Participant Manual

Drug Evaluation and Classification (Preliminary School)

NHTSA
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

TSI
Transportation Safety Institute

INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE
POLICE
SINCE 1893

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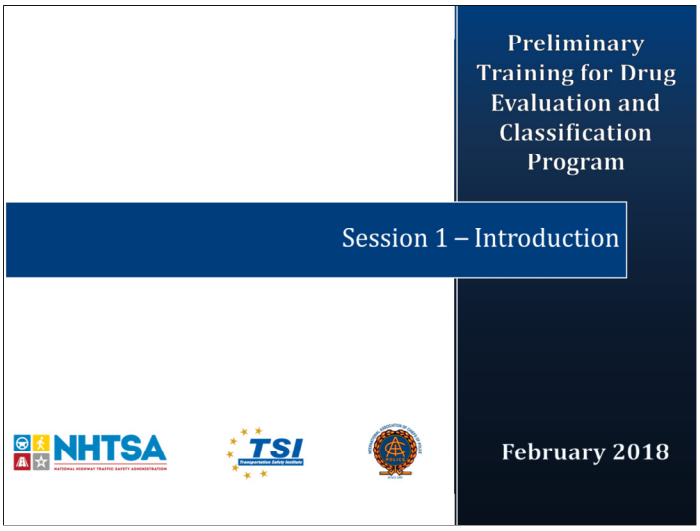
Preliminary Training for Drug Evaluation and Classification Program
Session 1 – Introduction
NHTSA
TSI
February 2018


Session 1 - Introduction: Preliminary Training for Drug Evaluation and Classification Program
50 Minutes
Session 1
Introduction:
Preliminary Training for
Drug Evaluation and
Classification Program
TSI
NHTSA
Preliminary Training for Drug Evaluation and Classification Program
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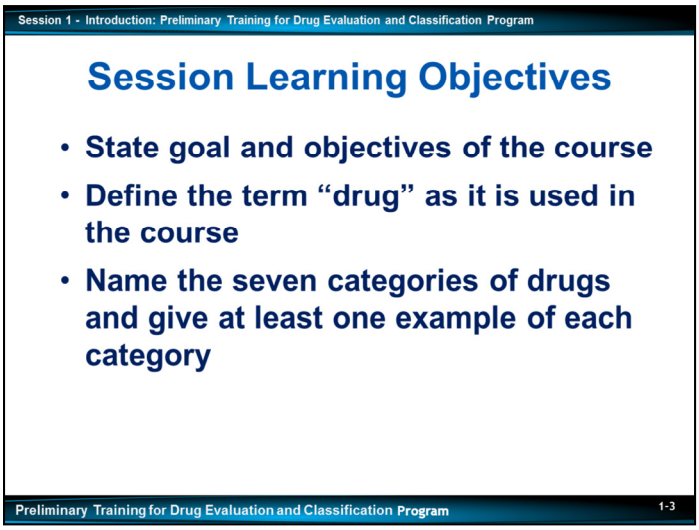


Upon successfully completing this session the participant will be able to:

