8203
State of Nebraska vs. Timothy J. Cubrich
Judge Todd J. Hutton, Sarpy Co. Court

The court was asked to determine the admissibility of the law enforcement officer’s opinion that the defendant was under the influence of a drug, other than alcohol, to the extent that his abilities to safely operate the vehicle were appreciable impaired.


The court concluded: Since Daubert, the court now serves in the “gatekeeping” role in which it is called upon to determine the reliability and relevance of expert testimony. There is no Case Law in Nebraska which has specifically addressed the issue of expert testimony relating to impaired drivers suspected of using drugs. Nor is there a statutory procedure by which Drug Recognition Examinations or the opinions derived there from have been codified.

Application of the Daubert standard provided a number of considerations the court used in determining the admissibility of evidence through the testimony of an expert, which included:

The 12-step protocol which relies on determining if a person is drug impaired has been recognized in the scientific community, including physicians, ophthalmologists, and forensic toxicologists, as a dependable methodology by which an officer, properly trained, can identify impairment and the category of drug(s) which are impairing the suspect’s cognitive and physical capabilities.

The methodology is reliable because it is dependent on a fixed set of assessments which are verified by a toxicology test. The evaluation process includes HGN testing which has been found to meet the Frye standard of admissibility. Additionally, the HGN and VGN tests have been subject to peer review and publication. The remaining tests serve to screen the suspect’s mental and physical condition documenting clues explaining why the person may or may not be impaired and if so the source(s) involved.
The drug recognition assessment is a tool by which a specially trained officer can conclude “based on the totality of results” whether or not a person is impaired by a drug other than alcohol.

The court found that the DREs opinion was correct in that the Defendant showed signs of impairment from a drug, other than alcohol, which caused him to seek a toxicological examination. The category of drug is admissible for the limited purpose of establishing foundation for drug screen conducted by the toxicologists.
INTRODUCTION

The following state case law summary contains the seminal cases for each state, the District of Columbia and the Federal courts on the admissibility of HGN. Three main issues regarding the admissibility of the HGN test are set out under each state: evidentiary admissibility, police officer testimony, and purpose and limits of the HGN test results. The case or cases that address each issue are then briefly summarized and cited.

**Alabama**

I. Evidentiary Admissibility

HGN is a scientific test that must satisfy the Frye standard of admissibility. The Supreme Court of Alabama found that the State had not presented "sufficient evidence regarding the HGN test's reliability or its acceptance by the scientific community to determine if the Court of Criminal Appeals correctly determined that the test meets the Frye standards."


II. Police Officer Testimony Needed to Admit HGN Test Result

The Court did not address this issue.

III. Purpose and Limits of HGN

The Court did not address this issue.

**Alaska**

I. Evidentiary Admissibility

HGN is a scientific test. It is generally accepted within the relevant scientific community.


II. Police Officer Testimony Needed to Admit HGN Test Result

A police officer may testify to the results of HGN testing as long as the government establishes a foundation that the officer has been adequately trained in the test.
III. Purpose and Limits of HGN

HGN testing is “a reliable indicator of a person’s alcohol consumption and, to that extent, HGN results are relevant.” The court cautioned that the HGN test could not be used to correlate the results with any particular blood-alcohol level, range of blood-alcohol levels, or level of impairment. Ballard, 955 P.2d at 940.

Arizona

I. Evidentiary Admissibility

HGN is a scientific test that needs to satisfy the Frye standard of admissibility. State has shown that HGN satisfies the Frye standard. State v. Superior Court (Blake), 718 P.2d 171, 181 (Ariz. 1986) (seminal case on the admissibility of HGN).

II. Police Officer Testimony Needed to Admit HGN Test Result


III. Purpose and Limits of HGN

HGN test results are admissible to establish probable cause to arrest in a criminal hearing. State v. Superior Court (Blake), 718 P.2d at 182.

“Where a chemical analysis has been conducted, the parties may introduce HGN test results in the form of estimates of BAC over .10% to challenge or corroborate that chemical analysis.” Ricke, 778 P.2d at 1361.

When no chemical analysis is conducted, the use of HGN test results “is to be limited to showing a symptom or clue of impairment.” Hamilton, 799 P.2d at 858.
Arkansas

I. Evidentiary Admissibility

Novel scientific evidence must meet the Prater (relevancy) standard for admissibility. Because law enforcement has used HGN for over thirty-five years, a Prater inquiry is not necessary as the test is not "novel" scientific evidence. Whitson v. Arkansas, 863 S.W.2d 794, 798 (Ark. 1993).

II. Police Officer Testimony Needed to Admit HGN Test Result

The Court did not address this issue.

III. Purpose and Limits of HGN

HGN may be admitted as evidence of impairment, but is not admissible to prove a specific BAC. Whitson, 863 S.W.2d at 798.

California

I. Evidentiary Admissibility


“A consensus drawn from a typical cross-section of the relevant, qualified scientific community accepts the HGN testing procedures.” Joehnk, 35 Cal. App. 4th at 1507, 42 Cal. Rptr. 2d at 17.

II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer testimony is insufficient to establish “general acceptance in the relevant scientific community.” Leahy, 882 P2d. at 609. Also see People v. Williams, 3 Cal. App. 4th 1326 (Cal. Ct. App. 1992).

Police officer can give opinion, based on HGN and other test results, that defendant was intoxicated. Furthermore, police officer must testify as to the administration and result of the test. Joehnk, 35 Cal. App. 4th at 1508, 42 Cal. Rptr. 2d at 18.

III. Purpose and Limits of HGN

HGN may be used, along with other scientific tests, as some evidence that defendant was impaired. Joehnk, 35 Cal. App. 4th at 1508, 42 Cal. Rptr. 2d at 17.
HGN test results may not be used to quantify the BAC level of the defendant. California v. Loomis, 156 Cal. App. 3d Supp. 1, 5-6, 203 Cal. Rptr. 767, 769-70 (1984).

Connecticut

I. Evidentiary Admissibility


Also see, Connecticut v. Merritt, 647 A.2d 1021, 1028 (Conn. App. Ct. 1994). HGN must meet the Frye test of admissibility. In this case, the state presented no evidence to meet its burden under the Frye test.

HGN satisfies the Porter standards and is admissible. (In State v. Porter, 698 A.2d 739 (1997), the Connecticut Supreme Court held the Daubert approach should govern the admissibility of scientific evidence and expressed factors to be considered in assessing evidence.) Connecticut v. Carlson, 720 A.2d 886 (Conn. Super. Ct. 1998).

II. Police Officer Testimony Needed to Admit HGN Test Result

Must lay a proper foundation with a showing that the officer administering the test had the necessary qualifications and followed proper procedures. Connecticut v. Merritt, 647 A.2d 1021, 1028 (Conn. App. Ct. 1994).

III. Purpose and Limits of HGN


Delaware

I. Evidentiary Admissibility


HGN evidence is acceptable scientific testimony under the Delaware Rules of Evidence. Ruthardt, 680 A.2d at 362.
II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer may be qualified as an expert to testify about the underlying scientific principles that correlate HGN and alcohol. Delaware police receiving three-day (twenty-four hour) instruction on HGN test administration are not qualified to do this. Ruthardt, 680 A.2d at 361-62.

Police officer testimony about training and experience alone, without expert testimony, is not enough foundation to admit HGN test results. Zimmerman v. Delaware, 693 A.2d 311, 314 (Del. 1997).

III. Purpose and Limits of HGN

HGN test results admissible to show probable cause in a criminal hearing. Ruthardt, 680 A.2d at 355.


HGN test results cannot be used to quantify the defendant’s BAC. However, they can be used as substantive evidence that the defendant was “under the influence of intoxicating liquor.” Ruthardt, 680 A.2d at 361-62.

District of Columbia

I. Evidentiary Admissibility

The Court does not address this issue.

II. Police Officer Testimony Needed to Admit HGN Test Result

The Court used the case law of other jurisdictions to come to the conclusion that the Officer in the case could testify as an expert on the administration and the results of the HGN test. Therefore, in this case, the evidence was properly admitted using the Officer as the expert. See Karamychev v. District of Columbia, 772 A. 2d 806 (D.C. App. 2001).

III. Purpose and Limits of HGN

The Court has not yet addressed this issue.
Florida

I. Evidentiary Admissibility

The 3rd District Court found HGN to be a “quasi-scientific” test. Its application is dependent on a scientific proposition and requires a particular expertise outside the realm of common knowledge of the average person. It does not have to meet the Frye standard because HGN has been established and generally accepted in the relevant scientific community, and has been Frye tested in the legal community. The court took judicial notice that HGN is reliable based on supportive case law from other jurisdictions, numerous testifying witnesses and studies submitted. It is “no longer ‘new or novel’ and there is simply no need to reapply a Frye analysis.” Williams v. Florida, 710 So. 2d 24 (Fla. Dist. Ct. App. 1998).

The 4th District Court found HGN to be a scientific test. However, because it is not novel, the Frye standard is not applicable. However, “[e]ven if not involving a new scientific technique, evidence of scientific tests is admissible only after demonstration of the traditional predicates for scientific evidence including the test’s general reliability, the qualifications of test administrators and technicians, and the meaning of the results.” Without this predicate, “the danger of unfair prejudice, confusion of issues or misleading the jury from admitting HGN test results outweighs any probative value.” The state did not establish the appropriate foundation for the admissibility of HGN test results. Florida v. Meador, 674 So. 2d 826, 835 (Fla. Dist. Ct. App. 1996), review denied, 686 So. 2d 580 (Fla. 1996).

II. Police Officer Testimony Needed to Admit HGN Test Result

“We take judicial notice that HGN test results are generally accepted as reliable and thus are admissible into evidence once a proper foundation has been laid that the test was correctly administered by a qualified DRE [Drug Recognition Expert].” Williams, 710 So. 2d at 32.

Also see Bown v. Florida, 745 So. 2d 1108 (Fl. Dist. Ct. App. 1999) which expands Williams. Allows trooper to explain HGN, but district requires confirmatory blood, breath or urine test before admitting HGN into evidence.

No evidence presented as to the police officer’s qualifications nor administration of the HGN test in this case. Meador, 674 So. 2d at 835.

III. Purpose and Limits of HGN

The HGN test results alone, in the absence of a chemical analysis of blood, breath, or urine, are inadmissible to trigger the presumption provided by the DUI statute, and may not be used to establish a BAC of .08 percent or more. Williams, 710 So. 2d at 36.
**Georgia**

I. Evidentiary Admissibility


HGN testing is judicially noticed as a scientifically reliable test and therefore expert testimony is no longer required before the test results can be admitted. Hawkins v. Georgia, 476 S.E.2d 803, 808-09 (Ga. Ct. App. 1996).

II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer, who received specialized training in DUI detection and worked with a DUI task force for two years, was permitted to testify that, in his opinion, defendant was under the influence. Sieveking v. Georgia, 469 S.E.2d 235, 219-20 (Ga. Ct. App. 1996).

A police officer who testifies to the results, administration, and procedure of HGN may be cross-examined about those areas even if the state only offers him as a POST-certified officer. This is because the analysis and expertise needed for HGN go far beyond those needed by a lay person who observes the walk and turn or one leg stance tests. James v. State, 2003 WL 1540235 (Ga. App.).

III. Purpose and Limits of HGN

HGN test can be admitted to show that the defendant “was under the influence of alcohol to the extent that it was less safe for him to drive.” Sieveking, 469 S.E.2d at 219.

**Hawaii**

I. Evidentiary Admissibility

HGN is a scientific test. The HGN test is reliable under the Hawaii Rules of Evidence and admissible as “evidence that police had probable cause to believe that a defendant was DUI.” Judicial notice of the “validity of the principles underlying HGN testing and the reliability of HGN test results” is appropriate. HGN test results can be admitted into evidence if the officer administering the test was duly qualified to conduct the test and the test was performed properly. Hawaii v. Ito, 978 P.2d 191 (Haw. Ct. App. 1999).

II. Police Officer Testimony Needed to Admit HGN Test Result

Before HGN test results can be admitted into evidence in a particular case, however, it must be shown that (1) the officer administering the test was duly qualified to conduct
and grade the test; and (2) the test was performed properly in the instant case. Hawaii v. Ito, 978 P.2d 191 (Haw. Ct. App. 1999), See also Hawaii v. Toyomura, 904 P.2d 893, 911 (Haw. 1992) and Hawaii v. Montalbo, 828 P2d. 1274, 1281 (Haw. 1992).

III. Purpose and Limits of HGN

HGN test can be admitted as “evidence that police had probable cause to believe that a defendant was DUI.” Hawaii v. Ito, 978 P.2d 191 (Haw. Ct. App. 1999).

Idaho

I. Evidentiary Admissibility


II. Police Officer Testimony Needed to Admit HGN Test Result

Officer may testify as to administration of HGN test, but not correlation of HGN and BAC.

III. Purpose and Limits of HGN

"HGN test results may not be used at trial to establish the defendant's blood alcohol level. Although we note that in conjunction with other field sobriety tests, a positive HGN test result does supply probable cause for arrest, standing alone that result does not provide proof positive of DUI." Garrett, 811 P.2d at 493.

HGN may be “admitted for the same purpose as other field sobriety test evidence -- a physical act on the part of [defendant] observed by the officer contributing to the cumulative portrait of [defendant] intimating intoxication in the officer's opinion.” Gleason, 844 P.2d at 695.

Illinois

I. Evidentiary Admissibility

HGN meets Frye standard of admissibility.
Despite the ruling of the Buening appellate court, the Fourth District Court of Appeals declined to recognize HGN’s general acceptance without a Frye hearing. The court criticized the Buening court for taking judicial notice of HGN’s reliability based on the

The state supreme court held that the state was no longer required to show than an HGN test satisfied the Frye standard before introducing the results of the test into evidence. Absent proof by the defense that the HGN test was unsound, the State only had to show that the officer who gave the test was trained in the procedure and that the test was properly administered. The People of the State of Illinois v. Linda Basler, 740 N.E.2d 1 (Ill. 2000), 2000 Ill. LEXIS 1698 (Ill. 2000). (Plurality Opinion) According to Fourth Circuit, a Frye hearing must be held for HGN to be admitted. People v. Herring, 762 N.E.2d 1186.

II. Police Officer Testimony Needed to Admit HGN Test Result

“A proper foundation should consist of describing the officer's education and experience in administering the test and showing that the procedure was properly administered.” Buening, 592 N.E.2d at 1227.

III. Purpose and Limits of HGN

HGN test results may be used to establish probable cause in a criminal hearing. People v. Furness, 526 N.E.2d 947, 949 (Ill. App. Ct. 1988).


HGN test results may be used “to prove that the defendant is under the influence of alcohol.” Buening, 592 N.E.2d at 1228.

*Indiana*

I. Evidentiary Admissibility

Results of properly administered HGN test are admissible to show impairment which may be caused by alcohol and, when accompanied by other evidence, will be sufficient to establish probable cause to believe a person may be intoxicated. Cooper v. Indiana, 751 N.E.2d 900, 903 (Ind. Ct. App. Feb. 2002)

II. Police Officer Testimony Needed to Admit HGN Test Result

The proper foundation for admitting HGN evidence should consist of describing the officer’s education and experience in administering the test and showing that the procedure was properly administered. Cooper, 751 N.E.2d at 903.
The question of whether a trained officer might express an opinion that defendant was intoxicated based upon the results of field sobriety tests was not before the court, and thus, the court expressed no opinion concerning the admissibility of such testimony. Cooper, 751 N.E. 2d at 902, n. 1.

III. Purpose and Limits of HGN

HGN test results, when accompanied by other evidence, will be sufficient to establish probable cause that the person may be intoxicated. Cooper, 751 N.E.2d at 903.

Iowa

I. Evidentiary Admissibility

HGN admissible as a field test under the Iowa Rules of Evidence. “[T]estimony by a properly trained police officer with respect to the administration and results of the horizontal gaze nystagmus test are admissible without need for further scientific evidence.” State v. Murphy, 451 N.W.2d 154, 158 (Iowa 1990).

II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer may testify about HGN test results under Rule 702 if the officer is properly trained to administer the test and objectively records the results. Murphy, 451 N.W.2d at 158.

III. Purpose and Limits of HGN

HGN test results may be used as an indicator of intoxication. Murphy, 451 N.W.2d at 158.

Kansas

I. Evidentiary Admissibility

HGN must meet Frye standard of admissibility and a Frye hearing is required at the trial level. There was no Frye hearing conducted and the appellate court refused to make a determination based on the record it had. State v. Witte, 836 P.2d 1110, 1121 (Kan. 1992).

HGN test has not achieved general acceptance within the relevant scientific community and its exclusion was appropriate. State v. Chastain, 960 P.2d 756 (Kan. 1998).
II. Police Officer Testimony Needed to Admit HGN Test Result

The Court did not address this issue.

III. Purpose and Limits of HGN

The Court did not address this issue.

**Kentucky**

I. Evidentiary Admissibility


II. Police Officer Testimony Needed to Admit HGN Test Result

The Court did not address this issue.

III. Purpose and Limits of HGN

The Court did not address this issue.

**Louisiana**

I. Evidentiary Admissibility

HGN meets Frye standard of admissibility and with proper foundation my be admitted as evidence of intoxication.


The standard of admissibility for scientific evidence is currently the Louisiana Rules of Evidence. State v. Foret, 628 So. 2d 1116 (La. 1993).

II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer may testify as to training in HGN procedure, certification in the administration of HGN test and that the HGN test was properly administered. Armstrong, 561 So. 2d at 887.
III. Purpose and Limits of HGN

The HGN test may be used by the officer “to determine whether or not he [needs] to ‘go any further’ and proceed with other field tests.” Breitung, 623 So. 2d at 25. HGN test results may be admitted as evidence of intoxication.

Armstrong, 561 So. 2d at 887.

**Maine**

I. Evidentiary Admissibility

Because the HGN test relies on greater scientific principles than other field sobriety tests, the reliability of the test must first be established. Either Daubert or Frye standard must be met. State v. Taylor, 694 A.2d 907, 912 (Me. 1997).

The Maine Supreme Court took judicial notice of the reliability of the HGN test to detect impaired drivers. Taylor, 694 A.2d at 910.

II. Police Officer Testimony Needed to Admit HGN Test Result

“A proper foundation shall consist of evidence that the officer or administrator of the HGN test is trained in the procedure and the [HGN] test was properly administered.” Taylor, 694 A.2d at 912.

III. Purpose and Limits of HGN

HGN test results may only be used as “evidence of probable cause to arrest without a warrant or as circumstantial evidence of intoxication. The HGN test may not be used by an officer to quantify a particular blood alcohol level in an individual case.” Taylor, 694 A.2d at 912.

**Maryland**

I. Evidentiary Admissibility


II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer must be properly trained or certified to administer the HGN test. [NOTE: In Schultz, the police officer failed to articulate the training he received in HGN testing and the evidence was excluded.] Schultz, 664 A.2d at 77.
III. Purpose and Limits of HGN


**Massachusetts**

I. Evidentiary Admissibility

HGN is scientific and is admissible on a showing of either general acceptance in the scientific community or reliability of the scientific theory. See Commonwealth v. Lanigan, 641 N.E.2d 1342 (Mass. 1994). HGN test results are inadmissible until the Commonwealth introduces expert testimony to establish that the HGN test satisfies one of these two standards. Commonwealth v. Sands, 675 N.E.2d 370, 373 (Mass. 1997).

II. Police Officer Testimony Needed to Admit HGN Test Result

“There must be a determination as to the qualification of the individual administering the HGN test and the appropriate procedure to be followed.” In this case there was no testimony as to these facts, thus denying the defendant the opportunity to challenge the officer’s qualifications and administration of the test. Sands, 675 N.E.2d at 373.

III. Purpose and Limits of HGN

The Court did not address this issue.

**Michigan**

I. Evidentiary Admissibility


II. Police Officer Testimony Needed to Admit HGN Test Result

Only foundation necessary for the introduction of HGN test results is evidence that the police officer properly performed the test and that the officer administering the test was qualified to perform it. Berger, 551 N.W.2d at 424.

III. Purpose and Limits of HGN

HGN test results are admissible to indicate the presence of alcohol. Berger, 551 N.W.2d at 424 n.1.
Minnesota

I. Evidentiary Admissibility

Court found that HGN meets the Frye standard of admissibility. State v. Klawitter, 518 N.W.2d 577, 585 (Minn. 1994).

II. Police Officer Testimony Needed to Admit HGN Test Result

Police officers must testify about their training in and experience with the HGN test. See generally Klawitter, 518 N.W.2d at 585-86.

III. Purpose and Limits of HGN

HGN admissible as evidence of impairment as part of a Drug Evaluation Examination in the prosecution of a person charged with driving while under the influence of drugs. See generally Klawitter, 518 N.W.2d at 585.

Mississippi

I. Evidentiary Admissibility

HGN is a scientific test. However, it is not generally accepted within the relevant scientific community and is inadmissible at trial in the State of Mississippi. Young v. City of Brookhaven, 693 So.2d 1355, 1360-61 (Miss. 1997).

II. Police Officer Testimony Needed to Admit HGN Test Result

Police officers cannot testify about the correlation between the HGN test and precise blood alcohol content. Young, 693 So.2d at 1361.

III. Purpose and Limits of HGN

HGN test results are admissible only to prove probable cause to arrest. Young, 693 So.2d at 1361.

HGN test results cannot be used as scientific evidence to prove intoxication or as a mere showing of impairment. Young, 693 So.2d at 1361.
Missouri

I. Evidentiary Admissibility

Court found that HGN test meets the Frye standard of admissibility. State v. Hill, 865 S.W.2d 702, 704 (Mo. Ct. App. 1993), rev’d on other grounds, State v. Carson, 941 S.W.2d 518, 520 (Mo. 1997).

II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer must be adequately trained and able to properly administer the test. Hill, 865 S.W.2d at 704.

See also, Duffy v. Director of Revenue, 966 S.W. 2d 372 (Mo. Ct. App. 1998). HGN not admitted at trial because the administering officer was not aware of hot to properly score the test and interpret its results.

III. Purpose and Limits of HGN

HGN can be admitted as evidence of intoxication. Hill, 865 S.W.2d at 704.

Montana

I. Evidentiary Admissibility

Court found that HGN is neither new nor novel; thus, Daubert does not apply. Court still finds that HGN must meet the state’s rules of evidence that are identical to the Federal Rules of Evidence. Hulse v. DOJ, Motor Vehicle Div., 961 P.2d 75, 88 (Mont. 1998).

II. Police Officer Testimony Needed to Admit HGN Test Result

The court held that before an arresting officer may testify as to HGN results, a proper foundation must show that the officer was properly trained to administer the HGN test and that he administered the test in accordance with this training. Before the officer can testify as to the correlation between alcohol and nystagmus, a foundation must be established that the officer has special training in the underlying scientific basis of the HGN test. Hulse, 961 P.2d 75 (Mont. 1998).

See Also, State v. Crawford, 315 Mont. 480, 68 P.3d 848 (2003), in which the court ruled that the officer’s credentials were sufficient to establish his expertise, along with evidence that he was previously qualified as an expert. They relied on Russette (2002 MT 200), stating that to establish an expert’s qualifications, the proponent of the testimony must show that the expert has special training or education and adequate knowledge on which to base an opinion.
III. Purpose and Limits of HGN

HGN test results admissible as evidence of impairment.
State v. Clark, 762 P.2d 853, 856 (Mont. 1988).

Nebraska

I. Evidentiary Admissibility

HGN meets the Frye standard for acceptance in the relevant scientific communities, and when the test is given in conjunction with other field sobriety tests, the results are admissible for the limited purpose of establishing impairment that may be caused by alcohol. State v. Baue, 607 N.W.2d 191 (Neb. 2000)

II. Police Officer Testimony Needed to Admit HGN Test Result

A police officer may testify to the results of HGN testing if it is shown that the officer has been adequately trained in the administration and assessment of the HGN test and has conducted the testing and assessment in accordance with that training.
State v. Baue, 607 N.W.2d 191 (Neb. 2000)

III. Purpose and Limits of HGN

“Testimony concerning HGN is admissible on the issue of impairment, provided that the prosecution claims no greater reliability or weight for the HGN evidence than it does for evidence of the defendant's performance on any of the other standard field sobriety tests, and provided further that the prosecution makes no attempt to correlate the HGN test result with any particular blood-alcohol level, range of blood-alcohol levels, or level of impairment.” State v. Baue, 607 N.W.2d 191 (Neb. 2000) (quoting Ballard v. State, 955 P.2d 931, 940 (Alaska App. 1998))

New Hampshire

I. Evidentiary Admissibility

In State v. Dahoo (Dec. 20, 2002), the N.H. Supreme Court ruled that the HGN test is admissible under N.H. Rule of Evidence 702 and Daubert for the limited purpose of providing circumstantial evidence of intoxication. HGN test is a scientifically reliable and valid test.

N.H. Supreme Court ruled their findings binding in Dahoo and that courts “will not be required to establish the scientific reliability of the HGN.”
II. Police Officer Testimony Needed to Admit HGN Test Result

“Since we have already determined that the scientific principles underlying the HGN test are reliable, a properly trained and qualified police officer may introduce the HGN test results at trial.” State v. Dahoo, 2002 N.H. LEXIS 179.

III. Purpose and Limits of HGN

“HGN results cannot be introduced at trial for the purpose of establishing a defendant’s BAC level \[T]\he results are not sufficient alone to establish intoxication.” State v. Dahoo, Id.

New Jersey

I. Evidentiary Admissibility

In New Jersey, the party offering the results of a scientific procedure into evidence must comply with Frye and show that the procedure is generally accepted in the relevant scientific communities. A party may prove this general acceptance via “(1) testimony of knowledgeable experts[,] (2) authoritative scientific literature[, or] (3) [p]ersuasive judicial decision.” Based on the testimony of Dr. Marcelline Burns and Dr. Jack Richman, the Court found the HGN test to be generally accepted and the results thus admissible. The Court also noted the “significant number” of jurisdictions that have accepted the HGN test as admissible scientific evidence. State v. Maida, 2000 N.J. Super. LEXIS 276 (N.J. Super. Ct. Law Div. 2000).

*But See, State v. Doriguzzi, 760 A.2d 336 (N.J. Super. 2000), which held that HGN is scientific evidence that must meet Frye Standard. However, in each trial, sufficient foundation evidence must be laid by expert testimony to assure defendants that a conviction for DUI, when based in part on HGN testing, is grounded in reliable scientific data. In this case, the appellate court reversed defendant’s conviction because at trial no such foundation was presented. The court found that because HGN testing has not achieved general acceptance in the community, it is not a matter of which a court can take judicial notice.

II. Police Officer Testimony Needed to Admit HGN Test Result

The Court did not address this issue.

III. Purpose and Limits of HGN

The Court found the HGN test admissible “as a reliable scientific indicator of likely intoxication.”
**New Mexico**

I. Evidentiary Admissibility

HGN is a scientific test. New Mexico follows the Daubert standard, which requires a showing of reliability before scientific evidence can be admitted. The court held that a scientific expert must testify to the underlying scientific reliability of HGN and that a police officer cannot qualify as a scientific expert. Because the State failed to present sufficient evidence regarding the HGN test’s reliability, the court remanded the case stating it would be appropriate for the trial court, on remand, to make the initial determination of whether HGN testing satisfies Daubert. In addition, the court found HGN to be “beyond common and general knowledge” and declined to take judicial notice of HGN reliability.

*State v. Torres, 976 P.2d 20 (N.M. 1999).*

*State v. Lasworth, 42 P.3d 844 (Ct. App. N.M. 2001), cert. denied (2002).* Results of HGN test were inadmissible at trial (*State v. Torres, 976 P.2d 20 (N.M. 1999).*). The State needed to prove that HGN was both valid and reliable.

State called Dr. Marceline Burns as a witness (reliability) but did not call an expert in a discipline such as biology or medicine to explain how the amount of alcohol a person consumes correlates with HGN (validity).

II. Police Officer Testimony Needed to Admit HGN Test Result

Police officers can qualify as non-scientific experts based on their training and experience. Non-scientific experts may testify about the administration of the test and specific results of the test provided another scientific expert first establishes the reliability of the scientific principles underlying the test. In order to establish the “technical or specialized knowledge” required to qualify as an expert in the administration of the HGN test, “there must be a showing: (1) that the expert has the ability and training to administer the HGN test properly, and (2) that the expert did, in fact, administer the HGN test properly at the time and upon the person in question.”

*State v. Torres, 976 P.2d 20 (N.M. 1999).*

*State v. Lasworth, 42 P.3d 844 (Ct. App. N.M. 2001), cert. denied (2002).* Court believed that state had to show that presence of HGN (BAC above .08) correlates with diminishment of driver’s mental or physical driving skills (which it failed to do) & a correlation between presence of HGN and BAC above or below .08 (which it did through testimony of Dr. Burns). Court did not preclude use of results of HGN to establish probable cause for arrest or to establish grounds for administering a chemical BAC test.

III. Purpose and Limits of HGN

The Court did not address this issue.
New York

I. Evidentiary Admissibility

Prue holds that HGN test results are admissible under Frye standard of “general acceptance.” People v. Prue, Indictment No. I-5-2001, Franklin County Court (November 2001).

In Gallup, the court said that it was only necessary to conduct a foundational inquiry into the techniques and the tester’s qualifications for admissibility. People v. Gallup, Memorandum and order #13094, 302 A.D.2d 681 (3rd Dept)( 2003).

The Court allowed the introduction of HGN and the results because it was properly administered and the burden of establishing that HGN is a reliable indicator of intoxication is generally accepted in the relevant scientific community was satisfied. People v. William Miley, NYLJ 12/6/02 p.30 col. 6 (Nassau Co. Ct 2002).

II. Police Officer Testimony Needed to Admit HGN Test Result

The People must lay a proper evidentiary foundation in order for HGN results to be admissible at trial.

III. Purpose and Limits of HGN

The Court held that HGN is generally accepted in the relevant scientific community as a reliable indicator of intoxication.

North Carolina

I. Evidentiary Admissibility

HGN is a scientific test. It “does not measure behavior a lay person would commonly associate with intoxication but rather represents specialized knowledge that must be presented to the jury by a qualified expert.” As a result, “until there is sufficient scientifically reliable evidence as to the correlation between intoxication and nystagmus, it is improper to permit a lay person to testify as to the meaning of HGN test results.” State v. Helms, 504 S.E.2d 293 (N.C. 1998).

II. Police Officer Testimony Needed to Admit HGN Test Result

Testimony of one police officer, whose training consisted of a “forty hour training class dealing with the HGN test”, was inadequate foundation for admission of HGN test results. Helms, 504 S.E.2d 293 (N.C. 1998).
III. Purpose and Limits of HGN

HGN test results are evidence of impairment. Helms, 504 S.E.2d 293 (N.C. 1998).

North Dakota

I. Evidentiary Admissibility

Court found that HGN test is admissible as a standard field sobriety test. City of Fargo v. McLaughin, 512 N.W.2d 700, 706 (N.D. 1994).

II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer must testify as to training and experience and that the test was properly administered. City of Fargo, 512 N.W.2d at 708.

III. Purpose and Limits of HGN

“... HGN test results admissible only as circumstantial evidence of intoxication, and the officer may not attempt to quantify a specific BAC based upon the HGN test.” City of Fargo, 512 N.W.2d at 708.

Ohio

I. Evidentiary Admissibility


Court determined that HGN was a reliable indicator of intoxication without specifically ruling on whether HGN meets Frye or some other standard of admissibility. State v. Bresson, 554 N.E.2d 1330, 1334 (Ohio 1990).

Court held that SFSTs, including HGN, must be administered in strict compliance with NHTSA’s directives in order for the test results to be admissible. State v. Homan, 732 N.E.2d 952 (Ohio 2000).

II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer need only testify to training in HGN procedure, knowledge of the test and ability to interpret results. Bresson, 554 N.E.2d at 1336.
III. Purpose and Limits of HGN

HGN can be used to establish probable cause to arrest and as substantive evidence of a defendant's guilt or innocence in a trial for DUI, but not to determine defendant's BAC. Bresson, 554 N.E.2d at 1336.

Oklahoma

I. Evidentiary Admissibility


II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer testified to training on how to administer HGN test and how the test was administered in this case. Officer also testified as to his training in analyzing HGN test results. Yell, 856 P.2d at 997.

III. Purpose and Limits of HGN

If HGN testing was found to satisfy the Frye standard of admissibility, HGN test results would be considered in the same manner as other field sobriety test results. HGN test results are inadmissible as scientific evidence creating a presumption of intoxication. Yell, 856 P.2d at 997.

Oregon

I. Evidentiary Admissibility

HGN test results are admissible under the Oregon Rules of Evidence. HGN test results are scientific in nature, are relevant in a DUI trial, and are not unfairly prejudicial to the defendant. State v. O'Key, 899 P.2d 663, 687 (Or. 1995).

II. Police Officer Testimony Needed to Admit HGN Test Result

“Admissibility is subject to a foundational showing that the officer who administered the test was properly qualified, that the test was administered properly, and that the test results were recorded accurately.” O'Key, 899 P.2d at 670.
III. Purpose and Limits of HGN

“HGN test results are admissible to establish that a person was under the influence of intoxicating liquor, but is not admissible to establish a person's BAC.”
O'Key, 899 P.2d at 689-90.

Officer may not testify that, based on HGN test results, the defendant's BAC was over .10.

**Pennsylvania**

I. Evidentiary Admissibility

The state laid an inadequate foundation for the admissibility of HGN under the Frye/Topa standard.

Testimony of police officer is insufficient to establish scientific reliability of HGN test.
Moore, 635 A.2d at 692.
Miller, 532 A.2d at 1189-90.

Testimony of behavioral optometrist did not establish general acceptance of HGN test.
Apollo, 603 A.2d at 1027-28.

II. Police Officer Testimony Needed to Admit HGN Test Result

County detective certified as HGN instructor. Court did not comment on whether this would be enough foundation to allow the detective to testify about HGN test results.
Moore, 635 A.2d 629.

Police officer had one-day course on HGN. Court did not comment on whether this would be enough foundation to allow the officer to testify about HGN test results.
Miller, 603 A.2d at 1189.

III. Purpose and Limits of HGN

Not addressed by court.
South Carolina

I. Evidentiary Admissibility

HGN admissible in conjunction with other field sobriety tests. By implication, HGN is not regarded as a scientific test. State v. Sullivan, 426 S.E.2d 766, 769 (S.C. 1993).

II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer given twenty hours of HGN training. Sullivan, 426 S.E.2d at 769.

III. Purpose and Limits of HGN

HGN test results admissible “to elicit objective manifestations of soberness or insobriety . . . Evidence from HGN tests is not conclusive proof of DUI. A positive HGN test result is to be regarded as merely circumstantial evidence of DUI. Furthermore, HGN test shall not constitute evidence to establish a specific degree of blood alcohol content.” Sullivan, 426 S.E.2d at 769.

South Dakota

I. Evidentiary Admissibility

If it can be shown that a horizontal gaze nystagmus test was properly administered by a trained officer, such evidence should be admitted for a jury to consider at trial along with evidence of the other accepted field sobriety tests administered in South Dakota. STATE v. HULLINGER, 2002 SD 83; 649 N.W.2d 253 (S.D.S.Ct. 2002); 2002 S.D. LEXIS 99

II. Police Officer Testimony Needed to Admit HGN Test Result

Officer may testify if properly trained and test properly administered. At the pretrial hearing, the State presented three witnesses: 1) Monte Farnsworth, training director for the Office of Highway Safety at the Division of Criminal Investigation Law Enforcement Training Academy; 2) Deputy Ludwig; and 3) Dr. Larry Menning, optometrist and expert witness. South Dakota follows a Daubert standard in use of expert witnesses.

III. Purpose and Limits of HGN

The Court did not address this issue.
**Tennessee**

I. Evidentiary Admissibility

HGN is a scientific test. To be admissible at trial, such evidence must satisfy the requirements of Tenn. Rules of Evidence 702 and 703. State provided an inadequate amount of evidence to allow the court to conclude that HGN evidence meets this standard.  
State v. Murphy, 953 S.W.2d 200 (Tenn. 1997).

II. Police Officer Testimony Needed to Admit HGN Test Result

HGN must be offered through an expert witness. To qualify as an expert, a police officer must establish that he is qualified by his “knowledge, skill, experience, training or education” to provide expert testimony to “substantially assist the trier of fact to understand the evidence or determine a fact in issue.” Although the court did not rule out the possibility that the officer can be considered an expert, the court set a high level of proof. In this case, the court felt that although the officer had attended law enforcement training in DUI offender apprehension and the HGN test, this training was not enough to establish him as an expert.  

III. Purpose and Limits of HGN

The Court did not address this issue.

**Texas**

I. Evidentiary Admissibility

HGN admissible under the Texas Rules of Evidence.  

II. Police Officer Testimony Needed to Admit HGN Test Result

A police officer must qualify as an expert on the HGN test, specifically concerning its administration and technique, before testifying about a defendant’s performance on the test. Proof that the police officer is certified in the administration of the HGN test by the Texas Commission on Law Enforcement Officer Standards and Education satisfies this requirement.  
Emerson, 880 S.W.2d at 769.

III. Purpose and Limits of HGN

HGN admissible to prove intoxication, but not accurate enough to prove precise BAC.  
Emerson, 880 S.W.2d at 769.
**Utah**

I. Evidentiary Admissibility


II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer need only testify as to training, experience and observations when HGN admitted as a field test. Garcia, 912 P.2d at 1001.

III. Purpose and Limits of HGN

Admissible as any other field sobriety test. Garcia, 912 P.2d at 1000-01.

**Washington**

I. Evidentiary Admissibility

It is “undisputed” in the relevant scientific communities that “an intoxicated person will exhibit nystagmus”. HGN testing is not novel and has been used as a field sobriety test for “decades” and is administered the same whether investigating alcohol impairment or drug impairment. Thus, the use of HGN in drug and alcohol impaired driving cases is acceptable.
State v. Baity, 140 Wn.2d 1, 991 P.2d 1151 (Wash. 2000).

“[T]he Frye standard applies to the admission of evidence based on HGN testing, unless . . . the State is able to prove that it rests on scientific principles and uses techniques which are not ‘novel’ and are readily understandable by ordinary persons.” The state failed to present any evidence to this fact and the court declined to take judicial notice of HGN.

II. Police Officer Testimony Needed to Admit HGN Test Result

The Court did not address this issue.

III. Purpose and Limits of HGN

The Court did not address this issue.
**West Virginia**

I. Evidentiary Admissibility

The state did not present evidence for the court to reach “the question of whether the HGN test is sufficiently reliable to be admissible.” However, the court did conclude “that even if the reliability of the HGN test is demonstrated, an expert’s testimony as to a driver’s performance on the test is admissible only as evidence that the driver was under the influence. Estimates of blood alcohol content based on the HGN test are inadmissible.” State v. Barker, 366 S.E.2d 642, 646 (W. Va. 1988).


II. Police Officer Testimony Needed to Admit HGN Test Result

Police officer's training consisted of a one-day, eight-hour training session conducted by the state police. Officer testified to giving the HGN test about 100 times. Court did not reach question of whether this would be enough to allow the officer to testify about the HGN test results. Barker, 366 S.E.2d at 644.

III. Purpose and Limits of HGN


“If the reliability of the HGN test is demonstrated, an expert's testimony as to a driver's performance on the test is admissible only as evidence that the driver was under the influence,” the same as other field sobriety tests. Barker, 366 S.E.2d at 646.

**Wisconsin**

I. Evidentiary Admissibility

The court held that the HGN test results are admissible in this case because the test results were not the only evidence. The results were accompanied by the expert testimony of the officer. State v. Zivcic, 598 N.W.2d 565 (Wisc. Ct. App. 1999). See also, State v. Maxon, 633 N.W. 2d 278 (Wisc. Ct. App. 2001)
II. Police Officer Testimony Needed to Admit HGN Test Result

A police officer who is properly trained to administer and evaluate the HGN test can testify to the test results. A second expert witness is not needed. State v. Zivcic, 598 N.W.2d 565 (Wisc. Ct. App. 1999).

III. Purpose and Limits of HGN

The Court did not address this issue.

**Wyoming**

I. Evidentiary Admissibility

SFSTs, including HGN, are admissible to establish probable cause when administered in substantial compliance with NHTSA guidelines. Strict compliance is not necessary. The court took judicial notice of the number of states that allow HGN evidence on the basis of the “officer’s training, experience and ability to administer the test”. Smith v. Wyoming, 2000 Wyo. LEXIS 202 (Wyo. October 4, 2000).

II. Police Officer Testimony Needed to Admit HGN Test Result

A police officer that is properly trained to administer and evaluate the HGN test can testify to HGN results. Smith v. Wyoming, 2000 Wyo. LEXIS 202 (Wyo. October 4, 2000).

III. Purpose and Limits of HGN


**United States**

I. Evidentiary Admissibility

U.S. V. Eric D. Horn, 185 F. Supp. 2d 530 (D. Maryland 2002) In this case, U.S. District Court in Maryland made the first application of the newly revised FRE 702 to the HGN and other SFSTs.

Results of properly administered WAT, OLS and HGN, SFSTs may be admitted into evidence in a DWI/DUI case only as circumstantial evidence of intoxication or impairment but not as direct evidence of specific BAC.

Officer must first establish his qualifications to administer the test - training and
experience, not opinion about accuracy rate of test or causal connection between alcohol consumption and exaggerated HGN.

Government may prove causal connection by: judicial notice, expert testimony, or learned treatise. Horn may prove other causes by: judicial notice, cross-examination of state’s expert, defense expert, or learned treatise.

U.S. V. Daras, 1998 WL 726748 (4th Cir. 1998)(Unpublished opinion). WAT and OLS were not scientific so no expert needed. Court would have applied Daubert to HGN test, but there was no need to because breathalyzer, WAT and OLS were sufficient.

HGN test was admitted as part of series of field tests. Its admission was not challenged on appeal. U.S. v. Van Griffin, 874 F.2d 634 (9th Cir. 1989).

II. Police Officer Testimony Needed to Admit HGN Test Result

Foundation for HGN must address validity & reliability under FRE 702. In Horn, prosecution had a medical doctor and a police officer, but defense used behavioral psychologist to attack HGN literature of Dr. Marceline Burns and others.

III. Purpose and Limits of HGN

SFSTs may be admitted into evidence in a DWI/DUI case only as circumstantial evidence of intoxication or impairment but not as direct evidence of specific BAC. Horn.

Properly qualified, Officer may give opinion of intoxication or impairment by alcohol. Horn.

Note: The following states were not listed above due to a lack of case law discussion on HGN:
Colorado
Nevada
Rhode Island
Vermont( HGN was mentioned in the context of a refusal being admissible as evidence of probative guilt. State v. Blouin, 168 Vt. 119 (Vt. 1998)
Virginia

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1. Anderson, Schweitz & Snyder, Field Evaluation of Behavioral Test Battery for DWI, U.S. Dept. of Transportation Rep. No. DOT HS 806 475 (1983) (field evaluation of the Standardized Field Sobriety Test battery (HGN, one leg stand, and walk and turn) conducted by police officers from four jurisdictions indicated that the battery was approximately 80% effective in determining BAC above and below .10 percent).

2. Aschan, Different Types of Alcohol Nystagmus, 140 ACTA OTOLARYNGOL SUPP. 69 (Sweden 1958) (“From a medico legal viewpoint, simultaneous recording of AGN (Alcohol Gaze Nystagmus) and PAN (positional alcoholic nystagmus) should be of value, since it will show in which phase the patient's blood alcohol curve is...”).


4. Aschan, Bergstedt, Goldberg & Laurell, Positional Nystagmus in Man During and After Alcohol Intoxication, 17 Q.J. OF STUD. ON ALCOHOL, Sept. 1956, at 381. Study distinguishing two types of alcohol induced nystagmus, PAN (positional alcoholic nystagmus) I and PAN II, found intensity of PAN I, with onset about one half hour after alcohol ingestion, was proportional to amount of alcohol taken.


6. Barnes, The Effects of Ethyl Alcohol on Visual Pursuit and Suppression of the Vestibulo Ocular Reflex, 406 ACTA OTOLARYNGOL SUPP. 161 (Sweden 1984) (ethyl alcohol disrupted visual pursuit eye movement by increasing number of nystagmic "catch up saccades").

7. Burns & Moskowitz, Psychophysical Tests for DWI Arrest, U.S. Dept. of Transportation Rep. No. DOT HS 802 424 (1977) (recommended the three test battery developed by SCRI (one leg stand, walk and turn, and HGN) to aid officers in discriminating BAC level).

8. Burns, The Robustness of the Horizontal Gaze Nystagmus (HGN) Test, U.S. Dept. of Transportation 2004. Concludes that HGN as used by law enforcement is a robust procedure and the data obtained in this report does not support changes or revisions to the current testing or procedure.

10. Citek, Ball and Rutledge, Nystagmus Testing in Intoxicated Individuals, Vol. 74, No. 11, Nov. 2003, Optometry, established that the HGN test administered in the standing, seated, and supine postures is able to discriminate impairment at criterion BAC’s of 0.08% and 0.10%.

11. Compton, Use of the Gaze Nystagmus Test to Screen Drivers at DWI Sobriety Checkpoints, U.S. Dept. of Transportation (1984) (field evaluation of HGN test administered to drivers through car window in approximately 40 seconds: "the nystagmus test scored identified 95% of the impaired drivers" at 2; 15% false positive for sober drivers, id.).


13. Goldberg, Effects and After Effects of Alcohol, Tranquilizers and Fatigue on Ocular Phenomena, ALCOHOL AND ROAD TRAFFIC 123 (1963) (of different types of nystagmus, alcohol gaze nystagmus is the most easily observed).

14. Helzer, Detection DUIs Through the Use of Nystagmus, LAW AND ORDER, Oct. 1984, at 93 (nystagmus is "a powerful tool for officers to use at roadside to determine BAC of stopped drivers...(O)fficers can learn to estimate BACs to within an average of 0.02 percent of chemical test readings." Id. at 94).

15. L.R. Erwin, DEFENSE OF DRUNK DRIVING CASES (3d ed. 1985) ("A strong correlation exists between the BAC and the angle of onset of (gaze) nystagmus." Id. at 8.15A(3).


17. Misoi, Hishida & Maeba, Diagnosis of Alcohol Intoxication by the Optokinetic Test, 30 Q.J. OF STUD. ON ALCOHOL 1 (March June 1969) (optokinetic nystagmus, ocular adaptation to movement of object before eyes, can also be used to detect central nervous system impairment caused by alcohol. Optokinetic nystagmus is inhibited at BAC of only .051 percent and can be detected by optokinetic nystagmus
test. Before dosage subjects could follow a speed of 90 degrees per second; after, less than 70 degrees per second).


20. Norris, The Correlation of Angle of Onset of Nystagmus With Blood Alcohol Level: Report of a Field Trial, CALIF. ASS'N CRIMINALISTICS NEWSLETTER, June 1985, at 21 (The relationship between the ingestion of alcohol and the inset of various kinds of nystagmus "appears to be well documented." Id. "While nystagmus appears to be useful as a roadside sobriety test, at this time, its use to predict a person's blood alcohol level does not appear to be warranted." Id. at 22).


22. Oosterveld, Meineri & Paolucci, Quantitative Effect of Linear Acceleration on Positional Alcohol Nystagmus, 45 AEROSPACE MEDICINE, July 1974, at 695 (G-loading brings about PAN even when subject has not ingested alcohol; however when subjects ingested alcohol, no PAN was found when subjects were in supine position, even with G force at 3).


27. Savolainen, Riihimaki, Vaheri & Linnoila, Effects of Xylene and Alcohol on Vestibular and Visual Functions in Man, SCAND. J. WORK ENVIRON. HEALTH 94 (Sweden 1980) (abstract available on DIALOG, file 172: Embase 1980 81 on file 5: Biosis Previews 1981 86) (the effects of alcohol on vestibular functions (e.g., positional nystagmus) were dose dependent).

28. Seelmeyer, Nystagmus, A Valid DUI Test, LAW AND ORDER, July 1985, at 29 (Horizontal Gaze Nystagmus test is used in "at least one law enforcement agency in each of the 50 states" and is "a legitimate method of establishing probable cause." Id.).


30. Tharp, Burns & Moskowitz, Circadian Effects on Alcohol Gaze Nystagmus (paper presented at 20th annual meeting of Society for Psychophysiological Research), abstract in 18 PSYCHOPHYSIOLOGY, March 1981 (highly significant correlation between angle of onset of AGN and BAC).

31. Tharp, Burns & Moskowitz, Development and Field Test of Psychophysical Tests for DWI Arrests, U.S. Dept. of Transportation Rep. No. DOT HS 805 864 (1981) (standardized procedures for administering and scoring the SCRI three test battery; participating officers able to classify 81% of volunteers above or below .10).

32. Umeda & Sakata, Alcohol and the Oculomotor System, 87 ANNALS OF OTOTOLOGY, RHINOLOGY & LARYNGOLOGY, May June 1978, at 392 (in volunteers whose "caloric eye tracking pattern" (CETP) was normal before alcohol intake, influence of alcohol on oculomotor system appeared consistently in the following order: (1) abnormality of CETP, (2) positional alcohol nystagmus, (3) abnormality of eye tracking pattern, (4) alcohol gaze nystagmus).


Participant Manual DRE 7-Day Session 4 – Overview of Drug Recognition Expert Procedures

Session 4
Overview of Drug Recognition Expert Procedures

Learning Objectives
- Name the components of the Drug Evaluation and Classification program drug influence evaluation
- State the purpose of each component
- Describe the activities performed during each component
- Correctly answer the “topics for study” questions at the end of this session

Upon successfully completing this session the participant will be able to:
- Name the components of the Drug Evaluation and Classification program drug influence evaluation.
- State the purpose of each component.
- Describe the activities performed during each component.
- Correctly answer the “topics for study” questions at the end of this session.

CONTENT SEGMENTS
A. Components of the Drug Evaluation and Classification Procedure
B. Interview of the Arresting Officer
C. The Preliminary Examination
D. Examinations of the Eyes
E. Divided Attention Psychological Tests
F. Examinations of Vital Signs
G. Dark Room Checks of Pupil Size
H. Examination of Muscle Tone
I. Examination for Injection Sites
J. Toxicological Examination
K. Video Demonstration

LEARNING ACTIVITIES
- Instructor Led Presentations
- Instructor Led Demonstrations
- Video Presentations
- Reading Assignments
The Drug Influence Evaluation

Systematic and Standardized Process

The DEC procedure is a systematic and standardized method of examining a subject to determine:
- Whether the subject is impaired, and if so,
- Whether the impairment is caused by drugs or a medical condition,
- And if drugs, the category (or categories) of drugs that is/are the likely cause of the subject’s impairment.

A. Components of the Drug Evaluation and Classification Procedure

The Drug Influence Evaluation

The DEC procedure is a systematic and standardized method of examining a subject to determine:
- Whether the subject is impaired, and if so,
- Whether the impairment is caused by drugs or a medical condition.
- And if drugs, the category (or categories) of drugs that is/are the likely cause of the subject’s impairment.

The process is systematic in that it is based on a careful assessment of a variety of observable signs and symptoms that are known to be reliable indicators of drug impairment.

- Some of these observable signs and symptoms relate to the subject’s appearance.
- Some of these observable signs and symptoms relate to the subject’s behavior.
- Some relate to the subject’s performance of carefully administered psychophysical tests.
Drugs impair the subject’s ability to control his or her mind and body.

- Psychophysical tests can disclose that the subject’s ability to control mind and body is impaired.

- The specific manner in which the subject performs the psychophysical tests may help indicate the category or categories of drugs causing the impairment.

- Some of the observable signs and symptoms relate to the subject’s automatic responses to the specific drugs that are present.

- All of these reliable indicators are examined and carefully considered before a judgment is made concerning what categories of drugs are affecting the subject.

The evaluation is standardized in that it is administered the same way, every time.
There may be times when the DRE may be unable to complete each step of the evaluation, i.e., injuries, uncooperative subject, equipment failure, etc.

• Standardization helps to ensure that no mistakes are made.

• No examinations are left out.

• No extraneous or unreliable “indicators” are included.

• Standardization helps to promote professionalism among drug recognition experts.

• Standardization helps to secure acceptance in court.

In such cases, the DRE may still be able to form an opinion based upon the evidence obtained. State v. Cammack, 1997 WL 104913 (Minnesota Ct. Appeals, 1997) ruled that a DRE need not complete the entire 12-step evaluation for an opinion to be admissible so long as there is sufficient admissible evidence.
Drug Influence Evaluation Steps

The Drug Evaluation and Classification drug influence evaluation has twelve components or steps.

7. Dark room examinations
8. Examination of muscle tone
9. Examination for injection sites
10. Subject's statements and other observations
11. Opinion of Evaluator
12. Toxicological examination

Notes: __________________________________________
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Breath Alcohol Test

The Breath Alcohol Test is needed to determine Blood Alcohol Concentration (BAC).

The purpose of the breath test is to determine whether the specific drug, alcohol, may be contributing to the impairment observed in the subject.

Obtaining an accurate measurement of BAC enables the DRE to assess whether alcohol may be the sole cause of the observable impairment, or whether it is likely that some other drug or drugs, or other complicating factors are contributing to the impairment.
The Interview of the Arresting Officer

In most cases, the subjects you will examine will not be people that you arrested.

The arresting officer may have seen or heard things that would be valuable indicators of the kinds of drugs the subject has ingested.

The arresting officer, in searching the subject, may have uncovered drug related paraphernalia, or even drugs themselves.

The arresting officer also may be able to alert you to important information about the subject’s behavior that could be very valuable for your own safety.
3. Preliminary Examination

The Preliminary Examination

• The preliminary examination is your first opportunity to observe the subject closely and directly.

• A major purpose of the preliminary examination is to determine if the subject may be suffering from an injury or some other medical condition not necessarily related to drugs.

• Analogy: The preliminary examination is a “fork in the road.” It can help you decide whether to continue with the drug influence evaluation, to pursue a possible medical complication, or to proceed with a DWI (alcohol) case.

• Another major purpose of the preliminary examination is to begin systematically assessing the subject’s appearance, behavior and automatic bodily responses for signs of drug induced impairment.

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3. Preliminary Examination (Cont.)

The preliminary examination consists of a series of questions dealing with possible injuries or medical problems; observations of the subject’s face, speech and breath; pupil size and tracking ability; initial checks of the subject’s eyes; and, an initial examination of the subject’s pulse.

While you are assessing the subject’s tracking ability, you can also perform a preliminary assessment of whether Horizontal Gaze Nystagmus is present in the subject’s eyes. In particular, if the Nystagmus or “jerking” is observed, an initial estimation of the angle of onset can be made. The approximate angle of onset may help to determine whether the subject has consumed some drug other than alcohol.

4. Examinations of the Eyes

Examinations of the Eyes

Certain drugs produce very easily observable effects on the eyes.
One of the most dramatic of these effects is Nystagmus, which means an involuntary jerking of the eyes.

Persons under the influence of alcohol usually will exhibit Horizontal Gaze Nystagmus, which is an involuntary jerking of the eyes occurring as the eyes gaze to the side.

Alcohol is not the only drug that causes Nystagmus.

Horizontal Gaze Nystagmus is not the only observable effect on the eyes that will be caused by various drugs.
5. Divided Attention Tests

Divided Attention Psychophysical Tests

All drugs that impair driving ability will also impair the subject’s ability to perform certain carefully designed divided attention tests.

These tests are familiar to you in the context of examining alcohol impaired subjects.

The same tests are very valuable for disclosing evidence of impairment due to drugs other than alcohol.

The divided attention tests used in the DRE examination include:

• The Modified Romberg Balance,
• The Walk and Turn,
• One Leg Stand,
• And, the Finger to Nose.
Examination of Vital Signs

Many categories of drugs affect the operation of the heart, lungs and other major organs of the body.

These effects show up during examination of the subject’s vital signs.

The vital signs that are reliable indicators of drug influence include blood pressure, pulse, and temperature.
Dark Room Examinations

Many categories of drugs affect how the pupils will appear, and how they respond to light.
Certain kinds of drugs will cause the pupils to widen dramatically, or dilate.
Some other drugs cause the pupils to narrow, or constrict.

By systematically changing the amount of light entering the subject’s eyes, we can observe the pupils’ appearance and reaction under controlled conditions.

We carry out these examinations in a dark room, using a penlight to control the amount of illumination entering the subject’s eyes.

We use a device called a pupillometer to estimate the size of the subject’s pupils.

By lining the circles up alongside the subject’s pupil, the pupil’s size can be determined.

Other examinations are also conducted in the darkroom, using the penlight: i.e., examination of the nasal area and mouth for signs of drug use and for concealed contraband.
8. Muscle Tone Examination

- Near Normal
- Flaccid
- Rigid

Comments:

**Notes:**

- Certain categories of drugs can cause the user’s muscles to become markedly tense, and rigid. Others may cause flaccidity, or “rubbery-like” muscle tone.

- Evidence of this muscle tone may come to light when the subject attempts to perform the divided attention tests.

**Examination of Muscle Tone**

- Evidence of muscle tone can also be observed when taking the subject’s pulse, blood pressure or while examining for injection sites.
Examination for Injection Sites

Certain drugs are commonly injected by their users, via hypodermic needles.

Heroin is probably most commonly associated with injection, but several other types of drugs also are injected by many users.

Uncovering an injection sites on a subject provides evidence of possible drug use.
10. Subject's Statements and Other Observations

At this point in the examination, the trained DRE should have reasonable grounds to believe that the subject is under the influence of a drug or drugs.

The DRE should also have at least an articulable suspicion as to the category or categories of drugs causing the impairment.

The DRE should proceed to interview the subject to confirm their opinion concerning the drug category or categories involved.

The DRE must carefully record the subject’s statements, and any other observations that may constitute relevant evidence of drug induced impairment.
Opinion of Evaluator

Based on all of the evidence and observations gleaned from the preceding ten steps, the DRE should be able to reach an informed conclusion as to:

• Whether the subject is under the influence of a drug or drugs, and if so,

• The probable category or categories of drugs causing impairment.

The DRE must record a narrative summary of the facts forming the basis for their conclusion.

Toxicological Examination

The toxicological examination is a chemical test or tests designed to obtain scientific, admissible evidence to substantiate the DRE’s opinion.

Departmental policy and procedures must be followed in requesting, obtaining and handling the toxicological sample.
B. Interview of the Arresting Officer

The purpose of the interview of the arresting officer is to obtain a summary of the subject’s actions, behaviors, etc. that led to the arrest and the suspicion that drugs other than alcohol may be involved.

**Interview Behavior**

Issues concerning the subject’s behavior:

- Was the subject operating a vehicle?
- What actions, maneuvers, etc. were observed?
- Was there a crash? If yes, was the subject injured?
- Was the subject observed smoking, drinking or eating?
- Was the subject apparently inhaling any substance?
- How did the subject respond to the arresting officer’s stop?
- Did the subject attempt to conceal or throw away any items?
- What has been subject’s attitude and demeanor? Has it changed?
Arresting Officer Interview (Cont.)

Interview Concerning Subject’s Statements

- Has subject complained of illness/injury?
- Has subject used drug-related “street terms” or slang?
- How has subject responded to questions?
- Is subject’s speech slurred, slow, thick, rapid, mumbled, etc.?
- What, specifically, has the subject said?

Interview Concerning Subject’s Statements

- Has the subject complained of an illness or injury?
- Has the subject used any “street terms” or slang associated with drugs or drug paraphernalia?
- How has the subject responded to the arresting officer’s questions?
- Was the subject’s speech slurred, slow, rapid, thick, mumbled, etc.?
- What, specifically, has the subject said to the arresting officer?

Arresting Officer Interview (Cont.)

Issues concerning physical evidence:

- What items or materials were uncovered during search of subject and vehicle?
- Was any smoking paraphernalia uncovered?
- Were there any injection materials?
- Were there any balloons, plastic bags, small metal foil wrappings, etc.?
- What was the subject’s BAC?

Interview: Physical Evidence

Issues concerning physical evidence:

- What items or materials were uncovered during the search of the subject or vehicle?
- Were any smoking paraphernalia uncovered?
- Were any injection materials, i.e., needles, syringes, leather straps, rubber tubes, spoons, bottle caps, etc. found?
- Were there any balloons, plastic bags, small metal foil wrappings, etc. found?
- What was the subject’s blood alcohol concentration?
C. The Preliminary Examination Overview

The preliminary examination consists of:

- Questions.

- Observations of face, breath, and speech.

- Initial checks of the eyes.

- The initial check of the subject’s pulse.
Preliminary Examination Questions

The questions deal with injuries or medical problems the subject may have. They include:

Briefly discuss the relevance of each question.

• Are you sick or injured?

• Do you have any physical defects?

• Are you diabetic or epileptic?

• Do you take insulin?

• Are you under a doctor's or dentist's care?

• Are you taking any medications or drugs?
Initial Checks of the Eyes

The initial checks of the subject’s eyes include several particularly important items.

Check of the size of each pupil.

Assessment of the ability of the eyes to track a moving object.

The presence of Nystagmus indicates the possible presence of certain categories of drugs.

Initial estimation of the angle of onset of Horizontal Gaze Nystagmus.

The approximate angle of onset may indicate the presence of some drug other than alcohol.
If the subject has also ingested some other drug that also causes Nystagmus, the angle of onset may occur even earlier than the Blood Alcohol Concentration would indicate.

Example: Suppose you are examining a subject who has an angle of onset at 45 degrees.

Based on that alone, you would expect the person's BAC to be in the .05 - .08 percent range. But if that subject has also ingested a Dissociative Anesthetic, the onset could occur much earlier, perhaps as soon as the eyes start to move to the side.

For example: Cannabis, Narcotic Analgesics, CNS Stimulants and Hallucinogens do not cause Nystagmus, and will not affect the angle of onset.
D. Examinations of the Eyes

Eye Examinations

The Examinations of the Eyes consist of three tests:

*Horizontal Gaze Nystagmus (HGN)*

Clue #1 – Lack of smooth pursuit.

Clue #2 – Distinct and sustained Nystagmus at maximum deviation.

Clue #3 – Angle of Onset

*Vertical Gaze Nystagmus*
Lack of Convergence

Lack of Convergence is checked by first getting the subject to focus on and track the stimulus as it slowly moves in a circle in front of the subject’s face.

Then, the stimulus is slowly pushed in toward the bridge of the subject’s nose and held for approximately one (1) second.

Under the influence of certain types of drugs, the eyes may not be able to converge.
E. Divided Attention Psychophysical Tests

Several Divided Attention tests used for drug examinations are the same familiar tests used for examining alcohol impaired subjects.

- Modified Romberg Balance Test
- Walk and Turn
- One Leg Stand
- Finger to Nose

Walk and Turn Demonstration
Instructions stage

One-Leg Stand Test Demonstration
Instructions stage
F. Examinations of Vital Signs

The Vital Signs consist of three things routinely measured in basic physical examinations.

- Pulse
- Blood Pressure
- Temperature

These measurements require some familiar instruments.

- Stethoscope
- Blood pressure cuff and gauge (sphygmomanometer)
- Thermometer

NOTE: An oral thermometer with disposable mouthpieces is recommended.
A time piece capable of measuring in seconds is also required.
G. Dark Room Checks of Pupil Size

Dark Room Checks for Pupil Size

The principal activity that takes place during the dark room examinations is the estimation of pupil size under three lighting conditions.

- Room light.
- Near total darkness.
- Direct light.

Room Light

Before turning off the lights, you will estimate the size of the subject’s pupils under room light.

You must always first estimate the left pupil, then the right.
Dark Room Checks of Pupil Size (Cont.)

• Room light
• Near-total darkness
• Direct light

You must position the pupillometer alongside the eye to ensure an accurate estimation.

After you have completed the room light estimations, turn off the lights and wait approximately 90 seconds to allow your eyes and the subject’s eyes to adapt to the darkness.

Near Total Darkness

The next check will be of pupil size under near total darkness.

You will need the bare minimum amount of light necessary to see the subject’s pupils and the pupillometer.

You can create the necessary light by covering the tip of the penlight with your finger or thumb.

The light is then moved near the subjects left eye just until it is possible to distinguish the colored portion of the eye (Iris).

Hold the pupillometer alongside the eye and locate the circle or semi-circle closest in size to the pupil.
**Direct Light**

The third and final check will be of the pupil size under direct light. You will shine the full strength of the penlight directly into the subject’s eye for 15 seconds. Do this by bringing the light in from the side of the subject’s face. The penlight should be held close enough to the subject’s eye so that its beam fills the eye socket. When the light is initially shown into the eye, you will check for the pupil’s reaction to light. Then immediately estimate the pupil size under direct light.

**Other Activities**

Two other activities are conducted while in the darkroom.

- Examination of the nasal area.
- Examination of the oral cavity.
H. Examination of Muscle Tone

Muscle Tone

Starting with the subject’s left arm, examine the arm muscles. Firmly grasp the upper arm and slowly move down to determine muscle tone. The muscles should appear flaccid, normal or rigid to the touch.

Examine the right arm in the same fashion.
I. Examination for Injection Sites

Some injection sites may be relatively easy to notice.

Persons who frequently inject certain drugs develop lengthy scars, commonly referred to as “tracks,” from repeated injections in the same veins.

Injection of certain drugs may result in severe caustic action against the skin and flesh, producing easily observable sores.

Often, a fresh injection site may not be readily observable.

Frequently, a DRE will locate the injection site initially by touch, running the fingers along such commonly used locations as the neck, forearms, wrists, back of hand, etc.
When the DRE locates a possible injection site, a light magnifying lens, commonly known as a “ski light” is used to provide a magnified visual examination.

“Ski” – short for schematic
During this step, the third pulse is taken.

J. Subject Statements

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Notes:_____________________________________________________
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Subject Statements
• Document statements
• Ask additional probing questions if appropriate
• Miranda Rights
Drug Influence Form Questions:

- What medication or drug have you been using? How much?
- Time of use?
- Where were the drugs used? (location)

Be Sure to Record:

- Date/Time of Arrest
- Time DRE Notified
- Evaluation Start Time
- Time Completed
- DRE signature (Include rank)
- ID #
- Reviewed by:

K. Opinion of Evaluator

By this point in the evaluation, the DRE should have formed an opinion of the category or categories of drugs responsible for any observed impairment.

This opinion is based on the totality of the evaluation.
L. **Toxicological Examination**

**Toxicology Samples**

Your State’s implied consent statues will dictate the type of sample you can obtain; urine, blood, breath, or saliva.

**Specimen Containers**

The type of container for collecting the sample will be dictated by the type of sample taken and the laboratory requirements where it will be tested.

Containers should be sterile and have a lid that will seal tightly. Make sure the seal is tight to prevent leaks.
Obtaining a Sample

- Urine – normally the officer must witness the collection of the sample.
- Blood – should be drawn by a qualified technician and witnessed by the officer.
- The sample must include a preservative. This is often pre-packaged in the container intended for this use.

Samples should be refrigerated or frozen as soon as possible to minimize degeneration during storage.

Chain of Custody

Establish a policy dictating the chain of custody, if one does not already exist.

Establish a policy for your Department on:

- The sealing of evidence to include officer identification markings; (i.e., initials, labels, tags and packaging).
- Paperwork for the chain of custody and laboratory analysis of your sample.
- Transportation of the sample to the laboratory.
- Return reporting of the laboratory analysis.

NOTE: These are issues that must be addressed with the individual agencies to insure proper and standardized procedures. Participants should follow-up with the appropriate representatives from their agencies to coordinate this activity.
M. Video Demonstrations (Optional)

QUESTIONS?

Notes:__________________________________________________
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Topics for Study Questions

1. Give three important reasons for conducting drug evaluation and classification evaluations in a standardized fashion.

2. What are the twelve components of the drug evaluation process?

3. How many times is pulse rate measured during the drug influence evaluation?

4. Are the diameters of a pupillometer’s circles/semi-circles indicated in centimeters, millimeters or micrometers?

5. What formula expresses the approximate statistical relationship between blood alcohol concentration and nystagmus onset angle?

6. Which of the seven categories of drugs ordinarily do not cause nystagmus?

7. How many heel-to-toe steps is the subject instructed to take, in each direction, on the Walk and Turn test?
8. What period of time is the subject required to estimate during the Modified Romberg Balance test?

9. What is systolic pressure?

10. What is the name of the instrument used to measure blood pressure?

11. Name the four validated clues of the One Leg Stand test.

12. Name the eight validated clues of the Walk and Turn test.

13. Suppose you have two hypodermic needles, one is 14 gauge, the other is 20 gauge. Which needle has the smaller inside diameter?
# Drug Influence Evaluation

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<th>Rolling Line #</th>
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<th>Property</th>
<th>Race</th>
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<th>No</th>
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<table>
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<tr>
<th>Pulse and time</th>
<th>RGN</th>
<th>Lack of Smooth Pursuit</th>
<th>Left Eye</th>
<th>Right Eye</th>
<th>Convergence</th>
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<table>
<thead>
<tr>
<th>Modified Romberg Balance</th>
<th>Walk and Turn Test</th>
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<table>
<thead>
<tr>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>Angle of Oust</th>
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<table>
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<th>Internal clock estimated as 30 seconds</th>
<th>Describe turn</th>
<th>Cannot do test (explain)</th>
<th>Type of footwear</th>
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<th>Draw lines to spots touched</th>
<th>Pupil Size</th>
<th>Room Light</th>
<th>Darkness</th>
<th>Direct</th>
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</table>

<table>
<thead>
<tr>
<th>Draw lines to spots touched</th>
<th>Left Eye</th>
<th>Right Eye</th>
</tr>
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</table>

<table>
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<table>
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<th>Muzzle time</th>
<th>Normal</th>
<th>Hazard</th>
<th>Rapid</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>What drugs or medications have you been using?</th>
<th>How much?</th>
<th>Time of use?</th>
<th>Where were the drugs used? (Location)</th>
</tr>
</thead>
</table>

<table>
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<tr>
<th>Date / Time of arrest</th>
<th>Time DRE was notified</th>
<th>Evaluation start time</th>
<th>Evaluation completion time</th>
<th>Precacc Occasion</th>
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</table>

<table>
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<tr>
<th>Officer's Signature</th>
<th>DRE #</th>
<th>Reviewed approved by / date</th>
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<table>
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<tr>
<th>Opinion of Evaluator</th>
<th>Date Out</th>
<th>Alcohol</th>
<th>CNS Stimulant</th>
<th>Drowsive Antidepressant</th>
<th>Inhalant</th>
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<table>
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<tr>
<th>Medical</th>
<th>CNS Depressant</th>
<th>Halothane</th>
<th>Thorazine</th>
<th>Pictalic Antipsylic</th>
<th>Cannabis</th>
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---

**Right Arm**

**Left Arm**
Drug Influence Evaluation Checklist

____ 1. Breath Alcohol Test

____ 2. Interview of Arresting Officer
   (NOTE: Gloves must be worn from this point on)

____ 3. Preliminary Examination
   - first pulse, initial estimation of angle of onset, and initial estimation of pupil size

____ 4. Eye Examination

____ 5. Divided Attention Tests:
   ____ Romberg Balance
   ____ Walk and Turn
   ____ One Leg Stand
   ____ Finger to Nose

____ 6. Vital signs and Second Pulse

____ 7. Dark Room Check of Pupil Size and Ingestion Exam

____ 8. Check of Muscle Tone

____ 9. Check for Injection Sites and Third Pulse

____ 10. Interrogation, Statements, and Other Observations

____ 11. Opinion of Evaluator

____ 12. Toxicological Examination
Upon successfully completing this session the student will be able to:

- State the purpose of various eye examinations in the DEC Program drug influence evaluation procedure.
- Describe the administrative procedures for the eye examinations.
- Describe the clues for each eye examination.
- Conduct the eye examinations and note the clues observed.
- Prepare complete, clear and accurate records of the eye examinations.

CONTENT SEGMENTS

A. Purpose of the Examinations
B. Procedures and Clues
C. Demonstrations
D. Document Procedures
E. Practice

LEARNING ACTIVITIES

Instructor Led Presentations
Instructor Led Demonstrations
Student Led Demonstrations
Students' Hands On Practice
Reading Assignments
A. Purposes of the Eye Examinations

• The principle purpose of all of the eye examinations is to obtain articulable facts indicating the presence or absence of specific categories of drugs.

• Certain drug categories usually cause the eyes to react in specific ways. Other drug categories usually do not cause those reactions.

• The tests of Horizontal and Vertical Gaze Nystagmus provide important indicators of the drug categories that may or may not be present.

• If HGN is observed, it is likely that the subject may have ingested alcohol or another CNS Depressant, an Inhalant, a Dissociative Anesthetic, or a combination of those.

• If Vertical Gaze Nystagmus is observed, the implication may be that the subject ingested a large dose of alcohol for that individual, a Dissociative Anesthetic, such as PCP, or high doses of other Depressants or Inhalants.
By comparing the subject’s blood alcohol concentration with the angle of onset of Horizontal Gaze Nystagmus, it may be possible to determine that alcohol is or is not the sole cause of the observed Nystagmus.

**Clarification:** If the angle of onset is significantly inconsistent with the BAC, the implication may be that the subject has also taken a Dissociative Anesthetic, such as PCP, an inhalant, or some CNS Depressant other than alcohol.

The consistency of the angle of onset and BAC can be compared using the following formula:

\[
BAC = 50 - \text{Angle of Onset}
\]

Note: Emphasize that this is not an absolute mathematical formula.

The corresponding blood alcohol concentration would be approximately 0.15.

Keep in mind that this formula is only a statistical approximation. It is not an exact relationship for all subjects at all times.

The purpose of comparing BAC and angle of onset is to obtain a gross indication of the possible presence of another CNS Depressant, a Dissociative Anesthetic, or an Inhalant.
Eye Examinations

• The purpose of comparing BAC and angle of onset is to obtain a gross indication of the possible presence of another “DID drug”
• Lack of Convergence can also provide another clue as to possible presence of “DIDC drugs”

The check for Lack of Convergence can provide another clue as to the possible presence of Depressants, Dissociative Anesthetics, or Inhalants.

Lack of Convergence is also an indicator of the possible presence of Cannabis.

• The checks of pupil size and reaction to light provide useful indicators of the possible presence of many drug categories.

• CNS Depressants, CNS Stimulants, and Inhalants will normally cause the pupils to react slowly. There will generally be little movement with Narcotic Analgesics.

• CNS Stimulants and Hallucinogens normally will cause the pupils to dilate.

• Cannabis normally causes dilation of the pupils, although this isn’t always observed.

Some specific Inhalants may cause pupil dilation.

Narcotic Analgesics will normally cause observable constriction of the pupils.

During the eye examinations you will also check for rebound dilation.
The Eye Examinations

Three Clues of Horizontal Gaze Nystagmus
1. Lack of Smooth Pursuit
2. Distinct and Sustained Nystagmus at Maximum Deviation
3. Angle of Onset of Nystagmus

B. Procedures and Clues

Three Clues of Horizontal Gaze Nystagmus
- Lack of smooth pursuit
- Distinct and sustained nystagmus at maximum deviation
- Angle of onset of nystagmus

Horizontal Gaze Nystagmus test consists of three separate checks, administered independently to each eye.
First Clue: Lack of Smooth Pursuit

If the subject is wearing contact lenses, note that fact on the report, but don’t have the subject remove them.

If the subject is wearing eyeglasses, have him or her remove them.

• Position the stimulus approximately 12 – 15 inches in front of the subject’s nose.
• Hold the tip of the stimulus slightly above the level of the subject’s eye. Point out that this procedure ensures that the subject’s eyes will be wide open and easy to observe.
• Instruct the subject to hold the head still and follow the stimulus with their eyes.

The first check is for “lack of smooth pursuit.”

• Move the stimulus smoothly, all the way to the subject’s left side and back all the way to the right side.
• Make at least two complete passes of the stimulus: to the left side, to the right side, back to the left side, and finally back to the right side.
**First Clue:**
**Lack of Smooth Pursuit (Cont.)**

- When doing this, don’t pause at the center of the subject’s face; move all the way to the left, then all the way to the right, then again all the way to the left and back all the way to the right, in a smooth, continuous motion.

- While the eye is moving, examine it for evidence of a lack of smooth pursuit.

- Use the following analogy:
  
  A smoothly pursing eye will move without friction, much the way that a windshield wiper glides across the windshield when it is raining steadily. An eye showing lack of smooth pursuit will move in a fashion similar to a wiper across a dry windshield.

- Also, check to be sure that both eyes are tracking in the same way: if one eye is moving smoothly but the other moves hesitantly or not at all, an illness or injury may be present.
Second Clue: Distinct and Sustained Nystagmus

The second check is for “distinct and sustained nystagmus at maximum deviation.”

- Again position the stimulus as before.
- Move the stimulus all the way to the subject’s left side and hold it there so that the subject’s eye is turned as far to the side as possible.
- Hold the eye at that position for a minimum of 4 seconds, to check carefully for jerking that may be present, and that is distinct.

When you have completed this check for the left eye, repeat the process for the right eye. Then, do it once again for the left eye, and again for the right, to verify that distinct and sustained nystagmus is or is not present.

With this cue, the examiner looks for a very distinct, unmistakable jerking.
A slight or barely visible tremor is not sufficient to consider this clue present. A definite, sustained jerking must be seen.

Third Clue: Angle of Onset

The final check is for the “angle of onset.”

- Position the stimulus as before.
- Slowly move the stimulus to the subject’s left side, carefully watching the eye for the first sign of jerking.

Note: Stimulus should be moved at a speed that requires approximately four seconds to travel from center to approximately 45 degrees.

- When you think that you see the eye jerk, stop moving the stimulus and hold it still.
- Verify that the eye is, in fact, jerking.
- Once you have established that you have located the point of onset, estimate the angle.
- Then, repeat the process for the right eye.
- Then, again check onset for the left eye, and again for the right.
Third Clue: Angle of Onset of Nystagmus (Cont.)

Participants’ Initial Practice of Angle Estimation

- 30 degrees
- 35 degrees
- 40 degrees

Participants will check their accuracy using a template (if available).

Vertical Gaze Nystagmus

The Vertical Gaze Nystagmus test is very simple check of the eyes.

- Position the stimulus horizontally, approximately 12 – 15 inches in front of the subject’s nose.
- Instruct the subject to hold the head still and follow the stimulus with the eyes only.
- Raise the stimulus until the subject’s eyes are elevated as far as possible.
- Watch closely for evidence of jerking.
Lack of Convergence

The test for Lack of Convergence (LOC) is also very simple. But it should be noted that this test is the least reliable of any of the eye tests due to the fact that a significant portion of the population may have an inability to cross their eyes.

- Lack of Convergence means an inability to cross the eyes.
- Prior to conducting the check for Lack of Convergence the DRE should determine if the subject to be tested routinely wears eyeglasses during reading and near visual tasks and if so, are they readily available for the test.
- If the subject wears glasses during reading and near visual tasks and they are readily available, ensure that the eyeglasses are worn for the check for Lack of Convergence.

Note: In testing for Lack of Convergence (LOC), the role of clear vision and focusing can have significant effect on the convergence of the eyes. In the clinical setting, the LOC check is routinely conducted with the eyeglasses on if normally worn by the subject during reading and near visual tasks. If the subject’s eyeglasses are not readily available, the DRE should still conduct the test.
Lack of Convergence (Cont.)

Note: Citations for clinical use of testing with subject wearing eyeglasses for LOC:

“Clinical Procedures for Ocular Examination”: Kurtz and Carlson; McGraw-Hill

“A Recognized Clinical Trial of Treatments for Convergence Insufficiency in Children”: Scheiman, Cotter, Cooper, etc.; Arch Ophthalmol, Jan 2005.

- Position the stimulus approximately 12-15 inches in front of the subject’s face.

- Instruct the person to hold their head still and follow the stimulus with the eyes only.

- Keep the object 12-15 inches away from the person’s nose, and start to move the stimulus slowly in a circle, approximately the same size as the subject’s face.

- Once you have verified that the subject is tracking the stimulus, move it slowly and steadily toward the bridge of the nose.

- Hold the stimulus near the bridge of the nose for approximately one (1) second. The stimulus should not come any closer than approximately two (2) inches from the bridge of the nose.

- Carefully observe the subject’s eyes to determine whether both eyes converge.
Lack of Convergence (Cont.)

Participants’ Initial Practice of the Check for the Lack of Convergence

Estimation of Pupil Size

The pupils of our eyes continually adjust in size to accommodate different lighting conditions.

The pupillometer is held alongside the subject’s eye, moved up and down until the circle or semi-circle closest in size to the pupil is located.

We use a device called a pupillometer to estimate the size of the subject’s pupils.

Pupil size estimations are recorded as the numeric value that corresponds to the diameter of the circle or semi-circle that is closest in size to the subject’s pupil in each lighting condition.
This should not be confused with pupillary unrest, the continuous, irregular change in the size of the pupils that may be observed under room or steady light conditions or with pupillary light reflex, which is the pupil’s normal reaction to the changes in light.

The Three Lighting Conditions

Pupil sizes are estimated under three different lighting conditions:

• Room Light
• Near Total Darkness
• Direct Light
Estimation of Pupil Size under Room Light

• The pupils are examined in room light prior to darkening the room.

Participant’s Initial Practice of Pupil Size Estimation — Room Light

Estimation of Pupil Size in the Dark Room

• After you have completed the pupil size estimations in room light, you must darken the room, wait 90 seconds, and then proceed with the dark room exam.

Participant’s Initial Practice of Pupil Size Estimation — Dark Room

• After you have completed the pupil size estimations in room light, you must darken the room, wait approximately 90 seconds (for the officers eyes to adjust to the light), and then proceed with the dark room exam.
Estimation of Pupil Size under Near Total Darkness

- For the check under near total darkness completely cover the tip of the penlight with your finger or thumb, so that only a reddish glow and no white light emerges.

- Bring the glowing tip up toward the subject's left eye until you can just distinguish the pupil from the colored portion of the eye (iris).

- Continue to hold the glowing red tip in that position and bring the pupillometer up alongside the subject's left eye and locate the circle or semi-circle that is closest in size to the pupil.

- Repeat this procedure for the subject's right eye.
**Estimation of Pupil Size under Direct Light**

- Bring the penlight from the side of the subject’s face and shine it directly into their left eye.
- Position the penlight so that it illuminates and approximately fills the subject’s eye socket.
- Hold the penlight in that position for 15 seconds, and bring the pupillometer up alongside the left eye.
- Find the circle or semi-circle that is closest in size to the pupil.
- Repeat this procedure for the subject’s right eye.

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Pupillary Unrest

Another eye sign that may be observed by the DRE is Pupillary Unrest. Pupillary Unrest is defined as the continuous, irregular change in the size of the pupils that may be observed under room or steady light conditions.

The unique indicators of Pupillary Unrest are the unevenness and fluctuations in the rate and size of the pupils under lighted conditions and its disappearance in darkness.

Pupillary Unrest may be similar to “Hippus” which is defined as a rhythmic change in the pupil size of the eyes, as they dilate and constrict when observed in darkness independent of changes in light intensity, accommodation (focusing), or other forms of sensory stimulation.

*Note: Research has shown that Hippus is primarily observed in total darkness conditions and is therefore difficult to detect under the current DRE protocol.*
**Rebound Dilation**

Rebound dilation is defined as a period of pupillary constriction followed by a period of pupillary dilation where the pupil steadily increases in size and does not return to its original constricted size.

Example: The pupil is estimated at 8.5mm in near total darkness. Once the penlight is shined into the pupil it constricts to 4.0 mm then steadily dilates to 6.0 mm and remains that diameter while the direct light is shined into the eye.

Rebound dilation has been reported with persons impaired by drugs that cause pupillary dilation. Cannabis is most common.

**Pupil Ranges**

For most people, even under very bright light the pupils will not constrict much below a diameter of 2.0 millimeters (mm) or dilate to a diameter of not more than 8.5 mm in near total dark conditions.

Consequently, the use of three distinct pupil size ranges for each of the different testing conditions may be considered more useful in the evaluation to determine impairment vs. non-impairment.
Pupil Size Technical Terms

Two key technical terms regarding pupil sizes are: Miosis – abnormally small pupil, i.e., constricted, and Mydriasis – an abnormally large pupil, i.e., dilated.

Non-Impaired Pupil Sizes

Room Light

• For a non-impaired person, the average pupil size and range for room light is approximately 4.0 mm, with pupil sizes ranging from 2.5 to 5.0 mm.

Near Total Darkness

• For a non-impaired person, the average pupil size and range for near total darkness is approximately 6.5 mm with pupil sizes ranging from 5.0 to 8.5 mm.

Direct Light

• For a non-impaired person, the average pupil size and range for direct light is approximately 3.0 mm with pupil sizes ranging from 2.0 to 4.5 mm.
Reaction to Light

Assessment of the pupil’s reaction to light takes place during the check of pupil size under direct light when the uncovered light is brought from the side of the subject’s face and the light beam is moved directly into his or her left eye.

- As you bring the beam of light directly into the subject’s eye, note how the pupil reacts.

- Under ordinary conditions, the pupil should react very quickly, and constrict noticeably when the light beam strikes the eye.

- Under the influence of certain categories of drugs, the pupil’s reaction may be slow, or there may be no visible reaction at all.

- Hold the direct light on the subject’s eye for 15 seconds to assess pupil reaction.

- Also check for Rebound Dilation during this 15 second period.

- Caution should be used by the officer so as not to move the light beam or allow the bulb to change in light intensity.

- When you have completed this process for the left eye, repeat it for the right eye.
C. **Demonstrations**

- Check for Lack of Smooth Pursuit
- Check for Distinct and Sustained Nystagmus at Maximum Deviation
- Check for an Onset of Nystagmus prior to 45 degrees

*Estimation of Angle of Onset*

*Demonstration of Vertical Gaze Nystagmus and Lack of Convergence*

---

*Demonstration of Pupil Size and Reaction to Light Checks*

- Room Light
- Dark room checks of pupil size
  - Near Total Darkness
  - Direct Light
  - Reaction to Light

---

*Demonstration of Pupil Size and Reaction to Light Checks*

- Room Light
- Dark room checks of pupil size
- Near total darkness
- Direct light
- Reaction to light
D. Documentation Procedures

A brief examination of the eyes is made during the Preliminary Examination.

- Check for equal pupil size.
- Check for resting nystagmus.
- Assessment of tracking ability.
- Initial assessment of Nystagmus angle of onset.

Notes:_______________________________________________
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Horizontal Gaze Nystagmus
Vertical Gaze Nystagmus
Lack of Convergence

The dark room eye examinations are documented in a subsequent section of the form.
Sample Eye Examination

A brief examination of the eyes is made during the Preliminary Examination.

- Check for equal pupil size.
- Check for resting nystagmus.
- Assessment of tracking ability.
- Initial assessment of Nystagmus angle of onset.

Horizontal Gaze Nystagmus

Vertical Gaze Nystagmus

Lack of Convergence

The dark room eye examinations are documented in a subsequent section of the form.
Sample Eye Examination (Cont.)

Preliminary Eye Exams
- Check for equal pupil size.
- Check for resting nystagmus.
- Assessment of tracking ability.
- Initial estimation of nystagmus angle of onset.

Eye Exams

Notes:_______________________________________________
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Pupil Size Estimations
- Room Light
- Near Total Darkness
- Direct Light

Notes:________________________________________________________________________
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Pupil Size Estimations
- Room Light
- Near Total Darkness
- Direct Light

Reporting out of Pupil Size Estimations
**Tabulations:**

**Room Light**
Repeat this process for each of the other two lighting conditions.

**Near Total Darkness Tabulation:**

**Direct Light Tabulation:**

**Eye Exams Practice**

- Check for equal pupil size.
- Check for resting nystagmus.
- Assessment of tracking ability.
- Initial estimation of nystagmus angle of onset.
- Horizontal Gaze Nystagmus.
- Vertical Gaze Nystagmus.
- Lack of Convergence.

**E. Practice**

**Preliminary Eye Exams**

- Check for equal pupil size.
- Check for resting nystagmus.
- Assessment of tracking ability.
- Initial estimation of nystagmus angle of onset.

**Eye Exams**

- Horizontal Gaze Nystagmus.
- Vertical Gaze Nystagmus.
- Lack of Convergence.
## Pupil Size Chart

<table>
<thead>
<tr>
<th>Pupil Size</th>
<th>Room Light</th>
<th>Near Total Darkness</th>
<th>Direct Light</th>
</tr>
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<tbody>
<tr>
<td>2.0 mm</td>
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</tr>
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</tr>
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</tr>
<tr>
<td>7.5 mm</td>
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<tr>
<td>8.0 mm and above</td>
<td></td>
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</tr>
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A. Physiology and Drugs: An Overview

Upon successfully completing this session the participant will be able to:

• Explain in layman’s terms the general concept of human physiology.
• Explain in layman’s terms the purpose and functions of major systems in the body (nervous system, circulatory system, respiratory system, etc.)

CONTENT SEGMENTS

A. Physiology and Drugs: An Overview
B. Body Systems
C. The Concept of Homeostasis
D. A Simple View of the Heart and Circulatory System
E. A Simplified Concept of the Nervous System
F. How Drugs Work
G. Medical Conditions Which Sometimes Mimic Drug Impairment

LEARNING ACTIVITIES

Instructor-Led Presentations
Reading Assignments
• Explain in layman’s terms how drugs work in the body.
• Explain in general terms how the drug evaluation is used to detect signs or symptoms indicative of drug impairment.
• Correctly answer the “topics for study” questions at the end of this session.

Before we can understand how drugs work, we must have a basic understanding of how the body works.

We will review general concepts of how the body functions in a “normal” or “standard” human.
"Average" or "Normal" Within the DEC Program

- "Average" is a quantity that represents the "middle" or "typical" value that the majority of healthy, non-impaired people would exhibit or have in a specific test that is measured numerically.
- "Normal" describes both a range of values or results that are "close to" average, but can be above or below the "average" value for the majority of healthy non-impaired people as well as to describe unremarkable muscle tone, etc.

"Normal" or DRE Averages

In the DEC Program we use the terms "Normal", "Average", "Average Ranges" or "DRE Average Range".

- **"Average"** is a quantity that represents the "middle" or "typical" value that the majority of healthy, non-impaired people would exhibit or have in a specific test that is measured numerically.

- **"Normal"** describes both a range of values or results that are "close to" average, but can be above or below the "average" value for the majority of healthy non-impaired people. "Normal" can also be used to describe unremarkable conditions on tests that are not measured numerically such as muscle tone, etc.

Within the DEC Program, "normal" means the same thing as "healthy" or "non-impaired" or within the "DRE average ranges."

For example, the "Average", or typical value, for pupil size in near total darkness is 6.5 mm. This means that when **ALL** the sizes were measured using the DRE test protocol, in a large number of pupils in healthy, non-impaired adults, the average pupil size for those was approximately 6.5 mm while the average range, or for normal pupil size was 5.0-8.5 mm.
Bodily Functions Examined During Drug Influence Evaluation

- Central Nervous System
- Eyes
- Blood Pressure and Pulse
- Balance and Coordination
- Body Temperature

Primary focus will be on the systems or component parts of those systems that are examined during the drug influence evaluation.

- Central Nervous System
- Eyes
- Blood Pressure and Pulse
- Balance and Coordination
- Body Temperature

Physiology: The study of the functions of living organisms and their parts

B. Body Systems

Physiology is the branch of biology that deals with the functions and activities of life or living matter and the physical and chemical phenomena involved.

For the purposes of this course, physiology is the study of the functions of living organisms and their parts.

A convenient way of discussing human physiology is to list the ten major systems of the body.

The phrase “MURDERS INC” helps us remember the names of the ten systems.

Each letter stands for the name of one system.
Muscular System

M stands for the MUSCULAR SYSTEM

The body has three different kinds of muscles.

• The heart or cardiac muscle.
• Smooth muscles, which control the body’s involuntary operations.
• Striated muscles, which carry out our voluntary movements.

Examples: Smooth muscles control breathing, the operation of the pyloric valve (a muscle located at the base of the stomach), dilation and constriction of pupils, and all other things that we do not consciously control.

All three types of muscles are examined at various stages of the drug influence evaluation.

Urinary System

U is for the URINARY SYSTEM.

The system consists of two kidneys, the bladder, ureters connecting the kidneys to the bladder, and the urethra, which transports the urine out of the body.

Kidneys filter waste or harmful products, such as drugs and their metabolites, from the blood, and dump these waste products into the bladder.
Respiratory System

The first R in “MURDERS INC” stands for the RESPIRATORY SYSTEM.

The major parts of the Respiratory System are the lungs and the diaphragm.

The diaphragm is a smooth muscle that draws the air into the lungs and forces it out.

Lungs take in oxygen and transfer it to the blood, and remove carbon dioxide and some other waste products from the blood, and expel them into the outside air.

Digestive System

D stands for the DIGESTIVE SYSTEM.

Major components of this system are the tongue, teeth, esophagus, stomach, intestines, liver, and pancreas.

The Digestive System breaks down large particles of food, until they are of a size and chemical composition that can be absorbed in the blood.

Endocrine System

E is for the ENDOCRINE SYSTEM.

The Endocrine System is made up of a number of different glands that secrete hormones.
Hormones are complex chemicals that travel through the blood stream and that control or regulate certain body processes.

Some drugs can mimic the effects of certain hormones, or can react with the hormones in ways that alter the hormones’ effects.

*Reproductive System*

The second R in “MURDERS INC” stands for the REPRODUCTIVE SYSTEM.

The functions of the reproductive system fall into two categories:

- self-producing (cytogenic), and
- hormone producing (endocrinic).

We are primarily concerned with hormone production since the hormones produced by the reproductive system aid the nervous system in its regulatory role.

*Skeletal System*

S is for the SKELETAL SYSTEM.

Consists of bones, cartilage and ligaments.

The Skeletal System provides support to the body, permits movement, and forms blood cells.


**Integumentary System**

The I in “INC” stands for the INTEGUMENTARY SYSTEM.

Consists of the skin, hair, fingernails and toe nails, and accessory structures.

The chief functions of the Integumentary System include protection of the body, control of the body temperature, excretion of wastes (i.e. through sweat) and sensory perception.

**Nervous System**

N is for the NERVOUS SYSTEM.

This system consists of the brain, the brain stem, the spinal cord and the nerves.

Nerves keep the brain informed of changes in the body’s external and internal environments.

Nerves also carry messages from the brain to the body’s muscles, tissues and organs.

The nervous system controls, coordinates and integrates all physiological processes, so that normal body functions can be maintained.
Circulatory System

C is for the CIRCULATORY SYSTEM.

For our purposes, the most important parts of the Circulatory System are the heart, the blood vessels (e.g., arteries, veins, capillaries, etc.) and the blood.

Blood is the body’s primary transport mechanism: it carries food, water, oxygen, hormones, antibodies, etc. to the body’s tissues and organs.

Blood is also primarily responsible for carrying heat throughout the body.

Blood is the main transport mechanism for bringing drugs to the brain.

The heart, of course, pumps the blood and causes it to circulate throughout the body.
C. The Concept of Homeostasis

Homeostasis is the dynamic balance, or steady state, involving levels of salts, water, sugars and other materials in the body’s fluids.

Human body is exposed to a constantly changing external environment.

Changes are neutralized by the internal environment – the blood.

Oxygen, foods, water and other substances are constantly leaving bodily fluids to enter cells, while carbon dioxide and other wastes are leaving the cells to enter these fluids.

Yet, the chemical composition of these fluids remains within very narrow limits.

This phenomenon is called homeostasis.

Drugs interfere with the homeostatic mechanisms and produce signs and symptoms that can be recognized by a trained DRE.
D. A Simple View of the Heart and Circulatory System

Heart and Circulatory System

Circulation is a closed system, where blood is propelled by contractions of the heart.

Blood is driven into arteries, arteries divide into smaller and smaller branches and finally into meshwork of fine capillaries which pervade body tissues.

Meshwork joins up again to form small veins which become larger trunks as they travel centrally towards the heart.

There are two separate circulation systems:

Systemic system involves the whole body and is driven by the left side of the heart.

Pulmonary system deals with the passage of blood through the lungs and is driven by the right side of the heart.
The heart is the pump and has two sides:

Consists of the left atrium and ventricle. The upper chamber (atrium) receives blood from the great veins, the lower chamber discharges blood into the great arteries.

Left side pumps blood through the aorta and the arteries to the tissues.

Blood, after passing through the tissues, returns via the veins to the right side.

Right side pumps blood through the pulmonary artery to the lungs and returns it to the left side of the heart again via the four pulmonary veins.

Consists of the right atrium and ventricle.

NOTE: The pulmonary artery is the only artery that carries de-oxygenated blood; all other arteries carry blood that has received fresh oxygen from the lungs. Likewise, the pulmonary vein is the only vein that carries blood rich in oxygen; all other veins carry blood depleted of oxygen back to the heart.

The normal heart continues to beat regularly and continuously, with a rest interval never longer than a fraction of a second.

Heart rate is the number of beats per minute.

Pulse rate is the number of pulsations per minute.

For DRE purposes, the average range for the pulse rate is 60-90 pulsation beats per minute.
Blood pressure (BP) is the force of the blood circulating in the arteries.
BP is categorized as systolic or diastolic BP.
Systolic pressure is the maximum force that occurs during contraction.
Diastolic pressure represents the minimum force that occurs when the heart relaxes.

The DRE average range for systolic blood pressure is 120 to 140. The DRE average range for diastolic blood pressure is 70 to 90.

Control Systems
The functions of the organs of the body are controlled in two ways:
This is a function of the endocrine system.
One, by sending “chemical messengers” known as hormones via the blood stream from an endocrine gland where they are produced.
Second, system of control is by means of the nervous system.
E. The Nervous System

Clarification: Nerves are often pictured as telephone or telegraph wires.

The nerves that carry messages to and from the brain often are pictured as “wires” that carry electrical signals.

A more accurate, but still simplified concept would envision a nerve as a series of broken wire segments, with the segments separated by short spaces, or gaps.

We can imagine messages running along the “wire segments” in much the same manner that electrical impulses run along telephone wires.

When the message reaches the end of the “wire segment,” it triggers the release of chemicals that flow across the gap, and contact the next “wire segment.”

When the chemical contacts the next wire segment, it generates an electrical impulse which runs along the wire until it reaches the next gap.

At that gap, the message again triggers the release of chemicals that flow across to the next “wire segment,” and the process continues.
How a Neurotransmitter Works
Steps are numbered sequentially:
1. Neuron makes a neurotransmitter
2. Synaptic vesicles are small membrane-bound structures in the axon terminals of nerve cells that contain neurotransmitters. The vesicles release neurotransmitters into the synaptic gap
3. Neurotransmitter enters gap to transmit electrical impulse to receptor site
4. Receptor performs a function

In our simple model of nerves, each “wire segment” corresponds to a nerve cell, called a neuron.

The chemical that flows across the gaps separating neurons is called a neurotransmitter.

The body has a number of different neurotransmitters; each carries a different chemical message.

The sequence of how a neurotransmitter works:
1. The neuron makes a neurotransmitter.
2. Synaptic vesicles are small membrane bound structures in the axon terminals of nerve cells that contain neurotransmitters. These vesicles release neurotransmitters into the synaptic gap.
3. The neurotransmitter enters the synaptic gap to transmit electrical impulse to the receptor site.
4. The receptor performs a function
Each neuron, or “wire segment” has three main parts:

- the cell body
- the axon
- the dendrite

The axon is the part of the neuron that sends out the neurotransmitter, or chemical messenger.

The dendrite is the part that receives the neurotransmitter.

The gap between two neurons is called a synapse, or synaptic gap.
Classification of Nerves

Some nerves carry messages away from the brain, to the body’s muscles and organs. These are called motor, or efferent nerves.

The brain uses motor nerves to send commands to the heart to beat, the lungs to breathe, the muscles to contract or expand, and so forth.

Other nerves carry messages to the brain, i.e. from the eyes, ears and other senses, from the muscles, etc.

These are called Sensory, or Afferent nerves.

The brain decodes the messages that come along the sensory nerves to monitor the condition of the body and of the outside world.

A fundamental notion: if something interferes with the messages the brain sends along the motor nerves, the brain’s control over the heart, the lungs, the muscles and other organs will be distorted.

Another fundamental notion: if something interferes with the messages the brain receives from the sensory nerves, the brain’s perception of the outside world and of the body’s status will be distorted.
There are two sub-systems of motor nerves:

- The voluntary nerves send messages to the striated muscles that we consciously control.
- The autonomic nerves send messages to the muscles and organs that we do not consciously control, i.e. smooth muscle and cardiac muscle.
- The Autonomic sub-system is divided into two groups.
- The Sympathetic nerves command the body to react in response to fear, stress, excitement, etc.

**CLARIFICATION:** Sympathetic nerves control the body’s “fight or flight” responses.

**EXAMPLES:** Sympathetic nerves carry the messages that cause: blood pressure to elevate, pupils to dilate, sweat glands to activate, hair to stand on end, heartbeat to increase and strengthen, blood vessels of the skin to constrict, the walls of the hollow viscera to relax (inhibiting digestion).

- Parasympathetic nerves carry messages that produce relaxed and tranquil activities.
Autonomic Sub-Systems

- Sympathetic nerves
  - control body’s “fight or flight” responses
- Parasympathetic nerves
  - produce relaxed and tranquil activities

EXAMPLES: Parasympathetic nerves carry messages that cause: pupils to constrict, heartbeat to slow, peripheral blood vessels to dilate, blood pressure to decrease.

Certain neurotransmitters (i.e. chemical messengers) aid in the transmission of messages along sympathetic and parasympathetic nerves.

Some drugs mimic the action of these neurotransmitters: when taken into the body, these drugs artificially cause the transmission of messages along sympathetic or parasympathetic nerves.

Drugs that mimic the neurotransmitter associated with sympathetic nerves are called sympathomimetic drugs.

Sympathomimetic drugs artificially cause the transmission of messages that produce elevated blood pressure, dilated pupils, etc.

Examples: CNS Stimulants, Hallucinogens, and to some extent Dissociative Anesthetics and Cannabis.

Drugs that mimic neurotransmitters associated with parasympathetic nerves are called parasympathomimetic drugs.

Parasympathomimetic drugs artificially cause the transmission of messages that produce lowered blood pressure, drowsiness, etc.

Examples: Narcotic Analgesics and CNS Depressants.
Neurotransmitters

Although there are more than 100 chemicals in the brain, only about two dozen probably are true neurotransmitters.

Among the primary neurotransmitters that have been identified are:

- Norepinephrine (also called Noradrenaline)
- Acetylcholine
  - Acetylcholine plays a role in muscle control, and affects neuromuscular or myoneural junctions.
- Dopamine
  - Dopamine plays a role in mood control and is used in treating Parkinson’s Disease.
- Serotonin
  - Serotonin is a vasoconstrictor, thought to be involved in sleep, wakefulness, and sensory perception. Tryptophan is a precursor to serotonin, and has been used to treat insomnia.
- Gamma Amino Butyric Acid (Abbreviated GABA)
  - GABA inhibits various neurotransmitters and also causes a release of growth hormones.
Endorphins and Enkephalins

- The body's natural pain relievers
- Many drugs artificially induce the effects of neurotransmitters and hormones

These are the body's natural pain relievers.
There are many drugs that artificially induce the effects of neurotransmitter and hormones.
How Drugs Work

By artificially creating natural body reactions generally associated with the work of neurotransmitters and hormones.

F. How Drugs Work

In very simple terms, drugs work by artificially creating natural body reactions generally associated with the work of neurotransmitters and hormones.

Therapeutic doses of legitimate prescription and over the counter drugs are designed to produce mild and carefully controlled simulations of the natural action of neurotransmitters and hormones.

Large, abusive doses of drugs may produce greatly exaggerated simulations of the natural action of hormones and neurotransmitters, sometimes with disastrous results.

Example: Cocaine (a sympathomimetic drug) may artificially create a message commanding the heart to beat so rapidly that cardiac arrest results.

When a person ingests a drug and artificially simulates the natural action of hormones and neurotransmitters, the body’s dynamic balance is disrupted.

The body automatically responds to the presence of the drug by producing other hormones and chemicals that can oppose the drug’s effects, and bring the body back into balance.

Example Number One

If a person ingests a stimulant drug that mimics neurotransmitters associated with the sympathetic nerves, the body may react by excreting hormones that depress the bodily functions that the drug is exciting.
How Drugs Work (Cont.)

By artificially creating natural body reactions generally associated with the work of neurotransmitters and hormones

If a person ingested Cocaine, for example, the Cocaine would artificially stimulate the body functions. The body would then produce hormones and neurotransmitters to slow down the body functions to try to maintain homeostasis.

*Example Number Two*

If a person ingests a drug that depresses some bodily function, the body may pour out one of its natural chemicals that stimulate that same function.

An interesting situation can occur when the drug is no longer psychoactive.

The chemicals produced by the body in an effort to counteract the drug may still be active.

These natural chemicals have exactly the opposite effect on the body that the drug had: after all, that is precisely why the body produced those chemicals.

As a result, the person may feel, appear and act in a manner exactly opposite to the way he or she would feel, appear and act when under the influence of the drug.
"Downside Effect"

When the body reacts to the presence of a drug by releasing hormones or neurotransmitters to counteract the effects of the drug consumed.

It is not uncommon for a DRE to encounter someone on the “downside.”

We call this situation being on the “downside” of the drug.

Example: with cocaine (a drug that is metabolized, or broken down by the body fairly quickly) the user may be exhibiting drowsiness and general depression by the time the DRE is called to the scene.

The concept of “downside” will be especially important to us when we discuss the effects of CNS Stimulants and drug combinations.

Then the body attempts to “counteract” the stimulant effects. When the effects of the drug diminish, the results may mimic a CNS Depressant or a Narcotic Analgesic.

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“Negative Feedback”

When the brain accommodates the routine presence of a drug by turning off the supply of natural chemicals that correspond to the drug

Another interesting effect that drugs can produce is called Negative Feedback. By taking the drug, the person artificially simulates the action of certain hormones and/or neurotransmitters. If the person continues to take the drug, the body may simply cease producing the natural chemicals that the drug simulates. In effect, the body comes to rely on the drug to supply itself with those chemicals. Example of Negative Feedback: when people regularly use heroin, cocaine, or marijuana, their bodies may cease producing the neurotransmitters and hormones known to be crucial for proper pain relief, stress reduction, mental stability and motivation. One result of this may be increased tolerance to the drug: since the body isn't producing its own natural chemicals, it can more easily stand the drug.
Tolerance

- May exhibit relatively little evidence of impairment on the psychophysical tests
- Even tolerant drug users, when impaired, usually exhibit clinical evidence (i.e. vital signs, eye signs, etc.)

Even tolerant drug users, when impaired, usually exhibit clinical evidence (i.e., in the vital signs and eye signs – such as HGN).

**Physical Dependence**

Another result may be physical dependence, or addiction.

In simplest terms, people take drugs because they like the feelings the drugs produce.

The artificial simulation of the natural action of hormones and neurotransmitters appears to permit the user to create any feeling or mood he or she desires.

As time goes on, and negative feedback develops, the user finds that he or she can only achieve those feelings and moods if the drug is taken.
Metabolite

One final concept is important for an understanding of how drugs work.

A Metabolite is a product of metabolism which is the chemical changes that take place when the drug reacts with enzymes and other substances in the body.

The body uses chemical reactions to break down the drug, and ultimately to eliminate it.

Example: when we drink alcohol, we initiate a series of chemical reactions that ultimately transform the alcohol into harmless carbon dioxide and water.

Sometimes, metabolites of the original drug are themselves drugs, and cause impairment.

For example, the body quickly metabolizes heroin into morphine, and it is the morphine that actually produces the effects the heroin user experiences.
G. Medical Conditions Which Sometimes Mimic Drug Impairment

Certain medical conditions or injuries may cause signs and symptoms similar to those of drug impairment.

• Bipolar Disorder (Manic Depression) – a condition characterized by the alteration of manic and depressive states.

• Conjunctivitis – inflammation of the conjunctiva.
  
  Conjunctivitis is a condition caused by infection, allergy, or irritation of the mucous membrane lining of the eyes, resulting in a “pink eye” appearance. A casual observer might mistake this for the bloodshot conditions associated with Cannabis or alcohol.

• Diabetes – a condition that can result in insulin shock (taking too much insulin) which may produce tremors, increased blood pressure, rapid respiration, lack of coordination, headache, confusion, and seizures.
  
  The most common problem with diabetics arises when they take too much insulin, so that their blood sugar levels become extremely low. They may be very confused, sweat profusely, and exhibit increased pulse rate and increased blood pressure.

• Head Trauma – normally due to a severe blow or bump to the head.
  
  Head trauma may injure the brain and create disorientation, confusion, lack of coordination, slowed responses and speech impairment.
Other Medical Conditions

- Multiple Sclerosis and similar conditions
- Shock
- Stroke

- Multiple Sclerosis (MS) – a degenerative muscular disorder.

MS is a progressive disease in which the nerve fibers of the brain and spinal cord lose their myelin cover. Some signs and symptoms are abnormal sensations in the face or extremities, weakness, double vision, etc.

- Shock – a sudden or violent disturbance in the mental or emotional faculties.

A shock victim may be dazed, uncoordinated, non-responsive.

Other indicators include: extremely low blood pressure, fast but weak pulse, dizziness, moist clammy skin, profuse sweating, rapid shallow breathing, blue lips and fingernails.

- Stroke – a medical condition caused by a rupture or obstruction (as if by clot) of an artery of the brain.

Others – Carbon Monoxide poisoning, Seizures, Endocrine disorders, Neurological conditions, Psychiatric conditions and infections.

Normal conditions can affect vital signs: Exercise, Excitement, Fear, Anxiety, Depression, Other

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Medical Rule Out

- For purposes of DRE and the DEC Program, a medical rule out is defined as:

  “A determination made by a DRE that the condition of a suspected impaired driver is more likely related to a medical issue that has affected the subject’s ability to operate a vehicle safely”

DRE Medical Rule Out Definition

There are times when a DRE may encounter situations where a subject arrested for drugged driving may be suffering from a medical condition that has affected the subject’s ability to operate a vehicle safely. Once the DRE makes this determination the evaluation is considered a “medical rule out.” In other words, the DRE through his or her evaluation has ruled out impairing substances and while doing so, identified signs and symptoms that are consistent with a medical issue. Once the DRE makes the determination, the DRE should consider taking appropriate steps to ensure the subject is referred to the proper medical personnel.

In such cases, the DRE should prepare the DRE drug evaluation report documenting his or her findings that support an opinion of a DRE medical rule out.

For purposes of DRE and the DEC Program, a medical rule out is defined as, “A determination made by a DRE that the condition of a suspected impaired driver is more likely related to a medical issue that has affected the subject’s ability to operate a vehicle safely.”

The suggested way to document this type of opinion in Step 11 of the DRE report would be: “It is my opinion that (Subject's name) is a medical rule out and is unable to operate a vehicle safely.”
H. Summary

Basic understanding of how the body works is necessary to:

- Understand why the drug evaluation is conducted in a systematic manner.
- Understand why the results, when viewed in their totality, provide reliable indicators of impairment within broad categories of drugs.
- This limited overview will not qualify participants as medical specialists.
- The knowledge gained during this session must be supplemented by additional reading and/or instruction.
- The body of knowledge in this area is being constantly expanded.
- The body maintains homeostasis (equilibrium) by constantly adjusting to changes in the external and internal environment:
- When drugs are introduced into the body this process comes into play.
- When drugs interact in the body they tend to:
  - speed things up, or slow things down, or confuse signals, or block signals, or some combination of the above.
Summary (Cont.)

• The body functions as a total unit in an integrated and coordinated manner
• This is a very simplistic overview of how drugs work

The effects of drugs can be detected and/or observed in the drug evaluation.

*Drug Evaluations*

*Physiological Pursuit*

For review of the Physiology and Drugs session, questions can be asked of the participants as if it were a game of Trivial Pursuit. See attachment.

*QUESTIONS?*
TOPICS FOR STUDY

1. What is a neurotransmitter? What is a hormone?

2. What is a dendrite? What is an axon? What is a synapse?

3. Do arteries carry blood toward the heart or away from the heart?

4. What is unique about the Pulmonary Artery?

5. What are the two types of nerves that make up the Autonomic Nervous Sub-System?

6. Cocaine sympathomimetic or parasympathomimetic? What about Heroin?

7. Explain the concept of the “downside effect.” Explain the concept of “Negative Feedback.”

8. What do we call the nerves that carry messages away from the brain? What do we call the nerves that carry messages toward the brain?
QUESTIONS FOR PHYSIOLOGICAL PURSUIT

1. Name the major body systems.

2. What vein carries oxygenated blood?

3. What is the function of the endocrine system?

4. Explain the “downside” effect of a drug.

5. Define homeostasis.

6. Hair and nails are part of what system?

7. Name the two circulatory systems.

8. The functions of the organs of the body are controlled by what two systems?

9. Define synapse, axon, and dendrite.

10. Define neurotransmitter and hormone.
11. _______ nerves carry messages AWAY from the brain to the body’s muscles and organs.

12. The _______ nervous system commands the body to react to stress, fear, and excitement.

13. Explain “negative feedback.”

14. What two types of nerves make up the autonomic nervous subsystem?

15. Define metabolite.
Upon successfully completing this session the participant will be able to:

- Explain the purposes of the various vital signs examinations in the drug influence evaluation procedure.
- Explain the administrative procedures for these examinations.
- Explain the clues obtained from these examinations.
- Document the examinations of vital signs accurately and completely.
- Correctly answer the “topics for study” at the end of this session.

CONTENT SEGMENTS

A. Purpose of the Examinations
B. Procedures and Clues
C. Demonstrations
D. Documentation Procedures
E. Practice

LEARNING ACTIVITIES

- Instructor-Led Presentations
- Instructor-Led Demonstrations
- Audio Tape Presentation
- Participant-Led Demonstrations
- Participants’ Hands On Practice
- Reading Assignments
A. Purposes of the Examinations

The vital signs that are relevant to the drug influence evaluation include:

- Pulse Rate
- Blood Pressure
- Temperature

Different types of drugs affect these vital signs in different ways.

Certain drugs tend to “speed up” the body and elevate these vital signs.

Clarification:

- Pulse may quicken
- Blood pressure may rise
- Temperature may rise

Other drugs tend to “slow down” the body and lower these vital signs.

Clarification:

- Pulse may slow
- Blood pressure may drop

Systematic examination of the vital signs gives us much useful information concerning the possible presence or absence of various categories of drugs.
Definitions Concerning “Pulse”

- **Pulse**
  The expansion and contraction of an artery generated by the pumping action of the heart

- **Pulse Rate**
  The number of pulsations in an artery per minute

- **Artery**
  A strong, elastic blood vessel that carries blood from the heart to the body tissues

- **Vein**
  A blood vessel that carries blood back to the heart from the body tissues

**B. Procedures and Clues**

**Measurement of Pulse Rate**

Pulse is the expansion and contraction of an artery generated by the pumping action of the heart. Pulse Rate is the number of pulsations in an artery per minute.

- An artery is a strong, elastic blood vessel that carries blood from the heart to the body tissues.
- A vein is a blood vessel that carries blood back to the heart from the body tissues.
- When the heart contracts, it squeezes blood out of its chambers into the arteries.
- The surging blood causes the arteries to expand.
- By placing your fingers on the skin next to an artery and pressing down, you can feel the artery expand as the blood surges through.

By keeping your fingers on the artery and counting the number of pulses that occur in one minute, you will measure the pulse rate.

Pulse is easy to measure, once you locate an artery close to the surface of the skin.
**Radial Artery Pulse Point**

One convenient pulse point involves the radial artery.

The radial artery can be located in or near the natural crease of the wrist, on the side of the wrist next to the thumb.

- Point to the radial artery pulse point on your own wrist.
- Hold your left hand out, with the palm up.
- Place the tips of your right hand’s index finger and middle finger into the crease of your wrist, and exert a slight pressure.

You should be able to feel the pulse in your radial artery.
Brachial Artery Pulse Point

Another pulse point involves the brachial artery.

The brachial artery can be located in the crook of the arm, halfway between the center of the arm and the side of the arm closest to the body.

• Point to the brachial artery pulse point in your own arm.
• Instruct participants to roll up their sleeves, if necessary, to expose their brachial artery pulse points.
• Hold your left hand out, with the palm up.
• Place the tips of your right hand’s index and middle fingers into the crook of your left arm, close to the body, and exert a slight pressure.

You should be able to feel the pulse in your brachial artery.
Carotid Artery Pulse Point

Another pulse point involves the carotid artery. The carotid artery can be located in the neck, on either side of the Adam’s apple.

- Point out the carotid artery pulse point on your own neck.
- Place the tips of your right hand’s index and middle fingers alongside the right side of your Adam’s apple.

You should be able to feel the pulse in your carotid artery.

Basic Do’s and Don’ts of Measuring Pulse

- Don’t use your thumb to apply pressure while measuring a subject’s pulse
- When measuring the pulse rate, use time intervals of 30 seconds

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Basic Do’s and Don’ts of Measuring Pulse

- Don’t use your thumb to apply pressure while measuring a subject’s pulse
- Point out that there is an artery located in the thumb close to the surface of the skin. If you apply pressure with the thumb, you may wind up measuring your own pulse when you think you are measuring the subject’s.
- If you use the carotid artery pulse point, don’t apply pressure to both sides of the Adam’s apple: this can cut off the supply of blood to the brain
- When measuring the pulse rate, use time intervals of 30 seconds

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Technical Terms Associated With Pulse Rate

- Tachycardia: abnormally rapid heart rate
- Bradycardia: unusually slow heart rate
- Arrhythmia: abnormal heart rate rhythm

Some Technical Terms Associated with Pulse Rate

- Tachycardia: abnormally rapid heart rate
- Bradycardia: unusually slow heart rate
- Arrhythmia: abnormal heart rhythm

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Blood Pressure

Millimeters of Mercury = mmHg

Example: a blood pressure of 120 means that the blood is pressing on the walls of the artery with enough force to push liquid mercury 120 millimeters up a glass tube.

Point out that 120 millimeters is approximately four and three-quarter inches.

We commonly abbreviate “millimeters of mercury” as mmHg.

Definitions Concerning Blood Pressure

- **Blood Pressure**
  The force that the circulating blood exerts on the walls of the arteries
- **Systolic Pressure**
  The maximum blood pressure, reached as the heart contracts
- **Diastolic Pressure**
  The minimum pressure, reached when the heart is fully expanded

Measurement of Blood Pressure

- Blood Pressure is the force that the circulating blood exerts on the walls of the arteries.
- Blood pressure is measured in millimeters of mercury.
- Blood Pressure changes constantly as the heart contracts and relaxes.
- Blood Pressure reaches its maximum as the heart contracts and sends the blood surging through the arteries. This is called the systolic pressure.
- Blood Pressure reaches its minimum when the heart is fully expanded. This is called the diastolic pressure.
- It is always necessary to measure and record both the systolic and diastolic blood pressure.
The device used for measuring blood pressure is called a sphygmanometer. The sphygmanometer has a special cuff that can be wrapped around the subject’s arm and inflated with air pressure.

As the pressure in the cuff increases, the cuff squeezes tightly on the arm.

Wrap the cuff around the participant volunteer’s arm and inflate it.

When the pressure gets high enough, it will squeeze the artery completely shut.

Blood will cease flowing through the brachial artery. And, since the brachial artery “feeds” the radial artery, blood will also cease flowing through the radial artery.
If we slowly release the air in the cuff, the pressure on the arm and on the artery will start to drop.

Release the pressure in the cuff on the participant volunteer’s arm.

Eventually, the pressure will drop enough so that blood will once again start to flow through the artery.

Blood will start flowing in the artery once the pressure inside the artery equals the pressure outside the artery.

The two pressures will become equal when the air pressure in the cuff drops down to the systolic pressure.

When that happens, blood will spurt through the artery each time the heart contracts.

Once the air pressure in the cuff drops down to the diastolic level, the blood will flow continuously through the artery.
The Basics of Blood Pressure Measurement

• Apply enough air pressure to cut off the flow of blood through the artery.
• Slowly release the air, 2 mmHg per second, until the blood just begins to spurt through the artery: that will be the systolic pressure.
• Continue to release the air until the blood flows continuously: that will be the diastolic pressure.
• Apply the stethoscope to the skin directly above the artery.
• Apply pressure to the cuff, enough to cut off the flow of blood.

When no blood is flowing through the artery, we hear nothing through the stethoscope.

• Inflate the cuff on the participant volunteer’s arm.
• Slowly release the air from the cuff, letting the pressure start to drop.
• Release the air in the cuff.

When we drop to the systolic pressure, we start to hear a spurtling sound.

Note: this begins as a clear, tapping sound.

Overview of Procedures for Measuring Blood Pressure

• Apply enough air pressure to the cuff to cut off the flow of blood through the artery.
• Slowly release the air pressure until the blood just begins to spurt through the artery: that level will be the systolic pressure.
• Slowly release the pressure in the cuff.
• Continue to release the air pressure until the blood flows continuously through the artery: that level will be the diastolic pressure.
• Apply the stethoscope to the skin directly above the artery.
• Apply pressure to the cuff, enough to cut off the flow of blood.

When no blood is flowing through the artery, we hear nothing through the stethoscope.

• Inflate the cuff on the participant volunteer’s arm.
• Slowly release the air from the cuff, letting the pressure start to drop.
• Release the air in the cuff.

When we drop to the systolic pressure, we start to hear a spurtling sound.

Note: this begins as a clear, tapping sound.
The Basics of Blood Pressure Measurement (Cont.)

- Apply enough air pressure to cut off the flow of blood through the artery
- Slowly release the air, 2 mmHg per second, until the blood just begins to spurt through the artery: that will be the systolic pressure
- Continue to release the air until the blood flows continuously: that will be the diastolic pressure

As we continue to allow the air pressure to drop, the surges of blood become steadily longer.

Note: the sounds take on a swishing quality, and become fainter.

When we drop to the diastolic pressure, the blood flows steadily and all sounds cease.

Korotkoff Sounds

The sounds that we listen to are called Korotkoff Sounds. They are divided into 5 phases:

- Phase 1 – the first appearance of clear, tapping sounds that gradually increase in intensity.
- Phase 2 – the sounds change to a murmur and take on a swishing quality.
- Phase 3 – the sounds develop a loud, knocking quality (not quite as clear as the Phase 1 sounds).
- Phase 4 – the sounds become muffled and again have a faint swishing quality.
- Phase 5 – the sounds cease.
**Familiarization with the Sphygmomanometer**

- The compression cuff contains an inflatable rubber bladder.
- A tube connects the bladder to the manometer, or pressure gauge.

Clarification: the manometer displays the air pressure inside the bladder. In the DEC program, we use an aneroid (without fluid) pressure gauge.

- Another tube connects the bladder to the pressure bulb, which can be squeezed to inflate the bladder.
- The pressure control valve permits inflation of the bladder and regulates the rate at which the bladder is deflated.
- To inflate the bladder, the pressure control valve must be twisted all the way to the right.
- When the valve is twisted all the way to the right, air can be pumped into the bladder, but no air can escape from the bladder.
- To deflate the bladder, twist the valve to the left.
- The more the valve is twisted to the left, the faster the bladder will deflate.
Details of Blood Pressure Measurement

If it proves difficult to hear the Korotkoff sounds, simply have the subject elevate the arm and squeeze the fist several times, to drain the arm: the Korotkoff sounds louder.

The manometer (pressure gauge) may be clipped on the subject’s sleeve, so that it is readily viewable.

Twist the pressure control valve all the way to the right.
Details of Blood Pressure Measurement (Cont.)

- Place stethoscope over brachial artery
- Rapidly inflate bladder to 180 mmHg
- Twist the valve slightly to the left
- Keep your eyes on the gauge and listen for the Korotkoff sounds

Put the stethoscope earpieces in your ears.
Make sure the earpieces are turned forward, i.e. toward the nose.
Place the diaphragm or bell of the stethoscope over the brachial artery.
Rapidly inflate the bladder to a pressure of at least 180.
Twist the pressure control valve slightly to the left to release the pressure slowly.
The pressure should be released at a speed that takes one full second for the needle to move a single gradation (i.e. 2 millimeters of mercury) on the gauge.
Keep your eyes on the gauge and listen for the Korotkoff sounds.

Note, however, that people can have significantly different blood pressures: there is wide variation in human blood pressure.
**Do’s and Don’ts of Blood Pressure Measurement**

If you inflate the bladder and then need to repeat the measurement, wait at least three minutes to allow the subject’s artery’s to return to normal.

- Do wait 3 minutes to repeat the measurement if a second measurement is needed.
- Don’t re-inflate cuff once you start releasing the pressure.

**Technical Terms Associated With Blood Pressure**

- Hypertension: Abnormally high blood pressure.
- Hypotension: Abnormally low blood pressure.

**Some Technical Terms Associated with Blood Pressure**

- Hypertension: abnormally high blood pressure.
- Hypotension: abnormally low blood pressure.
Measurement of Temperature

Body temperature is measured using a oral digital thermometer. Note: a digital thermometer with plastic sleeves is recommended.

C. **Demonstrations**

*Pulse Rate Measurement*

- Radial artery pulse point:
- Carotid artery pulse point:

*Blood Pressure Measurement*

Instruct the first participant to measure the second participant’s blood pressure. Have the participants reverse roles.

D. **Documentation Procedures**
Practice

In teams of 2 – 4 members, take turns measuring each other’s vital signs.

E. Practice

QUESTIONS?

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TOPICS FOR STUDY

1. Where is the Radial Artery pulse point?

2. Why should you never attempt to feel a subject’s pulse with your thumb?

3. Does an artery carry blood to the heart or from the heart?

4. What does the symbol "Hg" represent?

5. What is Diastolic pressure?

6. When do the Korotkoff Sounds begin?

7. Name and describe the major components of a Sphygmomanometer.

8. Which of the seven categories of drugs generally will cause blood pressure to be elevated?
Upon successfully completing this session the student will be able to:

- Describe the sequence in which examinations and other activities are performed during the drug influence evaluation procedure.

CONTENT SEGMENTS

A. Live Demonstrations
B. Video Demonstrations

LEARNING ACTIVITIES

- Instructor Led Presentations
- Instructor Led Demonstrations
- Video Presentations
- Reading Assignments
A. Live Demonstrations

For these live demonstrations, participants must be grouped into teams of not more than 12 members. Each team must be taken to a separate classroom. At least two instructors must work with each team. This is to ensure that all participants have the opportunity for a close and detailed observation of the demonstrations.

Preliminary eye checks:

- equal tracking
- equal pupil size
- resting nystagmus
- blindness
- eyelids

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Vital Signs Examinations

• Blood Pressure
• Temperature
• Second Check of Pulse

Dark Room Examinations

Pupil Size Estimations:
• Room light
• Near Total Darkness
• Direct light
Live Demonstrations (Cont.)

Reaction to Light
Check of Nasal Area
Check of Oral Cavity

Live Demonstrations (Cont.)

Statements made by subject
Behavior during entire evaluation

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Upon successfully completing this session the participant will be able to:

• Explain a brief history of the CNS Depressant 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.

CONTENT SEGMENTS
A. Overview of the Category
B. Possible Effects
C. Onset and Duration of Effects
D. Overdose Signs and Symptoms
E. Expected Results of the Evaluation
F. Classification Exemplar

LEARNING ACTIVITIES
Instructor-Led Presentations
Instructor Led Demonstrations
Reading Assignments
Video Presentations
Slide Presentations
Learning Objectives (Cont.)

- Explain 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.

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- Explain the typical time parameters, i.e. onset 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 the Category**

**CNS Depressants**

Central Nervous System Depressants slow down the operations of the brain.

- Depressants first affect those areas of the brain that control a person’s conscious, voluntary actions.
- Judgment, inhibitions and reaction time are some of the things that CNS Depressants affect first.
- As the dose is increased, depressants begin to affect the parts of the brain that control the body’s automatic processes, heartbeat, respiration, etc.

The CNS Depressant category includes the single most commonly abused drug in America.

- Alcohol has been used and abused since prehistoric times.
- Alcohol and its effects are familiar to most people.
- Alcohol is a model for the CNS Depressant category: with some exceptions, all depressants produce effects that are quite similar to the effects of alcohol.
Chloral Hydrate

Non-alcohol CNS Depressants have been around for more than 150 years. The first non-alcohol CNS Depressant was Chloral Hydrate. It was developed in 1832 and utilized clinically in 1869. Chloral Hydrate was derived from alcohol. It is commonly referred to as “Mickey Finn” or “Knockout drops” because of its fast acting effects.

Chloral Hydrate is still produced and prescribed today. It is a sedative used in the short term treatment of insomnia and to relieve anxiety and induce sleep before surgery. “Noctec” is a registered brand name of Chloral Hydrate.
Sub Categories of CNS Depressants

There are six major subcategories of CNS Depressants other than alcohol.

**Barbiturates**

More than 250 different barbiturates have been produced; of these, about 50 have been accepted for medical use.

- Derivatives of Barbituric Acid
- First produced in 1864
- Very common in use and abuse today

**Non-Barbiturates**

Note: Chloral Hydrate belongs to the non-barbiturate subcategory.

- Synthetic compounds with a variety of chemical structures
- Prescribed to help with some of the unintended side effects of barbiturates including sleepiness or drowsiness
- Still produce physical and psychological dependence

**Anti-Anxiety Tranquilizers**

The Anti-Anxiety Tranquilizers are also known as the “minor tranquilizers.” They include the group of drugs known as the “Benzodiazepines” examples of which are Valium, Xanax, and Librium.

- First produced in 1950
- In very wide spread use
- Frequently abused
Anti-Depressants
Sometimes called the “mood elevators.”

Anti-Psychotic Tranquilizers
Sometimes called the “major tranquilizers.”
Anti-psychotic tranquilizers were first introduced in the early 1950’s. They provide a way to manage schizophrenia and other mental disorders, and allow psychiatric patients to be released from hospitals and to lead fairly normal lives.
The most familiar Anti-Psychotic Tranquilizer is “Thorazine.”

Combinations
This subcategory includes a small class of depressants involving various combinations of the other five subcategories.
Specific Barbiturates Examples

<table>
<thead>
<tr>
<th>Drug</th>
<th>Brand Name</th>
<th>Street Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amobarbital</td>
<td>Amytal</td>
<td>Blues, Blue Heavens</td>
</tr>
<tr>
<td>Amosecobarbital</td>
<td>Tuinal</td>
<td>Rainbows, Christmas Trees</td>
</tr>
<tr>
<td>Pentobarbital</td>
<td>Nembutal</td>
<td>Yellows, Yellow Jackets</td>
</tr>
<tr>
<td>Phenobarbital</td>
<td>Luminal</td>
<td>Pink Ladies</td>
</tr>
<tr>
<td>Secobarbital</td>
<td>Seconal</td>
<td>Reds, Red Devils, RDs, Fender Benders, F-40's</td>
</tr>
</tbody>
</table>

The Barbiturates

• Amobarbital (Trade name “Amytal”) Street names “blues”; “blue heavens”
• Amosecobarbital (Trade name “Tuinal”) Street names “rainbows”; “Christmas Trees”
• Pentobarbital (Trade name “Nembutal”) Street names “yellows”; “yellow jackets”
• Phenobarbital (Includes Luminal and other trade names) Street name “pink ladies”.
• Secobarbital (Trade name “Seconal”) Street names “reds”; “red devils”; “RDs”; “fender benders”; F-40’s

Specific Non-Barbiturates Examples

<table>
<thead>
<tr>
<th>Drug</th>
<th>Brand Name</th>
<th>Street Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carisoprodol</td>
<td>Soma</td>
<td></td>
</tr>
<tr>
<td>Chloral hydrate</td>
<td>Felsule, Noctec</td>
<td>Knock Out Drops, Mickey Finn</td>
</tr>
<tr>
<td>Diphenhydramine Hydrochloride</td>
<td>Benadryl, Sominex</td>
<td></td>
</tr>
<tr>
<td>Diphenylhydantoin Sodium</td>
<td>Dilantin</td>
<td></td>
</tr>
<tr>
<td>Eszopiclone</td>
<td>Lunesta</td>
<td></td>
</tr>
</tbody>
</table>

The Non-Barbiturates

Note: The absence of street names implies only that illicitly manufactured versions of these drugs are not common. The legally manufactured versions are abused, however.

• Carisoprodol (Trade name “Soma”)
• Chloral Hydrate (Trade names “Noctec”, “Sominos”) (Street names “Knockout drops”; “Mickey Finn”)
• Diphenhydramine Hydrochloride (Trade names “Benadryl”; “Sominex”; “Dramamine” and “nytol”)
• Diphenylhydantoin Sodium (Trade name “Dilantin”)
• Eszopiclone (Trade names “eszopiclone”, “Estorra” and “Lunesta”)
Specific Non-Barbiturates Examples (Cont.)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Brand Name</th>
<th>Street Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethchlorvynol</td>
<td>Placidyl</td>
<td>GHB, Liquid X</td>
</tr>
<tr>
<td>Gamma Hydroxybutyrate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methyprylon</td>
<td>Noludar</td>
<td></td>
</tr>
<tr>
<td>Methaqualone</td>
<td>Parest, Quaalude, Sopor, Optimil, Mandrax</td>
<td>Ludes</td>
</tr>
<tr>
<td>Paraldehyde</td>
<td>Paral</td>
<td></td>
</tr>
<tr>
<td>Zolpidem</td>
<td>Ambien</td>
<td></td>
</tr>
</tbody>
</table>

Notes:

- Ethchlorvynol (Trade name “Placidyl”)
- Gamma Hydroxybutyrate (Street name “GHB”; “GBL”; “Liquid X”; “1,4-butanediol”)
- Methaqualone (Trade names “Parest”; “Quaalude”; “Sopor”; “Optimil”; “Mandrax”) (Street name “ludes”)
- Paraldehyde (Trade name “Paral”)
- Zolpidem (Trade names “Ambien”, “Edluar” and “Stilncot”)

Specific Anti-Anxiety Tranquilizers Examples

<table>
<thead>
<tr>
<th>Drug</th>
<th>Brand Name</th>
<th>Street Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alprazolam</td>
<td>Xanax</td>
<td>Bars, Zanny Bars</td>
</tr>
<tr>
<td>Chlordiazepoxide</td>
<td>Librium</td>
<td></td>
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<tr>
<td>Clonazepam</td>
<td>Klonopin</td>
<td></td>
</tr>
<tr>
<td>Diazepam</td>
<td>Valium</td>
<td></td>
</tr>
<tr>
<td>Estazolam</td>
<td>ProSom</td>
<td></td>
</tr>
</tbody>
</table>

Notes:

The Anti-Anxiety Tranquilizers

- Alprazolam (Trade names “Xanax”, “Niravam”) (Street name “Bars”; “Zannys”; “Blues”)
- Chlordiazepoxide (Trade name “Librium”)
- Clonazepam (Trade name “Klonopin”)
- Diazepam (Trade name “Valium”)
- Estazolam (Trade name “ProSom”)

Notes:
Specific Anti-Anxiety Tranquilizers Examples (Cont.)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Brand Name</th>
<th>Street Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flunitrazepam</td>
<td>Rohypnol</td>
<td></td>
</tr>
<tr>
<td>Flurazepam</td>
<td>Dalmadorm, Dalmane</td>
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<tr>
<td>Lorazepam</td>
<td>Ativan, Temesta</td>
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<tr>
<td>Meprobamate</td>
<td>Equanil, Miltown</td>
<td></td>
</tr>
<tr>
<td>Oxazepam</td>
<td>Serax</td>
<td></td>
</tr>
<tr>
<td>Temazepam</td>
<td>Restoril</td>
<td></td>
</tr>
<tr>
<td>Triazolam</td>
<td>Halcion</td>
<td></td>
</tr>
</tbody>
</table>

- Flunitrazepam (Trade name “Rohypnol”) (Street name “Roofies”; “Roches”)
- Flurazepam (Trade names Dalmadorm”, “Dalmane”)
- Lorazepam (Trade names “Ativan” and “Temesta”)
- Meprobamate (Trade names “Equanil”, “Miltown”)
- Oxazepam (Trade name “Serax”)
- Temazepam (Trade name “Restoril”)
- Triazolam (Trade name “Halcion”)

Specific Anti-Depressants

<table>
<thead>
<tr>
<th>Drug</th>
<th>Brand Name</th>
<th>Street Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amitriptyline Hydrochloride</td>
<td>Elavil, Endep</td>
<td></td>
</tr>
<tr>
<td>Bupropion</td>
<td>Wellbutrin, Zyban</td>
<td></td>
</tr>
<tr>
<td>Citalopram</td>
<td>Celexa</td>
<td></td>
</tr>
<tr>
<td>Desipramine Hydrochloride</td>
<td>Norpramin, Pertofrane</td>
<td></td>
</tr>
<tr>
<td>Doxepin Hydrochloride</td>
<td>Adapin, Sinequan</td>
<td></td>
</tr>
<tr>
<td>Duloxetine</td>
<td>Cymbalta</td>
<td></td>
</tr>
</tbody>
</table>

- Amitriptyline Hydrochloride (Trade names “Elavil”; “Endep”)
- Bupropion (Trade name “Wellbutrin”)
- Citalopram (Trade name “Celexa”)
- Desipramine Hydrochloride (Trade names “Norpramin”; “Pertofrane”)
- Doxepin Hydrochloride (Trade names “Adapin”; “Sinequan”)
- Duloxetine (Trade name “Cymbalta”)

The Anti-Depressants
Specific Anti-Depressants (Cont.)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Brand Name</th>
<th>Street Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escitalopram</td>
<td>Lexapro</td>
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<tr>
<td>Fluoxetine</td>
<td>Prozac, Sarafem</td>
<td></td>
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<tr>
<td>Fluvoxamine</td>
<td>Luvox</td>
<td></td>
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<tr>
<td>Imipramine</td>
<td>Tofranil</td>
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<tr>
<td>Paroxetine</td>
<td>Paxil</td>
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• Escitalopram (Trade name “Lexapro”)
• Fluoxetine (Trade names “Prozac”, “Sarafem”)
• Fluvoxamine (Trade name “Luvox”)
• Imipramine (Trade name “Tofranil”)
• Paroxetine (Trade name “Paxil”)

Specific Anti-Depressants (Cont.)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Brand Name</th>
<th>Street Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenelzine Sulfate</td>
<td>Nardil</td>
<td></td>
</tr>
<tr>
<td>Sertraline</td>
<td>Zoloft</td>
<td></td>
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<tr>
<td>Trazodone</td>
<td>Desyrel</td>
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<tr>
<td>Venlafaxine</td>
<td>Effexor</td>
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• Phenelzine Sulfate (Trade name “Nardil”)
• Sertraline (Trade name “Zoloft”)
• Trazodone (Trade name “Desyrel”)
• Venlafaxine (Trade name “Effexor”)

Anti-Depressants Exceptions

Anti-Depressants may cause dry mouth, sore throat, blurred vision, urinary retention, muscle twitching, restlessness, and increased anxiety.
Specific Anti-Psychotic Tranquilizers Examples

<table>
<thead>
<tr>
<th>Drug</th>
<th>Brand Name</th>
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<tbody>
<tr>
<td>Chlorpromazine</td>
<td>Thorazine</td>
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<tr>
<td>Droperidol</td>
<td>Inapsine, Innovar</td>
</tr>
<tr>
<td>Haloperidol</td>
<td>Haldol</td>
</tr>
<tr>
<td>Lithium Carbonate</td>
<td>Lithane</td>
</tr>
</tbody>
</table>

The Anti-Psychotic Tranquilizers

- Chlorpromazine (Trade name “Thorazine”)
- Droperidol (Trade name “Inapsine”)
- Haloperidol (Trade name “Haldol”)
- Lithium Carbonate (Trade name “Lithane”)

Some Combinations of Depressants

- Chlordiazepoxide in combination with Amitriptyline
  Trade name: “Limbitrol”
- Chlordiazepoxide Hydrochloride in combination with Clidinium Bromide
  Trade name: “Librax”
- Perphenazine in combination with Amitriptyline Hydrochloride
  Trade name: “Triavil” and “Etrafon”

The Combinations

- Chlordiazepoxide in combination with Amitriptyline (trade name “Limbitrol”)
- Chlordiazepoxide Hydrochloride in combination with Clidinium Bromide (Trade name “Librax”)
- Perphenazine in combination with Amitriptyline Hydrochloride (Trade name “Triavil” and “Etrafon”)
Methods of Ingestion of CNS Depressants

- Most common and easiest method is orally
- Some abusers prefer to use intravenous injection for Barbiturates
- Some abusers experience a “flash” or “rush” from intravenous injection of Barbiturates, that they do not experience from oral ingestion

The injection paraphernalia used for Barbiturates are very similar to those used for Heroin.

Examples:
- Spoon, for heating and dissolving the barbiturate
- Cotton, for filtering the solution when drawing it into the needle
- Hypodermic syringe
- Tourniquet

However, the Barbiturate abuser will use a larger hypodermic needle because the barbiturate solution is thicker than the heroin solution.

The injection sites on the skin of a Barbiturate abuser appear quite different from those of a Heroin addict.
A large swelling, about the size of a quarter or fifty cent piece frequently will appear at the Barbiturate injection site.

Necrosis may occur: i.e. a decaying of the body’s tissue at the injection site.

The dead tissue may begin to separate from the living tissue, producing ulcerations.

The Barbiturate user who injects the drug usually will not display the same type of track marks as the heroin addict who uses repeated injections along the same vein.

Barbiturate abusers often will inject in parts of the body other than the forearm, and will commonly exhibit the characteristic swellings at random locations on the extremities.
B. Possible Effects

CNS Depressants produce impairments of the human mind and body that essentially mirror alcohol impairment.

• Reduced social inhibitions
• Divided attention impairment
  • Clarification: impede the person’s ability to concentrate on more than one thing at a time.
• Slowed reflexes
• Impaired judgment and concentration
• Impaired vision
  • Elaboration: ability to focus eyes may be impaired; “double vision” may develop.
• Lack of coordination
• Slurred, mumbled, or incoherent speech
• Produce a variety of emotional effects, such as euphoria, depression, suicidal tendencies, laughing or crying without provocation, etc.

Generally speaking, a person under the influence of CNS Depressants will look and act drunk.
C. Onset and Duration Effects

Depressant drugs can be grouped loosely into four classes based on how quickly they take effect and how long their effects last.

Ultrashort:

- Very fast acting, very brief effects
- Take effect in a matter of seconds
- Effects last only a few minutes
- Very rarely are the “drugs of choice” for drug abusers

Ultrashort depressants are sometimes used at the beginning of a surgical operation, in conjunction with an inhaled anesthetic.

Clarification: to provide a momentary sedation to ease the patient’s anxiety and allow for the proper administration of the anesthetic.

Psychiatrists sometimes use ultrashort depressants at the beginning of a session, to reduce the client’s inhibitions and foster a free and open communication.

An example of an ultrashort depressant is Brevital Sodium which is a rapid, injectable barbiturate anesthetic mainly used in hospital settings.
Short Acting

Short: fairly fast acting, effects last for approximately 4-5 hours.

• They produce effects reasonably quickly
• The effects last long enough to “enjoy” the effects
• The effects can take up to 40 minutes to be activated
• Effects last for approximately 5 hours
• This is the most commonly abused class of CNS Depressants

Short Acting Depressants frequently are prescribed as a treatment for insomnia. They also may be used as a pre-anesthetic medication to calm a patient prior to surgery.

A common example of a short acting Depressant, Secobarbital, Brand name “Seconal”

Intermediate Acting

Intermediate: relatively slow acting, but prolonged effects.

• Generally take effect in about 30 minutes
• Effects typically last about 6–8 hours

• Fairly often abused, especially by users who desire a longer lasting state of intoxication. Medical use of this class of drugs is similar to that of short acting Depressants (i.e. treat insomnia, etc.) Common example of an intermediate Depressant: Amobarbital, brand name “Amytal”.
Long Acting CNS Depressants

• Generally take effect about one hour after ingestion
• Effects typically last 8–14 hours
• Phenobarbital (Luminal), Diazepam (Valium), and Flurazepam (Dalmane) are examples

Long Acting: delayed but long lasting effects.

• Generally take effect about one hour after ingestion
• Effects typically last 8–14 hours.
• Generally not the “drugs of choice” for abusers, however, some people will abuse the long acting Depressants if the more popular short and intermediate types are not readily available.

Long acting Depressants are used medically in the control of epilepsy and of other conditions that can cause convulsions.

They can also be used to provide continuing sedation to patients suffering from extreme anxiety.

A common example of a long acting depressant is Phenobarbital (Luminal) used primarily as a daytime sedative and anticonvulsant.

Other long acting depressants include:
• Diazepam (Valium) and
• Flurazepam (Dalmane).

How would you classify Alcohol in terms of the onset and duration of its effects?

Alcohol as a Specific Example
Examples of Short-to-Intermediate CNS Depressants

Non-barbiturates
- Noctec or Felsule (“Mickey Finn”)
- Ethchlorvynol (Placidyl)
- Meprobamate (Equanil or Miltown)
- Carisoprodol (Soma)
- Gamma Hydroxybutyrate (GHB)
- Zolpidem (Ambien)

Anti-Anxiety Tranquilizers
- Diazepam (Valium)
- Chlordiazepoxide (Librium)
- Alprazolam (Xanax)
- Oxazepam (Serax)
- Clonazepam (Klonopin)
- Lorazepam (Ativan)
- Flunitrazepam (Rohypnol)
D. Overdose Signs and Symptoms

Overdoses of the Central Nervous System Depressants produce symptoms essentially identical to those of alcohol overdoses.

- Subject will become extremely drowsy and may pass out
- The heartbeat (pulse) will be rapid and weak
- Respiration will become shallow
- Skin may feel cold and clammy

One major danger with CNS Depressant overdoses is death from respiratory failure. A sufficiently high dose of CNS Depressant will suppress the portions of the brain that control respiration. This situation only rarely occurs from alcohol intoxication: usually, a drinker will pass out before he or she consumes enough alcohol to suppress respiration completely. With other depressants, it is relatively easy to take a fatal overdose.
Another major danger with CNS Depressants occurs when they are combined with alcohol.

Clarification: the combination of alcohol and certain other CNS Depressants may produce an effect greater than the sum of the effects of the two drugs independently. There is at least an additive effect when alcohol and another depressant are taken together.

With many CNS Depressants, there may be more than an additive effect. Coroners have reported a number of cases in which neither the alcohol level nor the depressant level independently would have been close to a fatal dose.

It is not possible to predict how great an effect will occur when alcohol is mixed with another depressant.

However, it is clear that the combination is always risky.

E. **Expected Results of the Evaluation**

Observable Evidence of Impairment
Horizontal Gaze Nystagmus will be present with subjects under the influence of CNS Depressants.
Vertical Gaze Nystagmus may be present, with high doses, of depressants for that individual.
Performance on Modified Romberg Balance, Walk and Turn, One Leg Stand, and Finger to Nose tests will be similar to that of subjects impaired by alcohol.
Vital Signs
- Blood pressure will be Down
- Pulse will be Down \(^{(2)}\)
- \(^{(2)}\) Quaaludes, ETOH and possibly some anti-depressants may elevate
- Body temperature generally will be in the Normal Range (98.6 plus or minus one degree)

Muscle Tone
- Muscle tone will be Flaccid

Dark Room Examinations
- Pupil sizes will generally be Normal
  - \(^{(1)}\) Soma, Quaaludes and possibly some anti-depressants usually dilate pupils.
- Pupillary reaction to light will be Slowed
General Indicators

- Disoriented
- Droopy eyes (ptosis)
- Drowsiness
- Drunk-like behavior
- Flaccid muscle tone
- Gait ataxia
- Slow, sluggish reactions
- Thick, slurred speech
- Uncoordinated

NOTE:
- With Methaqualone, pulse will be elevated and body tremors will be evident.
- Alcohol, Quaaludes and possibly some anti-depressants elevate the pulse.
- Soma, Quaaludes and possibly some anti-depressants usually dilate pupils.

Anti-Depressant Exceptions:
- As a reminder, some Anti-Depressants may cause elevated pulse rate and pupil dilation.
- Anti-Depressants may cause dry, sore throat, dry mouth, blurred vision, urinary retention, muscle twitching, restlessness, and increased anxiety.
CNS Depressant Symptomatology Chart

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Present/Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>HGN</td>
<td>Present</td>
</tr>
<tr>
<td>VGN</td>
<td>Present (High dose for that individual)</td>
</tr>
<tr>
<td>Lack of Convergence</td>
<td>Present</td>
</tr>
<tr>
<td>Pupil Size</td>
<td>Normal (1)</td>
</tr>
<tr>
<td>Reaction to Light</td>
<td>Slow</td>
</tr>
<tr>
<td>Pulse Rate</td>
<td>Down (2)</td>
</tr>
<tr>
<td>Blood Pressure</td>
<td>Down</td>
</tr>
<tr>
<td>Temperature</td>
<td>Normal</td>
</tr>
<tr>
<td>Muscle Tone</td>
<td>Flaccid</td>
</tr>
</tbody>
</table>

(1) Soma, Quaaludes and some anti-depressants usually dilate pupils
(2) Quaaludes, ETOH and some anti-depressants may elevate

Notes:_______________________________________________
_____________________________________________________
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CNS Depressants

Notes:_______________________________________________
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Drug Evaluation and Classification
Exemplar Demonstrations

Notes:_______________________________________________
_____________________________________________________
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F. Classification Exemplar
TOPICS FOR STUDY

1. Name the six major subcategories of CNS Depressants.

2. Name the four groups of Depressants based on onset and duration time factors.

3. To which subcategory of Depressants does Thorazine belong? To which subcategory does Chloral Hydrate belong? To which subcategory does Xanax belong?

4. Name a CNS Depressant that usually causes the pupils to dilate.

5. What is the generic name for the drug that has the trade name “Prozac”? 

Notes: __________________________________________________________
__________________________________________________________
6. What is a trade name for the generic drug "Alprazolam"?

7. What is the name of the subcategory of CNS Depressants that is also known as the "Minor Tranquilizers"?
**DRUG INFLUENCE EVALUATION**

**Evaluator:**
Leo Hearty, PA State Police

**Date:**
04/14/70

**Session IX #1**

---

**Name:**
George Gehlker, Old Licking PD

**Date:**
04/21/64

**Race:**
W

**Blood Test:**
Trooper Frank Cicora, PA SP

**Test Result:**
0.06

**Chemical Test:**

---

**What have you eaten today?**
Chicken Soup

**What have you been drinking?**
Nothing

---

**Time now:**
Midnight

**Time you last slept:**
6 hours

---

**Are you taking any medication or drugs:**
Yes No

**Are you under the care of a physician:**
Yes No

---

**Speech:**
Slurred at times

**Breath Odor:**
Normal

---

**Pupil Size:**
Equal

**Vertigo Nystagmus:**
Yes No

---

**Pulse and Time:**

---

**Modified Romberg Balance:**

---

**Internal Clock:**
46 estimated as 30 seconds

**Can do do test (explain):**
N/A

---

**Type of footwear:**
Leather

---

**Blood Pressure:**
110/70

**Temperature:**
98.2

---

**Notings:**

---

**What drugs or medications have you been using?**

---

**Time of test:**
04/21/64

**Evaluation start time:**
0415

---

**Opinion of Evaluator:**

---

---

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DRUG INFLUENCE EVALUATION NARRATIVE

Suspect: Cramer, Carolyn

1. LOCATION: The evaluation was conducted at Harrisburg State Police Barracks.

2. WITNESSES: George Geisler of the Old Lycoming PD recorded the evaluation.

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

4. NOTIFICATION AND INTERVIEW OF THE ARRESTING OFFICER: I was notified that Trooper Cichra had arrested a subject for DUI and was requesting a drug evaluation. Writer contacted Trooper Cichra at the Harrisburg SP Barracks where it was determined that the suspect had been observed driving at 30 MPH on I-283. When contacted, the suspect appeared dazed and disoriented. She was unable to perform the roadside SFST's as directed and was arrested for DUI.

5. INITIAL OBSERVATION OF SUSPECT: Writer first observed the suspect in the Interview Room. She was quiet, withdrawn and slow to respond to questions. When she would try to walk, she would stumble and several times nearly fell.

6. MEDICAL PROBLEMS AND TREATMENT: None observed or stated.

7. PSYCHOPHYSICAL TESTS: Modified Romberg Balance: The suspect exhibited a 2" front to back and side to side sway. She estimated 30 seconds in 46 seconds. Walk and Turn: The suspect lost her balance during the instructions, started too soon, stepped off the line twice, missed heel to toe, raised her arms for balance, staggered to the right while turning and took two extra steps returning back down the line. One Leg Stand: The suspect swayed, raised her arms for balance, hopped and put her foot down. Finger to Nose: Suspect missed the tip of her nose on five of the six attempts.

8. CLINICAL INDICATORS: The suspect exhibited six clues of HGN and a Lack of Convergence. Two of her pulse rates were below the DRE average range and her Systolic blood pressure was also below the DRE average range.

9. SIGNS OF INGESTION: None were evident.

10. SUSPECT’S STATEMENTS: The suspect admitted taking "some medicine" her brother gave her. She also stated she did not know what the medicine was.

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

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

13. MISCELLANEOUS:
DRUG INFLUENCE EVALUATION

Evaluator: Stp, Helena Williams, California H.P. 
Date: 12-09-22

Drif #: 5249

Rolling Log #: 

Session IX #2

Date Examined / Time Location: 09-06-12, 2110 W, Sacramento

Bailiff: Travis Herbert, CHP

Arrestee’s Name (Last, First, Middle): Henry, Michael James

Date of Birth: 3/11/70
Sex: M
Race: W
Arresting Officer (Name, ID#): Officer Cindy Morgan, CHP

Date and time of last drink: N/A

Blood: N/A

Chemical Test: Urine

Test or tests refused: None

Date and time when last intoxicated: 10 pm / 2115

What have you eaten today? Cheeseburger 10

What have you been drinking? Nothing

Do you have any physical defects? Yes

Are you under the care of a doctor or dentist? No

Are you taking any medication or drugs? No

"Just Xanax"

Attitude: Withdrawn, Cooperative

Coordination: Poor, Slow, Sluggish

Speech: Normal

Corrective Lenses: None

Blindness: None

Glasses: None

Left: None

Conners, if so: No

Right: None

Hard: Soft

Unequal: Equal

Soft

Unequal (explain)

Pupil Size: Left

Normal

Right

Moderate Reaction

Convergence

Able to follow stimuli

Pupil reaction to light: Right

Lack of Smooth Pursuit

Left

Lack of Smooth Pursuit

Max. Deviation

Lack of Smooth Pursuit

Angle of Onset

Lack of Smooth Pursuit

Lack of Smooth Pursuit

3°

4°

Balance

3°

4°

Walk and turn test

3°

4°

Balance

Slow, rubber legged walk

Internal clock: 30 estimated in 30 seconds

Describe Turn: Lack of balance

Draw lines to spots touched:

PUPIL SIZE

Room light

2.5 - 5.0

Direct

2.0 - 4.5

Left Eye

4.5

6.5

3.5

Right Eye

4.5

6.5

3.5

REBOUND DILATION

Yes

No

REACTION TO LIGHT:

Slow

Blood Pressure:

Temperature:

106/66

98.6

MOUTH APPEARANCE:

Normal

Flaccid

Rigid

Consent:

What drugs or medications have you been using? A couple

How much?

A couple

Time of use:

6 pm

Where were the drugs used? (Location)

McDonald’s

Date and Time of arrest: 09/06/12, 2015

Time DRE was notified: 2040

Evaluation start time: 2110

Evaluation completion time: 2220

Officer’s Signature: DRF #

5249

Reviewed/approved by / date:

Opinion of Evaluator:

Role Out

Alcohol

Medical

CNS Depressant

CNS Stimulant

Dissociative Anesthetic

Inhalant

Narcotic Analgesic

Narcotic

Cannabis

28 of 29
DRUG INFLUENCE EVALUATION NARRATIVE

Suspect: Henry, Michael J.

1. LOCATION: The evaluation took place at the West Sacramento CHP office.

2. WITNESSES: Officer Travis Herbert of the CHP recorded the evaluation.

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

4. NOTIFICATION AND INTERVIEW OF THE ARRESTING OFFICER: I was requested to conduct a drug evaluation for Officer Morgan at the West Sacramento CHP office. Officer Morgan advised that she had located the suspect slumped over in the driver's seat of a vehicle stopped in the S/B traffic lane of S.R. 49. Officer Morgan further advised that the suspect appeared to be impaired and performed poorly on the SFST’s.

5. INITIAL OBSERVATION OF SUSPECT: I first observed the suspect in a slumped position in a chair next to the interview room desk. The suspect was mumbling, had thick, slurred speech and was slow to respond to questions.

6. MEDICAL PROBLEMS AND TREATMENT: The suspect stated he was under the care of a doctor for stress and was not in need of any medical assistance.

7. PSYCHOPHYSICAL TESTS: Modified Romberg Balance: The suspect swayed approximately 3” front to back and estimated 30 seconds in 50 seconds. Walk and Turn: The suspect lost his balance twice during the instructions, stepped off the line, missed heel to toe three times, raised his arms for balance and lost his balance while turning. One Leg Stand: Suspect swayed, raised his arms for balance and put his foot down once while standing on the left foot and twice while standing on the right foot. Finger to Nose: The suspect missed the tip of his nose on each of the six attempts.

8. CLINICAL INDICATORS: Henry exhibited six clues of HGN and a Lack of Convergence. One of his pulse rates was below the DRE average range and his blood pressure was also below the DRE average ranges.

9. SIGNS OF INGESTION: None observed.

10. SUSPECT’S STATEMENTS: The suspect admitted taking Xanax. He stated he normally takes the Xanax three times a day for stress and may have taken more today.

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

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

13. MISCELLANEOUS: The suspect voluntarily produced a pill bottle containing Xanax pills. A prescription for 30 pills had been filled two days earlier and there were 12 pills in the bottle.
Upon successfully completing this session the participant 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.
Learning Objectives (Cont.)

- Describe the typical time parameters, i.e. onset 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.

CONTENT SEGMENTS

A. Overview of the Category
B. Possible Effects
C. Onset and Duration Effects
D. Overdose Signs and Symptoms
E. Expected Results of the Evaluation
F. Classification Exemplar

LEARNING ACTIVITIES

- Instructor Led Presentations
- Review of the Drug Evaluation and Classification Exemplars
- Reading Assignments
- Video Presentations
- Slide Presentations

Notes:_______________________________________________
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CNS Stimulant Overview

CNS Stimulants:
- Speed up the operation of the Central Nervous System
- Increase heartbeat, pulse, respiration, blood pressure, and temperature
- Produce nervousness, irritability and an inability to concentrate or think clearly
- Lead to unpredictable and bizarre behavior

A. Overview of the Category

CNS Stimulants speed up the operation of the Central Nervous System.

- “Speed Up” does not mean “improve.”
- Emphasize that abuse of CNS Stimulants does not make the brain work “better” or “smarter.” Rather, they induce the brain to cause many of the body’s organs to work harder, but not better.
- The “speeding up” results in increased heartbeat, pulse, respiration, blood pressure, and temperature.

All of these effects can lead to physical harm to the stimulant user.

- However, Robert Louis Stevenson wrote “The Strange Case of Dr. Jekyll and Mr. Hyde” while under the influence of Cocaine. He wrote sixty thousand words in six days.

The “speeding up” also produces nervousness, irritability and an inability to concentrate or think clearly.

These psychological effects can lead to unpredictable and bizarre behavior by the stimulant user.
Subcategories of CNS Stimulants

There are three major subcategories of Central Nervous System Stimulants.

Cocaine

Subcategories of CNS Stimulants (Cont.)

Amphetamines
- Methamphetamine
- Amphetamine Sulfate
- Desoxyn

The Amphetamines

Examples:
- Methamphetamine
- Amphetamine Sulfate
- Desoxyn
  - Also includes (d-methamphetamine) (d-desoxyephedrine) and Methedrine.
  - Desoxyn was first developed in 1919 and has been used clinically since 1930. Mainly used for the treatment of obesity, narcolepsy and attention disorder.
Others

There are many "other" CNS Stimulants (i.e., non-Cocaine and non-Amphetamines); the ones listed on the visual are only a few of those.

- **Ritalin** (methylphenidate hydrochloride)
  - Also brand names of Concerta, Daytrana. Used in the treatment of depression, narcolepsy and ADD (Attention Deficit Disorder)

- **Ephedrine** (Primatene, Quadrinal)
  - Can be found in some naturally-occurring plants such as the Chinese herb ma huang. Used as a nasal decongestant and bronchodilator. Contained in numerous OTC supplements and energy products

- **Caffeine**
  - Contained in coffee and numerous energy drinks. Some "Monster drinks" contain as much as 240 milligrams of caffeine. Can be fatal at about 10 grams.
Coca Plant
“Erythroxylon Coca”

Cocaine

Coca plant: Scientific name “Erythroxylon Coca.”

Cocaine derives from the coca plant.

- The plant is native to South America.
- Cocaine is made from the leaves of the coca plant.
- Archaeological evidence indicates that natives of Peru chewed coca leaves 5,000 years ago.
- Sigmund Freud personally experimented with Cocaine for approximately 3 years.
- Small quantities of Cocaine originally were included in the formula of Coca Cola.
- Use of Cocaine in products as Coca Cola was outlawed by the Pure Food and Drug Law of 1906.
Amphetamines

Amphetamines were first synthesized near the end of the 19th Century. The first use of Amphetamines for medical purposes began in the 1920’s. Initial medical application was to treat colds.

- Amphetamines cause the nasal membranes to shrink.
- This gives temporary relief from stuffy nasal passages.

Amphetamines were prescribed for the treatment of narcolepsy and ADHD (attention deficit hyperactivity disorder).

Amphetamine use grew rapidly when amphetamines were distributed to soldiers during World War II.
Medical Uses of Amphetamines

- Control appetite
- Control symptoms of narcolepsy
- Control hyperactivity in children
- Relieve or prevent fatigue
- Treat mild depression

Present day medical purposes for amphetamines include:

- Control appetite. Many over the counter appetite control products contain CNS Stimulants as their active ingredient.

- Control symptoms of narcolepsy. Narcolepsy is an extremely rare disorder that causes the individual to fall asleep compulsively, often several hundred times per day.

- Control certain hyperactive behavioral disorders. Example: Ritalin is commonly prescribed for children diagnosed with ADD or similar disorders.

- Relieve or prevent fatigue to allow persons to perform essential tasks of long duration. The U.S. Air Force previously gave pilots amphetamines to keep them alert on long flights. Amphetamines have also had other short term military applications.

- Treat mild depression.

Other Medical Uses of Amphetamines

- Antagonize effects of depressants
- Prevent and treat surgical shock
- Maintain blood pressure during surgery
- Treat Parkinson’s disease
- Enhance the action of analgesic drugs

- Antagonize the effects of depressant drugs.
- Prevent and treat surgical shock.
- Maintain blood pressure during surgery.
- Treat Parkinson’s Disease.
- Enhance the action of certain analgesic (pain killer) drugs.

Numerous pharmaceutical companies manufacture Amphetamines for these purposes.
Commonly Prescribed Pharmaceutical Amphetamines

- **Dexedrine**
  Dextroamphetamine Sulfate

- **Adderall**
  Dextroamphetamine and Amphetamine

- **Benzedrine**
  Amphetamine Sulfate

- **Desoxyn**
  Methamphetamine Hydrochloride

Examples of common pharmaceutical Amphetamines:

- **Dexedrine** (dextroamphetamine sulfate) used to treat narcolepsy and hyperkinetic behavior, and for weight control. (Street names “Dexies”; “Hearts”)

- **Adderall** (Combination of Dextroamphetamine and Amphetamine Sulfate) It is used for the treatment of attention deficit hyperactivity disorder (ADHD) and narcolepsy.

- **Benzedrine** (Amphetamine Sulfate) used to treat narcolepsy, hyperkinetic behavior and weight problems. (Street names “Bennies”; “Whites”; “Cartwheels”)

- **Desoxyn** (Methamphetamine Hydrochloride, also known as Desoxyephedrine) used in weight reduction.

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Large quantities of Amphetamines are also illegally manufactured in this country.

The most commonly abused illicit Amphetamine is Methamphetamine. Methamphetamine Hydrochloride is a white to light brown crystalline powder, or clear chunky crystals resembling ice. Methamphetamine base is a liquid.

The majority of street Methamphetamine is produced in Clandestine laboratories.

Medicinally, forms of Methamphetamine can be used in the treatment of:

- Narcolepsy
- Attention Deficit Disorder (ADD)
- Attention Deficit Hyperactivity Disorder (ADHD)

Methamphetamine is also known as Methedrine or Methamphetamine Hydrochloride. Its’ more common street names are “speed”; “crank”; “ice”; “crystal”; “meth”; and “water.”
Other CNS Stimulants
(Besides Cocaine or Amphetamines)
- Ritalin
  Methylphenidate Hydrochloride
- Ephedrine
- Cathine and Cathinone
- Methcathinone

There are some other CNS Stimulants, apart from Cocaine or the Amphetamines.

Ritalin
Ritalin is a manufactured, non-Amphetamine CNS Stimulant:
- Generic name Methylphenidate Hydrochloride
- Used to treat mild depression, hyperkinetic behavior, narcolepsy and drug induced lethargy produced by CNS Depressants.
- Has many of the basic clinical effects of Amphetamine.

Ephedrine is a licitly manufactured stimulant used in diet aids and body building supplements. It can also be found in herbal preparations and numerous over-the-counter (OTC) substances.

Cathine and Cathinone are the two psychoactive chemicals derived from the Khat plant. It originates from the sub-Sahara regions of Africa. Also known as “cat.”

Methcathinone is illicitly manufactured from common household chemicals. Effects are very similar to Methamphetamine.
Methods of Ingestion of CNS Stimulants

There are a variety of ways in which the different CNS Stimulants may be ingested. Cocaine is commonly insufflated (snorted), smoked, injected and taken orally.

In order to be smoked, a pure form of Cocaine is required.

- Much of the Cocaine sold in this country is mixed with other materials, or chemically bonded to other elements.
- Various chemical processes can be used to “free” the Cocaine from other elements and impurities.
- One such process produces pure Cocaine in the form of small chunks.
- These chunks are known as “Crack” or “Rock Cocaine.”
- Licitly manufactured Amphetamines are taken orally, in the form of tablets, capsules and liquid elixirs.

• Illicitly manufactured Methamphetamine most commonly is injected or smoked but sometimes may be snorted or taken orally.
• The smokable 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.
• Amphetamine Sulfate usually is produced in tablet form (called “mini bennies”) and is taken orally.
### Possible Effects of CNS Stimulants

- Euphoria
- Hyperactivity
- Release of inhibitions
- Misperception of time and distance
- Inability to concentrate
- Bruxism (Grinding of the teeth)

### B. Possible Effects

Cocaine, Amphetamines and most stimulants 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 Amphetamines, there is an anesthetic effect, and the dulling of pain may contribute to the euphoria.

CNS Stimulant users tend to become hyperactive, indicated by nervousness, extreme talkativeness, an inability to sit still, and users may grind their teeth (which is called Bruxism).

CNS Stimulants tend to release inhibitions, allowing users to commit acts that they normally would avoid.

CNS Stimulant users misperceive time and distance.

  Example: to the subject, time seems to be speeded up, so that 2 hours may seem like two minutes.

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 Effects

The onset and duration of effects are quite different for Cocaine as compared to Amphetamines.

- Generally speaking, Cocaine’s effects are much briefer than are Amphetamine’s.
- The time parameters of Cocaine vary with the method of ingestion.

**Cocaine: Smoked**

When Cocaine is smoked, or “freebased,” the drug goes immediately to the lungs, and is absorbed into the blood stream very rapidly.

- The smoker begins to feel the effects of the Cocaine virtually immediately.
- Note: Injection sites will be discussed in Session 17 (Narcotic Analgesics).
- The “rush” or euphoria is reported to be very intense.
- However, the euphoric effect only last 5 – 10 minutes after the Cocaine is smoked.

**Cocaine: Injected**

When Cocaine is injected, the drug is passed directly to the blood stream, where it is carried swiftly to the brain.

- The effects are felt within seconds.
- The onset of effects is very intense.
- Note: Injection sites will be discussed in Narcotic Analgesics
- The effects generally last 5 - 15 minutes.

*Source: “Disposition of Toxic Drugs and Chemicals in Man”, 9th Edition, R. Baselt*
Cocaine Time Factors (Cont.)

• Snorted (insufflated)
  • Effects are felt within 30 seconds
  • Intense “rush”
  • Effects last 30-90 minutes

Cocaine: Snorted

When Cocaine is snorted (insufflated), the onset of effects is not quite as rapid as with smoking or injecting.

• The user typically feels the onset of effects within 30 seconds after snorting the drug.
• Although the “rush” occurs, it is not quite as intense as it is when the Cocaine is smoked or injected.
• The effects from snorting usually last from 30 – 90 minutes.

Cocaine: Oral Ingestion

• Oral ingestion of Cocaine usually is the least preferred method.
• The effects of Cocaine taken orally may last from 45 – 120 minutes.
• The user generally does not begin to feel the effects for 3 – 5 minutes.
• The effects are not as intense as they are with other methods of ingestion.
• However, the effects may last 15 – 30 minutes longer than with other methods.

With all methods of ingestion, the duration of Cocaine’s effects tend to be briefer than the effects of most other drugs.

• As the effects wear off, it becomes very difficult to observe evidence of impairment.
• If the subject is not evaluated by a DRE fairly soon after the subject has been apprehended, the DRE may not uncover evidence of the CNS Stimulant.
Methamphetamine Time Factors

- Effects are felt within seconds
- “Rush” is very intense for 5-30 seconds
- Effects can last up to 12 hours

Methamphetamine: Injected

When Methamphetamine is injected, the initial effects are very similar to the injection of Cocaine.

- The user begins to feel the effects within a few seconds.
- The “rush” is very intense, and lasts at a high level of intensity for 5 – 30 seconds.
- Unlike Cocaine, Methamphetamine’s effects are longer and may last up to 12 hours after injection.

Methamphetamine: Smoked

When Methamphetamine is smoked, the rush is very intense, and the effects are long lasting.

The user stays “high” for 4 – 8 hours with residual effects lasting up to 12 hours.

Source: Drugs and Human Performance Fact Sheets, NHTSA (2004).

Methamphetamine: Snorted

When Methamphetamine is snorted or taken orally, the onset takes longer, the rush is much less intense, and the effects are much briefer.

Methamphetamine: Orally

When taken orally the onset of effects is delayed, the rush is much less intense and the effects last longer.
D. Overdose Signs and Symptoms

Overdose 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.

- Subject may suffer convulsions and faint or pass into a coma.
- Heartbeat (pulse) will increase, possibly dramatically.
- Hallucinations may occur.

Example: The feeling that bugs are crawling under the skin is also known as “Coke Bugs.” The medical term for this condition is formication.

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Death can occur from sudden respiratory failure, or from heart arrhythmia, leading to cardiac arrest.

- Death can occur from sudden respiratory failure, or from heart arrhythmia, leading to cardiac arrest.
- Another danger is that subjects may attempt to treat CNS Stimulant overdoses with Barbiturates, possibly leading to overdose of CNS Depressants.
E. **Expected Results of the Evaluation**

**Observable Evidence of Impairment**

- Horizontal Gaze Nystagmus will not be present with subjects under the influence of CNS Stimulants.
- Vertical Gaze Nystagmus will not be present.
- Lack of Convergence will not be evident.
- Performance on Modified Romberg Balance should be impaired.
- Performance on Walk and Turn may be impaired due to the subject’s hyperactivity and inability to concentrate. Example: subject may start too soon on the Walk and Turn, and may tend to walk fast, thus losing balance or missing heel-to-toe.
- Performance on the One Leg Stand may be impaired due to the subject’s hyperactivity. Example: subject may also count very rapidly on the One Leg Stand test.
- Performance on the Finger to Nose test should be impaired. His or her finger movements may be abrupt, jerky and inaccurate.
Vital Signs
- Blood pressure will generally be elevated.
- Pulse generally will be increased.
- Body temperature generally will be elevated.

Muscle Tone
- Muscle tone will be Rigid

Dark Room Examinations
- Pupils generally will be dilated.
- The technical term for “dilated pupils” is Mydriasis.
- Pupil reaction to light generally will be slow.
Evaluation of Subjects Under the Influence of CNS Stimulants (Cont.)

**General Indicators:**
- Anxiety
- Body tremors
- Bruxism (grinding teeth)
- Dry mouth
- Euphoria
- Excited
- Exaggerated reflexes
- Eyelid and leg tremors
- Increased alertness
- Insomnia
- Irritability
- Restlessness
- Rigid muscle tone
- Talkative
- Redness to nasal area
- Runny nose

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### CNS Stimulant Symptomatology Chart

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HGN</td>
<td>None</td>
</tr>
<tr>
<td>VGN</td>
<td>None</td>
</tr>
<tr>
<td>Lack of Convergence</td>
<td>None</td>
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<tr>
<td>Pupil Size</td>
<td>Dilated</td>
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<tr>
<td>Reaction to Light</td>
<td>Slow</td>
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<tr>
<td>Pulse Rate</td>
<td>Up</td>
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<tr>
<td>Blood Pressure</td>
<td>Up</td>
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<tr>
<td>Temperature</td>
<td>Up</td>
</tr>
<tr>
<td>Muscle Tone</td>
<td>Normal</td>
</tr>
</tbody>
</table>

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### CNS Stimulants

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### Drug Evaluation and Classification Exemplar Demonstrations

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**F. Drug Evaluation and Classification Exemplar Demonstrations**

Notes:

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QUESTIONS?
Topics for Study

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”? 

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DRUG INFLUENCE EVALUATION

Evaluator: Sgt. Rose Baton, Arkansas H.P.

Note: The document contains a DRUG INFLUENCE EVALUATION form with handwritten notes and responses. The form includes sections for evaluator details, breath test results, blood test results, physical examination, and observations.

Session X - #1

Date/Time: 02-08-12, 2230 Pulaski Co. Jail

Breath Results: Test Results: 0.09

Blood: Test or tests refused

Miranda Warning Given: Yes

Tested By: TFC Hust, Arkansas S.P., #9896

Date Examinations / Time Location: 02-08-12, 2230 Pulaski Co. Jail

Basis for One Leg Stand: 1. 102° / 2240°, 2. 100° / 2253°, 3. 100° / 2315°

Modified Romberg Balance: Walk and Turn test

Internal Clock: 22 estimated at 10 seconds

Draw lines to spots touched

Quick Movements

Blood Pressure: 142/96

Temperature: 99.8°

Muscle Tone: Normal

What drugs or medications have you been using? “Nothum”

Date / Time arrested: 02-08-12, 2205

Time DRE was notified: 2230

Evaluation start time: 2335

Evaluation completion time: 2335

Officer’s Signature: DRE # 2189

Opinion of Evaluator: 

Time of use?: N/A

Where were the drugs used? (Location): North Precinct

Type of footwear: N/A

Nasal area: N/A

Oral cavity: N/A

REBOUND DILATION: Yes

REACTION TO LIGHT: Slow

Nothing observed

Type of drugs:

Ot: None

Sex: M

Race: W

Date of Birth: 7/10/63

Arrestee’s Name (Last, First, Middle): Hedlund, James R.

Property: None

Address: None

Case # 12-0077890

Officer: None

DRE: 2189

Rolling Log #: 12-02-009
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: I 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: I 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: Modified Romberg Balance: Suspect swayed approximately 3” front to back and estimated 30 seconds in 22 seconds. Walk and Turn: Suspect started too soon, lost his balance twice during the instructions, raised his arms for balance, made an abrupt quick turn, and missed heel to toe twice on the second nine steps. 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 elevated and above the DRE average 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:
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 Kirk Dowell of the OKC PD and by DRE instructor Officer Lance Arnold of the Norman 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 Dowell requesting a drug evaluation. After arriving at the County Jail, Officer Dowell 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 Dowell. 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: Modified 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 DRE average 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 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.
Upon successfully completing this session the participant will be able to:

- Conduct examinations of pupil size and reaction to light under both lighted and darkened room conditions.
- Describe the eye examination procedures.
- Document the results of the eye examinations.

CONTENT SEGMENTS
A. Procedures for this Session
B. Room Light Examinations
C. Dark Room Examinations
D. Session Wrap-Up

LEARNING ACTIVITIES
- Instructor Led Presentations
- Participants’ Hands-On Practice
- Instructor Led Coaching
- Participant Led Coaching
A. **Procedures for this Session**

*Team Assignments*

- Participants will work in three or four member teams.
- Make team assignments.
- At any given time, one member of the team will be engaged in conducting and recording eye examinations of another member.
- The remaining member(s) will help coach and critique the participant who is conducting the examinations.

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Team Practice

Participants will take turns serving as test administrator, test subject and coach.

Teams initially will practice under lighted room conditions.
• Check pupil size under normal room light.
• Check reaction to light and pupil size using a penlight in a lighted room.

Teams subsequently will practice under darkened room conditions.
• Check pupil size in near total darkness.
• Check reaction to light and pupil size under direct light.
• Participants will record their estimations using Eye Examinations Data Sheet. There are copies of the Eye Examination Data Sheet in the Participant’s Manual.

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B. **Room Light Examinations**

*Pupil Size Estimation*

- Pupil size estimation, under room light.
- Pupil reaction and size estimation, under direct light.

Sequence of roles should be as follows:

- Test Administrator
- Test Subject
- Coach
- Test Administrator (continue cycle)
C. **Dark Room Examinations**

*Pupil Size Estimation*

- Pupil size estimation, under near total darkness.
- Pupil reaction and size estimation, under direct light.

Allow participants approximately 90 seconds for the eyes to adapt to the darkened conditions.

Sequence of roles should be as follows:

- Test Administrator
- Test Subject
- Coach
- Test Administrator (continue cycle)
QUESTIONS?

D. Session Wrap-Up
Upon successfully completing this session the participant will be able to:

- Correctly administer the preliminary examinations and psychophysical tests used in the drug influence evaluation procedure.
- Observe and record the subject’s performance on the preliminary examinations and psychophysical tests.
- Determine the level of impairment based on the results of the subject’s preliminary examinations and psychophysical tests.

CONTENT SEGMENTS

A. Procedures
B. Hands-On Practice
C. Session Wrap-Up

LEARNING ACTIVITIES

Instructor Led Presentations
Participant Led Practice
Instructor Discussion
Examinations and Tests Conducted

• Pupil Size (Room Light)
• Horizontal Gaze Nystagmus
• Vertical Gaze Nystagmus
• Lack of Convergence
• Modified Romberg Balance
• Walk and Turn
• One Leg Stand (Both Legs)
• Finger to Nose
• Pulse Rate

A. Procedures

The preliminary examinations and psychophysical tests include:

• Pupil Size Estimation (Room Light)
• Horizontal Gaze Nystagmus
• Vertical Gaze Nystagmus
• Lack of Convergence
• Modified Romberg Balance
• Walk and Turn
• One Leg Stand (both legs)
• Finger to Nose
• Pulse Rate

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Team Member Duties

- One team member will administer the tests to the volunteer
- One team member will record the results on the report form
- The other team member(s) will assist the test administrator in observing the volunteer’s performance on the tests

Some volunteers will have BACs above 0.10, others will have lower BACs. The following safety precautions will be strictly enforced:
- No weapons will be present.
- Volunteers will not be left unattended at any time.

B. Hands-On Practice

Test Administration
C. Session Wrap-Up

Feedback of teams’ assessments:

Ask each team briefly to describe the evidence that led the members to their conclusions about a particular volunteer’s BAC.

Feedback of volunteer’s BACs:

Discussion

Sample Dry Erase Board Array

TEAMS’ ESTIMATES OF BAC
(TABLE ENTRIES REPRESENT TEAMS’ “VOTES”)

<table>
<thead>
<tr>
<th>Team</th>
<th>0.05</th>
<th>0.06-0.07</th>
<th>0.08-0.09</th>
<th>0.10-0.11</th>
<th>0.12-0.13</th>
<th>0.14+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team 1</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Team 2</td>
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<tr>
<td>Team 3</td>
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<td></td>
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<tr>
<td>Team 4</td>
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</table>
QUESTIONS?

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Upon successfully completing the session, the participant will be able to:

- Explain how the various sections of the PDR can provide information that will:
  a) aid in the drug influence evaluation
  b) aid in courtroom testimony
- Use the PDR in a practical exercise.
- Learn about other resources available to assist DREs.

CONTENT SEGMENTS
A. Procedures
B. Practical Exercises
C. Other Resources Available
A. Procedures

PDR: Physician's Desk Reference

PDR is published annually.

Many versions are published:

- PDR for prescription drugs
- PDR for non-prescription drugs
- PDR for ophthalmology
- PDR Consumer Guide to Prescription Drug
- PDR for Herbal Medicines
- PDR for Nutritional Supplement
- PDR Nurse’s Drug Handbook

PDR supplements are published periodically as new products are introduced during the year.

Function of the publisher is compilation, organization and distribution of information.

Product descriptions are prepared by the manufacturer, and edited and approved by their respective medical directors.

Additional information on the various drugs can be obtained from the manufacturer.
**Sections of a Physician's Desk Reference**

**Section 1:**
- Manufacturers' index

**Section 2:**
- Product name index and discontinued products

**Section 3:**
- Product category index

**Sections of a PDR**

- **Section 1**
  - Manufacturers Index
    List of manufacturers (with phone numbers) who have provided prescribing information.

- **Section 2**
  - Product Name Index and Discontinued Products
    Alphabetical listing of products available and a listing of discontinued products. Newer editions of the PDR will have a merging of Sections 2 and 4.

- **Section 3**
  - Product Category Index
    Products listed according to appropriate category.
Sections of a Physician's Desk Reference (Cont.)

- Section 4
  - Generic and chemical name index
  - Products listed under generic and chemical name headings according to the principal ingredient(s).

- Section 5
  - Product identification section

- Section 6
  - Product information section
  - It also includes common names, generic compositions, or chemical names.

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Sections of a Physician’s Desk Reference (Cont.)

Section 7:
- Diagnostic product information

Section 8:
- Poison control centers

Section 9:
- Guide to management of drug overdose

Use of the PDR in DEC Program

To identify prescription drugs.
This information is contained in the product identification section.

To identify the effects of prescription drugs for comparison with observed effects.
This information is contained in the product information section.

How to use the PDR

Identification of an unknown product.
Identification of drug pharmacology.
Example: MS Contin tablets (Morphine Sulfate).

Location and acquisition of agency’s PDR(s)

B. Practical Exercise

Suggested Criteria for Identifying a Non-PDR Source

- Be less than five years old (by copyright date)
- Be readily available in print or online
- Be periodically updated
- Be utilized by practitioners in the scientific and healthcare fields
- At a minimum, contain information on a particular drug’s: name, forms, actions and side effects

C. Other Resources

Suggested criteria to identify a non-PDR drug reference

When selecting an acceptable drug reference, DRE’s should consult references that meet the below criteria:

- Be less than five years old (by copyright date).
- Be readily available in print or online.
- Be periodically updated.
- Be utilized by practitioners in the scientific and healthcare fields.
- At a minimum, contain information on a particular drug’s:
  - Trade (brand), generic, and alternate common names.
  - Available forms (liquid, pill, injectable, etc.).
  - Pharmacologic / therapeutic actions (as used clinically, both “on” and “off” label).
  - Adverse reactions and side effects.

The reason for this is to keep from consulting references that have become outdated and inaccurate.
Other Written Sources

Acceptable written examples include:

• The Complete Guide to Prescription and Non-prescription Drugs 2012
• The Pill Book (currently the 15th Edition)
• Nursing 2013 Drug Handbook
• Nurse Pocket Drug Guide 2012
• Drug Identification Bible (available at: www.drugbible.com)

Acceptable resources may be in-print, electronic, or a combination. Non-representative, non-ranked.

Acceptable written examples include:

• The Complete Guide to Prescription and Non-prescription Drugs 2012
• The Pill Book (currently the 15th Edition)
• Nursing 2013 Drug Handbook
• Nurse Pocket Drug Guide 2012
• Drug Identification Bible (available at: www.drugbible.com)

Acceptable written examples include (Cont):

• Davis’s Drug Guide for Nurses
• Tarascon Pocket Pharmacopoeia
• The Monthly Prescriber’s Reference (MPR)
• Disposition of Toxic Drugs and Chemicals in Man (Source: Randall C. Baselt. Biomedical Publications)
Other Electronic Sources
Acceptable electronic examples include:
• Drugs.com
• RxList.com
• WebMD.com/Drugs/Index-drugs.aspx
• Eprocrates.com
• iMeds – Medical Reference for Android
• Monthly Prescriber’s Reference (MPR)
• PDR.net

Other Information Sources
• National Highway Traffic Safety Administration, Enforcement and Justice Services Division.
• State Drug Evaluation and Classification (DEC) Program Coordinator.
• The DRE Newsletter. Published by the Phoenix City Prosecutor’s Office, Phoenix, Arizona.
  • Website: http://phoenix.gov/AGENCY/PHXPROS/dre.html
  • This resource also includes past editions that are a very valuable resource for information

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Other Information Sources

- The National Traffic Law Center (NTLC)
  www.ndaa.org/ntlc_home.html
- Local poison control center
- Medical dictionary

- The National Traffic Law Center (NTLC).
  NTLC is part of the American Prosecutors Research Institute (APRI).
- Local Poison Control Center.
- Medical Dictionaries.

Other Information Sources (Cont.)

- Drugs and Human Performance Fact Sheets
- Various textbooks, newspaper and magazine articles

- Drugs and Human Performance Fact Sheets
- Newspaper and magazine articles on drugs and drug impaired driving, including counter-culture magazines such as “High Times.”
- Software programs such as Pharmacists, Body Works, Mosby’s Medical Dictionary and other programs are available on disks and CDs. Various resources are available through online services and the Internet.
QUESTIONS?

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Participant Manual DRE 7-Day Session 14 - Hallucinogens

Learning Objectives

- Explain a brief history of the Hallucinogen 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

Upon successfully completing this session the participant will be able to:

- Explain a brief history of the Hallucinogen 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
Learning Objectives (Cont.)

- Describe the typical time parameters, i.e. onset 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

CONTENT SEGMENTS

A. Overview of the Category
B. Possible Effects
C. Onset and Duration Effects
D. Overdose Signs and Symptoms
E. Expected Results of the Evaluation
F. Classification Exemplars

LEARNING ACTIVITIES

Instructor-Led Presentations
Review of Drug Evaluation and Classification Exemplars
Reading Assignments
Video Presentations
Slide Presentations

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Hallucinogens are drugs that affect a person's perceptions, sensations, thinking, self-awareness and emotions.

The word “Hallucinogen” means something that causes hallucinations.

Definition from The Random House College Dictionary (Revised Edition, 1980)

A hallucination is a sensory experience of something that does not exist outside the mind.

Seeing, hearing, smelling, tasting or feeling something that isn’t really there.

Having distorted sensory perceptions, so that things look, sound, smell, etc. differently than they really are.

Hallucinogenic drugs usually produce what are called pseudo-hallucinations: i.e. the user typically is aware that what he or she is seeing, hearing, smelling, etc. isn’t real, but is a product of the drug.

But emphasize that the fact that the user knows the hallucinations aren’t real doesn’t make those hallucinations any less dangerous if they occur while driving.
Synesthesia

One common type of hallucination produced by these drugs is called Synesthesia, which is a sensory perception disorder, in which an input via one sense is perceived by the brain as an input via another sense. In its simplest terms, it is a transposition of senses.

Note: Synesthesia can occur naturally in a small percentage of the population, and can differ from drug induced synesthesia.

Examples: The user may “see a flash of color, or some other sight, when the telephone rings.”

• Sounds for example, may be transposed into sights.
• Sights may be transposed into odors.
• The user may “smell” a particular fragrance when he or she looks at something painted yellow.
• The illusions and distorted perceptions produced by hallucinogenic drugs may be very alarming, even terrifying.
• They may produce panic and uncontrolled excitement.

The user may be unable to cope with the terror, and may attempt to flee wildly.

A user who is emotionally or mentally unstable may become psychotic in response to this frightening experience.
Flashback

A terrifying “bad trip” sometimes may be re-experienced as a flashback.

In simple terms, a flashback is a vivid recollection of a portion of a hallucinogenic experience.

A flashback does not occur because of a residual quantity of drug in the user’s body. Instead, a flashback essentially is a very intense daydream.

But point out that subsequent use of the drug may precipitate a flashback, by causing the user to re-experience the frightening illusions of the previous “bad trip.”

Types of Flashbacks

There are three types of flashback:

- Emotional: feelings of panic, fear, etc.; the sensations of a “bad trip.”
- Somatic: Altered body sensations, tremors, weakness, dizziness, crawly, tingly feeling on the skin.
- Perceptual: Distortions of vision, hearing, smell and touch (associated with original “trip” least harmful, unless driving a motor vehicle).
Delusion and Illusion

Remember that hallucinogens produce delusions, illusions, or both.

• A delusion is a false belief.

Example of a delusion: “I am an Elephant.”

• An illusion is a false perception, i.e. a misrepresentation of what the senses are receiving.

Example of an illusion: “I see an Elephant.”

Because they often make the user appear to be insane, hallucinogens sometimes are called psychotomimetic drugs.

“Psychotomimetic” means “something that mimics psychosis.” A psychosis is a major mental disorder. It implies a loss of touch with reality.

Some hallucinogens come from natural sources, while others are synthetically manufactured.

Note: Some regional or local hallucinogens may be discussed in more detail.

Peyote, Psilocybin and Salvia Divinorum are examples of naturally occurring hallucinogens.
Synthetically Manufactured Hallucinogens
- Lysergic Acid Diethylamide (LSD)
- Trimethoxyamphetamine (TMA)
- Dimethyltryptamine (DMT)
- 3,4-Methylenedioxymethamphetamine (MDMA)
- 3,4-Methylenedioxyamphetamine (MDA)
- 2CB

LSD, TMA, DMT, MDMA, MDA, and 2CB are examples of synthetically manufactured Hallucinogens.

- LSD: Lysergic Acid Diethylamide.
- TMA: Trimethoxyamphetamine
- DMT: Dimethyltryptamine
- MDMA is an abbreviation for 3,4-Methylenedioxymethamphetamine and is commonly referred to as “Ecstasy.” It is a hallucinogen that also acts as a stimulant. It produces an energizing effect, as well as distortions in time and perception and enhances enjoyment from tactile experiences.
- MDA is an abbreviation for 3,4-Methylenedioxyamphetamine. It is normally produced as a clear liquid, or as a white powder in capsule or tablet form.
- 2CB (4-Bromo-2, 5-Dimethoxyphenethylamine) is a white powder usually found in pressed tablets or gel caps. It is considered a synthetic psychedelic amphetamine. (DEA, Feb. 2011)
Peyote is a small, spineless cactus.
The active, hallucinogenic ingredient in peyote is Mescaline.
Mescaline is a chemical relative of adrenaline. Effects may be similar to those that
would result from a massive rush of adrenalin.
Mescaline was first isolated from Peyote in 1856. It was named after the Mescalero
Apaches.
Peyote is used legally in religious ceremonies of the Native American Church.

Psilocybin is a drug found in a number of different species of mushrooms of the genus
Psilocybe.
There are over 185 known species of mushrooms that contain psilocybin and psilocin.
These mushrooms also have been used in Native American religious ceremonies for
thousands of years.
An unstable derivative of Psilocybin, called Psilocin, is also found in these mushrooms
and also has hallucinogenic properties.
Psilocybin is chemically very similar to serotonin, a neurotransmitter that is found in the
brain.
The effects of psilocybin may be similar to what would happen if the brain were
suddenly flooded with Serotonin.
Salvia Divinorum, also known as S. divinorum or Salvia, is a naturally occurring Hallucinogen.

Salvia divinorum is a perennial herb in the mint family native to certain areas of Mexico. The plant, which can grow to over three feet in height, has large green leaves, hollow square stems and white flowers with purple calyces, can also be grown successfully outside of this region.

Salvia divinorum has been used by the Mazatec Indians for its ritual divination and healing. The active constituent of Salvia divinorum has been identified as Salvinorin A.

It was not until August 2002 that researchers discovered that Salvia divinorum acts at the kappa opiate receptor (KOR) site, where much of human reception is regulated.

According to a National Survey on Drug Use and Health Report published by SAMHSA in February 2008, it is estimated that 1.8 million persons aged 12 or older used Salvia divinorum in their lifetime.
Salvia Divinorum (Cont.)

Effects of Salvia Divinorum include:
- Intense hallucinations
- Feelings of floating through space or flying
- Twisting and spinning

Physical effects include:
- Slurred speech
- Confused sentence patterns
- Lack of coordination
- Dizziness
- Nausea
- Chills

There are several methods of ingesting Salvia with varying durations of hallucinogenic effects:

- Dried leaves of Salvia can be smoked like marijuana, in a bong, pipe or as a joint, with the effects lasting up to 15-30 minutes.

- Fresh leaves can be chewed as a quid. The leaves of Salvia produce extractions of Salvinorin A before the leaves are removed from the mouth. Effects from chewing Salvia can last up to one hour.

- Salvinorin A can also be vaporized and inhaled by heating the leaves in a pipe of tin foil and the vapors inhaled through a glass pipe.

Effects of Salvia Divinorum include: intense hallucinations; feelings of floating through space or flying; twisting and spinning. Physical effects include dizziness; nausea; lack of coordination; slurred speech, confused sentence patterns; and chills.

Some common street names for Salvia Divinorum include: Salvia, Sally D, Magic Mint, Maria Pastora, and Diviner’s Sage.

Salvia is not listed under the Controlled Substance Act (CSA) or approved for medical use.

LSD is perhaps the most famous of the synthetically manufactured Hallucinogens.

- “LSD” is an abbreviation of Lysergic Acid Diethylamide.

It was first produced in 1938, although its hallucinogenic properties were not discovered until 1943.

- LSD was used in psychotherapy during the 1940’s and early 1950’s.
  Example: it was occasionally used in the treatment of alcoholism.

Although LSD is a synthetic drug, it was first derived from Ergot, a fungus that grows on rye and other grains.

In the Middle Ages, when people accidentally ate this fungus, their resulting bizarre behavior was thought to stem from possession by the Devil.

- Ergot is still used medically to treat migraine headaches. Sandoz Laboratories markets a combination of caffeine and Ergot called Cafergot.
• 2CB (4-Bromo-2, 5-Dimethoxyphenethylamine) is a popular drug first synthesized in 1974.
• 2CB is considered both a psychedelic and an entactogen.
• Note: “Entactogen” is a term used by psychiatrists to classify Ecstasy (MDMA). It literally means “touching within.”
• 2CB is a white powder usually found in pressed tablets or gel caps.
• 2CB is sometimes referred to as “Venus”; “Nexus”; and “Bromo-Mescaline.”
MDA, STP, and TMA are synthetically manufactured hallucinogens that sometimes are called “Psychedelic Amphetamines.”

- MDA is an abbreviation for 3, 4-Methylenedioxyamphetamine.
- STP is an abbreviation for 2,5-Dimethoxy-4-methylamphetamine
- TMA is an abbreviation for 3, 4, 5-Trimethoxyamphetamine.
- Chemically related to Amphetamines and produce many effects similar to those of CNS Stimulants.
- Chemically related to Mescaline.

Among users, MDA sometimes is referred to as the “Mellow Drug of America.”

An important fact about Hallucinogens is that they are not addictive, in the sense that cessation of use does not produce withdrawal signs or symptoms; however, regular users do develop tolerance to these drugs.
Methods of Ingestion of Hallucinogens

The most common method of ingesting Hallucinogens is orally. Some Hallucinogens can also be smoked. However, LSD cannot be ingested by smoking.

LSD is usually ingested orally, which produces rapid effects. It can also be absorbed by placing drops in the eye.

Some Hallucinogens can be ingested and absorbed through the skin. MDA can also be insufflated, or "snorted."
Hallucinogen Effects

- Intensify whatever mood the user is in at the time the drug is taken
- Uncover mental or emotional flaws that the user was unaware of possessing
- Hallucination: the distorted perception of reality

B. Possible Effects

The effects of Hallucinogens vary widely, and are affected by the user’s personality, mood and expectations, and by the surroundings in which the drug is taken.

The most common effect of the Hallucinogen is hallucination: the distorted perception of reality, often with a mixing of senses that makes it virtually impossible for the drug influenced user to function in the real world.

Generally, Hallucinogens intensify whatever mood the user is in at the time the drug is taken.

- If the user is depressed, the drug will deepen the depression.
- If the user is feeling pleasant, the drug will heighten that feeling.

If the user expects that the drug will help him or her achieve new insights or an expanded consciousness, the “trip” will seem to have that effect.

However, Hallucinogens also often uncover mental or emotional flaws that the user was unaware of possessing.

Therefore, many users who expect a positive experience with the drug will encounter instead the panic of a “bad trip.”
Time Factors of Peyote

• 30 minutes: Onset
  
  • Nausea, elevated blood pressure, pulse and temperature, heart rate and dilated pupils
  
  • 60 minutes: Development of hallucinogenic effects
  
  • Visual distortions, rich colors, changing forms and moving shapes
  
  • 3-4 hours: Peak effects
  
  • "Synesthesia"

C. Onset and Duration Effects

Time Factors of Peyote

The time parameters associated with Hallucinogens vary from drug to drug.

The effects of Peyote (Mescaline) begin to be felt within approximately one-half hour after eating the cactus “buttons.”

30 minutes: nausea, possibly leading to vomiting; mild rise in blood pressure, pulse, temperature and heart rate; pupils dilate.

One hour: sensory changes begin; visual distortions accompanied by rich colors; objects take on new forms and begin to move; shapes “come alive.”

3 – 4 hours: sensory changes reach their peak; synesthesia (transposition of senses) commonly occurs.

10 hours: gradual decline in effects.

12 hours: nearly total recovery from effects.

24 hours: the majority of the Mescaline has been excreted from the body.
Time Factors of Psilocybin

Psilocybin also begins to exert its effects within one-half hour.

First 30 minutes: dizziness, light headed feeling, giddiness; the extremities (hands, feet, etc.) may feel very light or very heavy.

30 – 60 minutes: vision blurs; colors become brighter, leave longer lasting after images; objects take on sharp visual definition; hearing becomes more acute.

60 – 90 minutes: color patterns and shapes start to develop; the surfaces of objects appear to develop waves and wave-like patterns; distance perception becomes impaired; feelings of euphoria develop.

90 – 120 minutes: body sensations increase, along with mental perceptions; user commonly becomes introspective, with increased bodily sensations and mental perceptions.

120 – 180 minutes: effects start to diminish.

180 – 300 minutes: Nearly complete resolution of drug-induced effects.

Source: Drug Identification Bible, 2012
LSD’s effects begin to be felt within 30 – 45 minutes.

30 – 45 minutes: blood pressure, pulse and temperature rise; pupils dilate; hair starts to stand on end (Piloerection); nausea, dizziness and headache development.

4 – 6 hours: effects reach their peak.

7 – 9 hours: effects diminish.

10 – 12 hours: user feels normal.

MDMA’s effects usually begin within several minutes to a half hour if taken orally.

Psychological effects include confusion, depression, anxiety and paranoia.

The duration effects can last from 1 – 12 hours depending on dosage.

2CB’s effects are dose related.

Lower doses (5-15mg) produce enhanced sensual sensations and feelings of being “in one’s body.”

At higher doses (15-30mg) it produces intense visual effects that include moving objects with "trails" behind them and colors appearing from nowhere.

Onset and duration of effects of other Hallucinogens vary widely from about two hours to about 24 hours.
D. **Overdose Signs and Symptoms**

The most common danger of an overdose of Hallucinogen is an intense “bad trip,” which can result in severe and sometimes permanent damage.

It is unlikely that other Hallucinogens would directly result in death from overdoses. However, an overdose can be extremely dangerous and indirectly result in death.

The extreme panic and agitation of a “bad trip” have been known to result in suicide or in accidental death as the user attempts to flee the hallucinations.

Sometimes Hallucinogens induce a perception of invulnerability in the user, leading to bizarre and very dangerous behavior, and death.

Example: at least one LSD user was killed when he attempted to stop a train. Others have died from jumping off buildings believing they can fly.

Some evidence suggests that prolonged use of LSD may produce organic brain damage, leading to impaired memory, reduced attention span, mental confusion and impaired ability to deal with abstract concepts.
Evaluation of Subjects Under the Influence of Hallucinogens

- HGN and VGN - None
- Lack of Convergence - No
- Impaired performance will be evident on Modified Romberg, Walk and Turn, One Leg Stand and Finger to Nose

E. Expected Results of the Evaluation

Observable Evidence of Impairment

Eye Exams:
- Neither Horizontal Gaze nor Vertical Gaze Nystagmus will be present.
- Lack of Convergence will not be evident.

Psychophysical Tests:
- Performance on the Modified Romberg balance test will be impaired, particularly in the subject’s estimation of the passage of 30 seconds.
- Performance on the Walk and Turn, One Leg Stand, and Finger to Nose tests will be markedly impaired due to the subject’s severe visual distortion, impaired perception of distance and decreased muscle coordination.

Vital Signs:
- Pulse - Up
- Blood Pressure - Up
- Body temperature – Up
- Muscle Tone - Rigid

Vital Signs
- Pulse will generally be elevated
- Blood pressure generally will be elevated
- Body temperature generally will be elevated
**Dark Room**

Pupils generally will be dilated

Reaction to light will usually be normal. Certain Psychedelic Amphetamines may cause slowing of the pupil's reaction to light.

**General Indicators**

- Body tremors
- Dazed appearance
- Difficulty with speech
- Disoriented
- Flashbacks
- Hallucinations
- Memory loss
General Indicators (Cont.)

- Nausea
- Paranoia
- Perspiring
- Piloerection (LSD)
- Poor perception of time and distance
- Synesthesia
- Uncoordinated

Symptomatology Chart

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VGN</td>
<td>None</td>
</tr>
<tr>
<td>VGN</td>
<td>None</td>
</tr>
<tr>
<td>Lack of Convergence</td>
<td>None</td>
</tr>
<tr>
<td>Pupil Size</td>
<td>Dilated</td>
</tr>
<tr>
<td>Reaction to Light</td>
<td>Normal (1)</td>
</tr>
<tr>
<td>Pulse Rate</td>
<td>Up</td>
</tr>
<tr>
<td>Blood Pressure</td>
<td>Up</td>
</tr>
<tr>
<td>Temperature</td>
<td>Up</td>
</tr>
<tr>
<td>Muscle Tone</td>
<td>Rigid</td>
</tr>
</tbody>
</table>

Notes:_______________________________________________
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Notes:_______________________________________________
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_____________________________________________________
_____________________________________________________
_____________________________________________________

(1) Certain psychedelic amphetamines may cause slowing
Hallucinogens

Drug Evaluation and Classification
Exemplar Demonstrations

F. Classification Exemplar

QUESTIONS?

Notes:_______________________________________________
_____________________________________________________
_____________________________________________________
_____________________________________________________
_____________________________________________________
_____________________________________________________
_____________________________________________________
TOPICS FOR STUDY

1. What does “synesthesia” mean?

2. What is a “flashback”? What are the three types of “flashback”?

3. Name two naturally occurring Hallucinogens.

4. What is a “bad trip”?

5. What does “psychotomimetic” mean?

6. What is an “illusion”? What is a “delusion”?

7. What is the difference between “hallucinations” and “pseudo-hallucinations”? 
8. What is “piloerection”?
**DRUG INFLUENCE EVALUATION**

**Evaluator:**
OFC: Chris Thurman, Louisville Metro PD

**Driver:**
DRE # 16444

**Rolling Log:**
12-07-14

**Session XIV #1**

<table>
<thead>
<tr>
<th>Details</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver/Offense</td>
<td>OC: Dean King, Louisville Metro PD</td>
</tr>
<tr>
<td>Date/Time</td>
<td>07/28/12 23:00 Jefferson Co. Jail</td>
</tr>
<tr>
<td>Breath Results</td>
<td>Test refused</td>
</tr>
<tr>
<td>Chemical Test</td>
<td>Urine, Blood</td>
</tr>
<tr>
<td>Mirandas Warning</td>
<td>Given by Officer Belcher 9:50</td>
</tr>
<tr>
<td>Time now</td>
<td>7 pm / 2040</td>
</tr>
<tr>
<td>When did you last sleep?</td>
<td>Last night 6-7 hours</td>
</tr>
<tr>
<td>Are you sick or injured?</td>
<td>No</td>
</tr>
<tr>
<td>Are you under the care of a doctor or dentist?</td>
<td>No</td>
</tr>
<tr>
<td>Do you take any medication or drugs?</td>
<td>Yes</td>
</tr>
<tr>
<td>Attitude</td>
<td>Withdrawn, distracted</td>
</tr>
<tr>
<td>Speech</td>
<td>Rapid, stammering</td>
</tr>
<tr>
<td>Breath odor</td>
<td>Sour, rank</td>
</tr>
<tr>
<td>Face</td>
<td>Flushed</td>
</tr>
<tr>
<td>Corneal Reflexes</td>
<td>None</td>
</tr>
<tr>
<td>Eyes</td>
<td>Reddened Conjunctiva</td>
</tr>
<tr>
<td>Blindness</td>
<td>None</td>
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<tr>
<td>Tracking</td>
<td>Normal</td>
</tr>
<tr>
<td>Pupil Size</td>
<td>Equal</td>
</tr>
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<td>Pupil Unequal (explain)</td>
<td></td>
</tr>
<tr>
<td>Pulse and time</td>
<td>104 / 2040</td>
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<tr>
<td>Right Eye</td>
<td>Left Eye</td>
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<tr>
<td>Maximum Deviation</td>
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<td>Angle of Onset</td>
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<tr>
<td>Modified Romberg Balance</td>
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<td>Walk and Turn test</td>
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<td>Internal clock</td>
<td>N/A estimated as 10 seconds</td>
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<tr>
<td>Describe Turn</td>
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<tr>
<td>Pupil Size</td>
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<tr>
<td>Darkness</td>
<td>5.0 - 8.5</td>
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<tr>
<td>Direct</td>
<td>20.0 - 45.0</td>
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<tr>
<td>Left Eye</td>
<td>7.0</td>
</tr>
<tr>
<td>Right Eye</td>
<td>7.0</td>
</tr>
<tr>
<td>REBOUND DILATION</td>
<td>Yes</td>
</tr>
<tr>
<td>Reaction to light</td>
<td>Normal</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>148/104</td>
</tr>
<tr>
<td>Temperature</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Opinion of Evaluator:**
- [ ] Role Out
- [ ] Alcohol
- [ ] Medical
- [X] CNS Stimulant
- [ ] Dissociative Anesthetics
- [ ] Inhalant
- [ ] Hallucinogens
- [ ] Nestic Agents
- [ ] Cannabis

**Note:**
- N/A

---

**Case #12-07-1145**

**Officer:**
Off. Kevin Belcher, KY Vehicle Enforcement 12849

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**Error:**

The document appears to be a medical or legal evaluation form. It contains detailed information about the evaluation of a driver, including physical and mental assessments, medical history, and the results of a drug influence evaluation. The page includes various sections such as pulse and time, modified Romberg balance, and pupil size tests, among others. The evaluator's opinion and the case number are also noted at the end.
DRUG INFLUENCE EVALUATION NARRATIVE

Suspect: Hoeckle, Rebecca S.

1. LOCATION: The evaluation took place at the Jefferson County Jail.

2. WITNESSES: The arresting officer, Kevin Belcher observed the evaluation and DRE Instructor Dean Kisling of the Louisville Metro PD recorded the evaluation.

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

4. NOTIFICATION AND INTERVIEW OF THE ARRESTING OFFICER: I was contacted by Officer Belcher and requested to conduct a drug evaluation on Hoeckle. I contacted Officer Belcher at the jail where he advised that he had found the suspect stopped partially in the travel portion of I-65. When contacted, the suspect appeared dazed and disoriented. She pointed to some bright lights near the Interstate and told Officer Belcher that “They told me to stop, so I stopped.” She was unable to perform SFST's and was subsequently arrested for DUI.

5. INITIAL OBSERVATION OF SUSPECT: The suspect was seated next to the Intoxilyzer and was staring straight ahead. She slowly turned and asked “Are you God?” Writer replied by giving her my name and asking for consent to conduct a drug evaluation. She replied, “They sent you, so you must be good.” Her speech was rapid, she stuttered at times and she was perspiring.

6. MEDICAL PROBLEMS AND TREATMENT: The suspect indicated that she had an upset stomach and was not feeling good, but she did not require medical assistance.

7. PSYCHOPHYSICAL TESTS: The suspect was unable to stand without assistance. It was necessary to terminate the Modified Romberg Balance, Walk and Turn and One Leg Stand tests for her safety. The Finger to Nose test was conducted while she was seated. She missed the tip of her nose on all six attempts.

8. CLINICAL INDICATORS: The suspect’s pupils were dilated in two of the lighting levels. Her pulse, blood pressure and temperature were elevated and above the DRE average ranges.

9. SIGNS OF INGESTION: The suspect’s breath was sour smelling and was rancid.

10. SUSPECT’S STATEMENTS: The suspect stated she was fasting for religious reasons and that her trucking company forbids the use of alcohol and illegal drugs. The suspect stated she got hungry so she purchased some “organic mushrooms” at a truck stop near Lexington.

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

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

13. MISCELLANEOUS:
DRUG INFLUENCE EVALUATION

Evaluator
Sergeant Allan Kolak, Cape Coral PD

DIKE #8191

Rolling Log #12-04-209

Session XIV #2

Arresting Agency
Kyle Clark, IPTM

Credit: None

Date: 09/07/12

Warrant: Cindy T.

Sex: F

Arrestee's Name (Last, First, Middle)

Date of Birth: 7/18/82

Arresting Officer (Name, ID#)

Race: W

Deputy Darrel Kelme, Collier Co, S.O. #9077

Date Examined / Time / Location
09/07/12, 2310 Collier Co, Jail

Breath Results: Test Released E

Chemical Test: E

Instrument #: 33465

Test or tests refused

Miranda Warning Given

Given By: Dpty, Kelme

Yes ☐ No ☐

What have you eaten today? ☐ Spaghetti

What have you been drinking? ☐ Lunch

When? Nothing

How much? N/A

Time of last drink?

Are you taking any medication or drugs?

Yes ☐ No ☐

Attitude:

Distracted, paranoid

Are you under the care of a doctor or dentist?

Yes ☐ No ☐

Coordination:

Poor, staggering

Speck: Rambling, incoherent at times?

Speech Odor Normal

Face Perspiring

Corrective Lenses:

Glasses ☐ Contacts, if so ☐ Hard ☐ Soft

Eyes:

☐ Reddened Conjunctive

Bloodshot ☐ Watery

Pupil Size:

Equal ☐ Unequal

Vertical Nystagmus

No Yes ☐ No

Unusual reactions

Pulse and time:

HGK Left Eye No Right Eye

Convergence

Lack of Smooth Pursuit

Maximum Deviation

Angle of Onset

None

None

Modified Romberg Balance:

Starts too soon

Step walking

Misses balance

Steps off line

Rises arms

Actual steps taken

Leg tremors

Internal clock:

10 estimated in 30 seconds

Draw lines to spots touched

Blood pressure

150/102

Temperature

99.8

Muscle tone:

Normal ☐ Rigid ☐

What drugs or medications have you been using?

How much?

Time of use?

Where were the drugs used? (Location)

Nothing

N/A

N/A

No answer

Date / Time of arrest:

05/07/12

Time DRI was notified:

2215

Evaluation start time:

2240

Evaluation completion time:

2310

2355

Driver's Signatures:

DRI #8191

Reviewed/approved by / date:

Officer's Signature:

Opinion of Evaluator:

☐ Rule Out

☐ Alcohol

☐ Medical

☐ CNS Stimulant

☐ CNS Depressant

☐ Hallucinogen

☐ Narcotic

☐ Sedatives

☐ Inhalant

☐ Cannabis

Nothing observed
DRUG INFLUENCE EVALUATION NARRATIVE

Suspect: Warburton, Cindy T.

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

2. WITNESSES: DRE State Coordinator, Kyle Clark witnessed and recorded the evaluation.

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

4. NOTIFICATION AND INTERVIEW OF THE ARRESTING OFFICER: I was on-duty when informed by Dispatch that Deputy Kehne was requesting a drug evaluation. I contacted Deputy Kehne at the Intake Center where he advised the suspect had been arrested after driving along the gravel shoulder of Beach Road trying to pass some stopped vehicles. According to Deputy Kehne, the suspect pointed to his baton and shouted “Look out, there’s a big snake hanging from your belt!” She was very paranoid acting and also claimed that the overhead lights on the patrol car were burning her eyes and skin.

5. INITIAL OBSERVATION OF SUSPECT: I first observed the suspect sitting in the interview room and she appeared to be disoriented. She was at times talking to herself and at one point she pointed to the clock on the wall and began talking to it.

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

7. PSYCHOPHYSICAL TESTS: Modified Romberg Balance: Suspect swayed approximately 3” side to side and estimated 30 seconds in 10 seconds. Walk & Turn: Suspect started walking too soon, lost her balance twice during the instructions, missed heel to toe, stopped walking, stepped off the line, raised her arms, staggered while turning and only took eight steps on the return. One Leg Stand: Suspect swayed, raised her arms, and put her foot down. Finger to Nose: Suspect missed the tip of her nose on each attempt. She also opened her eyes and shouted, “I can’t feel my face!” “My face is gone!”

8. CLINICAL INDICATORS: The suspect’s pulse, blood pressure and temperature were all elevated and above the DRE average ranges. The suspect’s pupils were dilated in two of the lighting levels.

9. SIGNS OF INGESTION: None observed.

10. SUSPECT’S STATEMENTS: The suspect stated that she felt hot and denied drug use.

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

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

13. MISCELLANEOUS: The suspect was wearing an “XTC” tee-shirt.
DRUG INFLUENCE EVALUATION

Evaluator:
Officer Daven Byrd, Arizona DPS

Date of Incident:
01-25-12

Session XIV #3

Identification:
D.O.T. # 14508

Rolling Log #: 12-01-203

Case #: 12-004123

Arrestee’s Name (Last, First, Middle):
Buchanan, Lew B.

Date Examinated / Time Examined:
01-25-12 0145

Central Testing

Instrument #: 10234

Miranda Warning Given:
Yes

Test Refused:
No

Chemical Test:
Blood

Brenda’s Name (Last, First, Middle):

Date of Birth:
6/19/76

Sex:
M

Race:
B

Arresting Officer (Name, ID#):
Deputy Frank Stump, Maricopa Co. S.O. #14231

Blood Alcohol Content (BAC):

Time of Last Drink:
Two

Snack:
Pizza about 6pm

Time of Day:
11:00

Stagger:
Yes

Yes No

Do you have any physical defects?
Yes No

Are you under the care of a doctor or dentist?
Yes No

Are you taking any medication or drugs?
Yes No

Attitude:
Withdrawn/cooperative

Coordination:
Very poor - staggering

Difficulty in speaking, rambling:
Yes

Breath Odor:
Normal

Face:
Dazed, perspiring, listless

Corrective Lenses:
None

Glasses:

Contacts, if so:

Hard:

Soft:

International Clock:

Lack of Smooth Pursuit:

Lack of Smooth Pursuit:

Maximum Deviation:

Angle of Onset:

None

Walk and turn test:

Can not keep balance

Starts to slow

Stops walking

Misses heel-toe

Steps off line

Rises arm

Actual steps taken

External Clock:

35 estimated as 30 seconds

N/A

Describe Turn:

Cannot do test (explain):

Stood off line 3 times during initiation

Type of Footwear:
Running shoes

Draw lines to spots touched:

Pupil Size:

Left Eye

6.5

9.0

6.0

Right Eye

6.5

9.0

6.0

REACTION TO LIGHT:

Normal

Rebound Dilation:

Yes

No

Nothing observed

Room Light

Darkness

Direct

Blood Pressure:

146/102

Temperature:

100.5

Muscle tone:

Normal

Flaccid

Rigid

Comments:
Arms, neck, face rigid

What drugs or medications have you been using?

How much?

Time of use:

Where were the drugs used? (Location)

Refused

Date / Time of arrest:
01/25/12 0055

Time D.H.W. notified:
01/20

Evaluation start time:
01/25 0145

Evaluation completion time:
02/25

Refused

Present / Station:

Officer’s Signature:

D.O.T. # 14549

Reviewed/approved by: 

Opinion of Evaluation:

No

Yes

No

Yes

Narcotic Analgesic

CNS Stimulant

Hallucinogen

Drug Test:

Methed

CNS Depressant

Diuretic

Inhalant

Rule Out

Alcohol

Medical

CNS Stimulant

Disopyramide

Cannabis

Opinion of Evaluation:

No

Yes

Rebound

Narcotic Analgesic

CNS Depressant

Diuretic

Inhalant

Rule Out

Alcohol

Medical

CNS Stimulant

Disopyramide

Cannabis

Nothing observed

Right Arm

No

Yes

Nothing

How much?

Time of use:

Where were the drugs used? (Location)

Refused

Date / Time of arrest:
01/25/12 0055

Time D.H.W. notified:
01/20

Evaluation start time:
01/25 0145

Evaluation completion time:
02/25

Refused

Present / Station:

Officer’s Signature:

D.O.T. # 14549

Reviewed/approved by: 

Opinion of Evaluation:

No

Yes

No

Yes

Narcotic Analgesic

CNS Stimulant

Hallucinogen

Drug Test:

Methed

CNS Depressant

Diuretic

Inhalant

Rule Out

Alcohol

Medical

CNS Stimulant

Disopyramide

Cannabis

Nothing observed

Left Arm

No

Yes

Nothing

How much?

Time of use:

Where were the drugs used? (Location)

Refused

Date / Time of arrest:
01/25/12 0055

Time D.H.W. notified:
01/20

Evaluation start time:
01/25 0145

Evaluation completion time:
02/25

Refused

Present / Station:

Officer’s Signature:

D.O.T. # 14549

Reviewed/approved by: 

Opinion of Evaluation:

No

Yes

No

Yes

Narcotic Analgesic

CNS Stimulant

Hallucinogen

Drug Test:

Methed

CNS Depressant

Diuretic

Inhalant

Rule Out

Alcohol

Medical

CNS Stimulant

Disopyramide

Cannabis

Nothing observed
DRUG INFLUENCE EVALUATION NARRATIVE
Suspect: Buchanan, Lew B.

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

2. WITNESSES: The evaluation was recorded by Officer Tim Merrill of the AZ DPS.

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

4. NOTIFICATION AND INTERVIEW OF THE ARRESTING OFFICER: I was dispatched to the MCSO Jail to conduct a drug evaluation for Deputy Sloup. Deputy Sloup stated that he had observed the suspect driving 20 miles under the posted speed limit on Thomas Road. He also observed the suspect’s vehicle drifting from lane to lane. The suspect performed poorly on the SFST’s and was arrested for DUI.

5. INITIAL OBSERVATION OF SUSPECT: Writer first observed the suspect in the breath testing room. He was swaying as he stood and appeared dazed and disoriented. He responded slowly to my greeting, but was cooperative and responsive to my questions. He was perspiring heavily and had rambling speech.

6. MEDICAL PROBLEMS AND TREATMENT: Suspect stated he felt nauseous.

7. PSYCHOPHYSICAL TESTS: Modified Romberg Balance: Suspect swayed approximately 3” in a circular motion and estimated 30 seconds in 35 seconds. Walk & Turn and One Leg Stand: Suspect was unable to perform the tests. Both were terminated for safety reasons. Finger to Nose: Suspect missed the tip of his nose on each attempt.

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

9. SIGNS OF INGESTION: None were observed.

10. SUSPECT'S STATEMENTS: The suspect admitted to drinking a beer about 2-3 hours prior to driving and denied any drug use.

11. DRE'S OPINION: In my opinion Buchanan is under the influence of a Hallucinogen and unable to operate a vehicle safely.

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

13. MISCELLANEOUS: A small baggy of dried mushrooms were located in the suspect’s coat pocket. He denied ownership and said he didn’t know what they were.
Upon successfully completing this session the participant will be able to:

- Analyze the results of a complete drug influence evaluation and identify the category or categories of drugs affecting the individual examined.
- Articulate the basis for the drug category identification.

**CONTENT SEGMENTS**

- Interpretation Demonstration
- Interpretation Practice
- Session Wrap-Up

**LEARNING ACTIVITIES**

- Instructor Led Demonstrations
- Small Group Practice
- Participant Led Presentations
A. Interpretation Demonstrations

Case One: Subject Adams

Preliminary examination
Eye examinations
Psychophysical tests

Vital Signs Examinations

Pulse
Blood pressure
Temperature

Vital Signs examinations:

Notes:_______________________________________________
_____________________________________________________
_____________________________________________________
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Notes:_______________________________________________
_____________________________________________________
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_____________________________________________________
_____________________________________________________
_____________________________________________________
Dark Room Examinations

- Room light
- Near-total darkness
- Direct light
- Check nasal area and oral cavity

Dark Room examinations

Narrative Report

Evaluator: Subject: R/L #:
Location; Witnesses;
Breath Test; Notification/Interview Arresting Off;
Initial Observation; Medical problems; Psychophysicals;
Clinical Indicators; Signs of Ingestion; Subject Statements;
Opinion; Toxicology; Misc.
The following summarizes the evaluation ________________________

Case Two: Subject Baker

Preliminary examination
Eye examination
Psychophysical tests
Case 2: Subject Baker

- Vital sign examinations
- Dark room examinations
- Other evidence
- Narrative report
- Opinion of the evaluator

Vital Signs examinations
Dark Room examinations
Other evidence and additional observations
Narrative Report
Opinion of the evaluator

Interpretation Practice

- Work in teams
- Review exemplars
- Present conclusions to class

B. Interpretation Practice

Team Practice

Teams will present their conclusions to the entire class.

Allow teams approximately 15 minutes to review the three exemplars and reach their conclusions.

Subject Charles
Subject Dodge
Subject Edwards
C. Session Wrap-Up

Notes:_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
DRUG INFLUENCE EVALUATION NARRATIVE
Suspect: Adams, Frances A.

1. LOCATION: The evaluation was conducted at the Boulder County Jail Intake Center.

2. WITNESSES: The evaluation was witnessed and recorded by Deputy Mark George of the Boulder County S.O.

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

4. NOTIFICATION AND INTERVIEW OF THE ARRESTING OFFICER: I was contacted by radio and advised to contact Officer John Blea at the Boulder Co. Jail for a drug evaluation. Officer Blea advised that he arrested Adams for DUI after observing him commit numerous traffic violations and performing poorly on the SFST’s.

5. INITIAL OBSERVATION OF SUSPECT: I first observed the suspect in the interview room at the jail. His head was tilted forward, his eyes were closed and his breathing was deep and slow. He responded slowly to questions and his speech was slow, slurred and thick.

6. MEDICAL PROBLEMS AND TREATMENT: None noted or stated.

7. PSYCHOPHYSICAL TESTS: The suspect had difficulty performing the psychophysical tests. Modified Romberg Balance: Suspect had an approximate 3” side to side sway and a 2” front to back sway. He estimated 30 seconds in 42 seconds. Walk & Turn: Suspect lost his balance twice during the instructions, missed heel to toe five times, stopped while walking three times, turned improperly, stepped off the line twice and used his arms for balance. One Leg Stand: Suspect swayed while balancing, used his arms for balance and put his foot down. Finger to Nose: Suspect missed the tip of his nose on five of the six attempts.

8. CLINICAL INDICATORS: Suspect had six clues of HGN with a 35 degree angle of onset with a Lack of Convergence. His pulse and blood pressure were below the DRE average ranges.

9. SIGNS OF INGESTION: Nothing observed.

10. SUSPECT’S STATEMENTS: Suspect stated he was very sleepy and denied using drugs.

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

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

13. MISCELLANEOUS:
DRUG INFLUENCE EVALUATION NARRATIVE
Suspect: Baker, Sam B.

1. LOCATION: The evaluation was conducted at the Cooperstown Police Department.

2. WITNESSES: The evaluation was witnessed and recorded by Trooper David Olney of the New York State Police.

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

4. NOTIFICATION AND INTERVIEW OF THE ARRESTING OFFICER: I was contacted and advised to meet Trooper Guerriere at the Cooperstown Police Department for a drug evaluation. It was determined that Trooper Guerriere arrested Baker for DUI after his vehicle crossed the center line and nearly struck Trooper Guerriere’s patrol vehicle.

5. INITIAL OBSERVATION OF SUSPECT: I first observed the suspect standing in the breath testing room with Trooper Guerriere. The suspect was repeatedly shifting his weight from foot to foot. He was scratching his head and was perspiring heavily. He appeared nervous, anxious and was very restless. His speech was fast and slurred at times.

6. MEDICAL PROBLEMS AND TREATMENT: None noted or stated.

7. PSYCHOPHYSICAL TESTS: The suspect had difficulty performing the psychophysical tests. Modified Romberg Balance: Suspect had an approximate 3” front to back and a 2” side to side sway and estimated 30 seconds in 21 seconds. Walk & Turn: Suspect performed the test very quickly, used his arms for balance and missed heel to toe three times. One Leg Stand: Suspect swayed while balancing, used his arms for balance and put his foot down once. He also counted fast during the test. Finger to Nose: Suspect missed the tip of his nose on three of the six attempts and had quick jerky movements.

8. CLINICAL INDICATORS: Suspect’s pulse, blood pressure and temperature were elevated and above the DRE average ranges. His pupils were dilated in room light and in direct light.

9. SIGNS OF INGESTION: The suspect had a reddened nasal area and his nose was runny.

10. SUSPECT’S STATEMENTS: Suspect denied using any drugs.

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

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

13. MISCELLANEOUS:
# Drug Influence Evaluation

**Evaluator:** Trooper Kelly Greigerson, WA State Patrol  
**OGE #:** 11341  
**Rolling Leg #:** 12-03-010  
**Session XV #3**

### Case Information
- **Date of Birth:** 6/13/72  
- **Sex:** F  
- **Race:** W  
- **Arresting Office (Name, ID):** Sgt. Courtney Stewart, WA SP #15455  
- **Test Refused:** No  
- **Chemical Test:** Urine  
- **Test or tests refused:** No  
- **Blood:**  
- **Comment:** None

### Time & Location
- **Time of Arrest:** 03/17/12 0045  
- **Location:** Olympia WSP Office

### Medical History
- **Last Night:** Pizza
- **What have you been drinking:** "Couple of beers" 9 pm
- **Are you sick or injured:** No  
- **Are you taking any medication or drugs:** No  
- **Are you under the care of a doctor or dentist:** No

### Examination
- **Eye:** Normal  
- **Blindness:** None  
- **Unusual:** None  
- **Vestibular:** Normal

### Reflexes & Memory
- **Convergence:** Yes
- **One-Leg Stand:** 50
- **Sway:** While balancing
- **Uses arms to balance:** Yes  
- **Foot down:** Yes

### Pupil Size
- **Right Eye:** 4.5  
- **Left Eye:** 4.5
- **N/A:** ROOM LIGHT

### Draw to Lines & Spots
- **N/A:**  

### Blood Pressure
- **Systolic:** 110/76  
- **Diastolic:** 90  
- **Temperature:** 98.0

### Drug Influence
- **No visible marks**
- **Opinion of Evaluator:** Could be alcohol
- **Role Out:**  
- **Information:**  
- **Name:** None

### Other Information
- **Time of Day:** 09-45 PM
- **Place:** Olympia
- **Officer’s Signature:** Trooper
- **Date of Arrest:** 03/17/12
- **Time DRE was monitored:** 0045
- **Evaluation Start Time:** 0125
- **Evaluation Completion Time:** 0125
- **Premise/Location:** Olympia District
- **ID #:** 11341
- **Reviewed/approved by:** Trooper
- **Witness:** None
- **Chain of Custody:** None
- **Chemical Test:** Urine  
- **Test or tests refused:** No  
- **Blood:**  
- **Comment:** None

---

**Note:** The document includes multiple tables, diagrams, and sections that detail the evaluation process comprehensively.
DRUG INFLUENCE EVALUATION NARRATIVE
Suspect: Charles, Mary C.

1. LOCATION: The evaluation was conducted at the WSP Office in Olympia.

2. WITNESSES: The evaluation was recorded and witnessed by Deputy Theodore Boe of the King County S.O.

3. BREATH ALCOHOL TEST: Charles’ breath test was a 0.07%.

4. NOTIFICATION AND INTERVIEW OF THE ARRESTING OFFICER: Sergeant Stewart contacted the writer at the Olympia Patrol Office requesting a drug evaluation on suspect Charles. Sergeant Stewart advised that the suspect had been reported by several motorists as a possible DUI driver. She located the suspect traveling SB on I-5. The suspect was unable to maintain a single lane of travel and had traffic backed up behind her. When contacted, the suspect had slow, sluggish reactions and slurred speech. She performed poorly on the SFST’s and was arrested for DUI.

5. INITIAL OBSERVATION OF SUSPECT: Writer first observed the suspect in the interview room with Sergeant Stewart. The suspect was swaying as she stood and was very unstable on her feet. Her speech was slow, thick and slurred.

6. MEDICAL PROBLEMS AND TREATMENT: None noted or stated.

7. PSYCHOPHYSICAL TESTS: Modified Romberg Balance: Suspect had an approximate 2” circular sway and estimated 30 seconds in 40 seconds. Walk & Turn: Suspect lost her balance during the instructions, missed heel to toe twice, stepped off the line and used her arms for balance. One Leg Stand: Suspect swayed while balancing, used her arms for balance and put her foot down once while standing on her left foot and twice while standing on the right foot. Finger to Nose: Suspect missed the tip of her nose on 3 of the 6 attempts.

8. CLINICAL INDICATORS: The suspect exhibited six clues of HGN and a Lack of Convergence.

9. SIGNS OF INGESTION: The suspect had an odor of an alcoholic beverage on her breath.

10. SUSPECT’S STATEMENTS: Suspect admitted drinking a “couple of beers” earlier in the evening and admitted smoking some marijuana 3 or 4 days ago.

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

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

13. MISCELLANEOUS:
## DRUG INFLUENCE EVALUATION

### Evaluating Officer
Sgt. Joseph Milos, Bellevue PD

### Report Information
- Date of Birth: 10/13/75
- Sex: M
- Race: W
- Arresting Officer: Sgt. Dale Hilderbrand
- Grand Island P.D.
- Instrument #: 43121
- Time: 02/22/12 2215

### Record/Witness
- Sgt. Martin Denton, Nebraska SP
- Date: 12-02-008
- Property: Case # 12-12050

### Observation
- Time now: 11:00 am / 2220
- Last sleep: 4-5 hours ago
- Illness: No
- Alcohol: No
- Are you diabetic or hypertensive? No
- Are you under the care of a doctor or dentist? No
- Are you taking any medications or drugs? No

### Attitude
- Excited, Cooperative
- Coordination: Poor, jittery, stumbling

### Pupil Size
- Converge: Normal
- Dilation: N/A

### Pulse and Time
- 100 / 2228
- 104 / 2215
- 100 / 2242

### Modified Romberg Balance
- Walk and Turn test
- Cannot keep balance
- Start too soon
- Stop walking
- Meets hand-toe
- Steps off line
- Reaches arm
- Acted steps taken

### Internal Clock
- 22 estimated in 30 seconds

### Blood Pressure
- 142/96

### Opinion of Evaluator
- Bile Out
- Alcohol
- Drugs
- CNS Stimulant
- CNS Depressant
- Hallucinogens
- Amphetamines
- Opioids
- None

### Blood Alcohol
- 0.00

### Conclusion
- Four puncture wounds with red dots
DRUG INFLUENCE EVALUATION NARRATIVE
Suspect: Dodge, Fred D.

1. LOCATION: The evaluation was conducted at the Grand Island Police Department.

2. WITNESSES: The evaluation was recorded by the arresting officer, Sergeant Dale Hilderbrand of the Grand Island Police Department and witnessed by Sgt. Martin Denton.

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

4. NOTIFICATION AND INTERVIEW OF THE ARRESTING OFFICER: Sgt. Hilderbrand contacted Dispatch and requested a drug evaluation on suspect Dodge. I contacted Sgt. Hilderbrand at the P.D. where it was determined the suspect had been involved in an attempted elude and was apprehended at E. Bismark Road and S. Oak. The suspect was very restless, animated and unable to stand still. He was also very talkative and his speech was rapid. He performed poorly on SFST’s and was arrested for DUI.

5. INITIAL OBSERVATION OF SUSPECT: I first observed the suspect in the interview room at the P.D. His speech was rapid and loud. He seemed unconcerned about being under arrest. He had quick movements and was unable to stand still.

6. MEDICAL PROBLEMS AND TREATMENT: None noted or stated.

7. PSYCHOPHYSICAL TESTS: Modified Romberg Balance: Suspect had an approximate 2” side to side sway and estimated 30 seconds in 22 seconds. Walk & Turn: Suspect twice started the test too soon, lost his balance once during the instructions, stopped walking on his fifth step, raised his arms for balance and performed the test quickly. One Leg Stand: Suspect swayed while balancing and put his foot down once while standing on his right foot. Finger to Nose: Suspect missed the tip of his nose on all six attempts.

8. CLINICAL INDICATORS: The suspect’s pulse and blood pressure were elevated and above the DRE average ranges. His pupils were dilated and had a slow reaction to light.

9. SIGNS OF INGESTION: The suspect had four fresh puncture marks on the inside of his left forearm.

10. SUSPECT’S STATEMENTS: Suspect denied any drug use.

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

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

13. MISCELLANEOUS:
**DRUG INFLUENCE EVALUATION**

**Evaluator**
Sgt. Jim Roy, Colechester P.D.

**DRE Log #**
12574

**Rolling Log #**
12-08-07

**Session XV #5**

**Respondent/Witness**
Lt. John Flanagan, VT State Police

**Arrestee’s Name (Last, First, Middle)**
Edwards, Jean F.

**Date of Birth**
1/16/84

**Sex**
F

**Race**
W

**Arresting Officer (Name, Title, Dept.)**
Officer Ron Hogue, St. Albans PD, #13224

**Date Examined / Time / Location**
06/04/12 2:30p Colechester PD

**Breath Results**
Test Refused

**Chemical Test**
Urine Blood

**Miranda Warning Given**
Yes No

**What have you eaten today?**
Nothing

**What have you been drinking?**
Nothing

**Time now / Actual**
N/A

**“Don’t know”**
N/A

**“I don’t remember”**
N/A

**Do you take any medicine or drugs?**
Yes No

**Are you under the care of a doctor or dentist?**
Yes No

**Attitude**
Disoriented, cooperative

**Coordination**
Poor, unsteady

**Speech**
Rambled, slurred

**Breath Odor**
Normal

**Pupil Size**
Equal Unequal

**Corrective Lenses**
None

**Glasses**
Contacts if so

**Hand**
Soft

**Eyes**
Reddened Conjunctiva

**Bloodshot**
Normal

**Watery**

**Blindness**
None Left Right

**Tracking**
Equal Unequal

**Pulse and time**

| 1.  | 100 | 2310 |
| 2.  | 106 | 2425 |
| 3.  | 104 | 2337 |

**Convergence**

**Walking and Turning Test**

**Lack of Smooth Pursuit**

<table>
<thead>
<tr>
<th>Maximum Deviation</th>
<th>Right Eye</th>
<th>Left Eye</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

**Vertigo Nystagmus**

<table>
<thead>
<tr>
<th>Right</th>
<th>Left</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

**One Leg Stand**

<table>
<thead>
<tr>
<th>L R</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 3 5 R 0 3 5</td>
</tr>
</tbody>
</table>

**Internal Clock**

9:00 estimated as 10:30 seconds

**Draw lines to spots touched**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

**Temperature**

100.0

**Blood pressure**

148/110

**Muscle tone**

Normal Flaccid Rapid

**Communicate**

Very rigid arms

**What drugs or medications have you been using?**

**“Nothing”**

**How much?**

No answer

**Time of use?**

No answer

**Where were the drugs used? (Location)**

No answer

**Date / Time of arrest**

08/04/12 2215

**Time DRE was notified**

2245

**Evaluation start time**

2300

**Evaluation completion time**

2315

**Officer’s Signature**

DRE # 12574

**Opinion of Evaluator**

Reviewed/approved by / date:
DRUG INFLUENCE EVALUATION NARRATIVE
Suspect: Edwards, Joan E.

1. **LOCATION:** The evaluation was conducted at the Colchester Police Department.

2. **WITNESSES:** Lt. John Flannigan from the VT State Police recorded the evaluation.

3. **BREATH ALCOHOL TEST:** Edwards’ breath test was a 0.00%.

4. **NOTIFICATION AND INTERVIEW OF THE ARRESTING OFFICER:** I was advised to contact Officer Hoague at the Colchester PD for a drug evaluation. It was determined that Officer Hoague had found the suspect sitting on the hood of her vehicle along I-89-S. She was waving her arms and screaming at cars as they passed by. It was determined that she had driven her vehicle to that location after attending a concert in Canada earlier that day. She was administered SFST’s which she had great difficulty completing and was subsequently arrested for DUI.

5. **INITIAL OBSERVATION OF SUSPECT:** I first observed the suspect in the interview room at CPD. She appeared dazed, disoriented and had difficulty standing.

6. **MEDICAL PROBLEMS AND TREATMENT:** Suspect stated she felt sick to her stomach and felt like “throwing-up” but did not require medical assistance.

7. **PSYCHOPHYSICAL TESTS:** The suspect performed very poorly on the psychophysical tests. Modified Romberg Balance: Suspect had an approximate 3” side to side sway and estimated 30 seconds in 90 seconds. Walk & Turn: Suspect missed heel to toe on each step, stopped walking twice, used her arms for balance, took an extra step on the first nine steps and made an improper turn. One Leg Stand: The suspect put her foot down three times on each foot and the test was stopped for safety reasons. Finger to Nose: Suspect missed the tip of her nose on all six attempts.

8. **CLINICAL INDICATORS:** The suspect’s pulse, blood pressure and temperature were elevated and above the DRE average ranges. Her pupils were dilated.

9. **SIGNS OF INGESTION:** None were evident.

10. **SUSPECT’S STATEMENTS:** Suspect denied any medicine or drug use.

11. **DRE’S OPINION:** In my opinion Edwards is under the influence of a ______________ and unable to operate a vehicle safely.

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

13. **MISCELLANEOUS:** After completing the evaluation the suspect was transported to the local hospital for monitoring and a medical evaluation.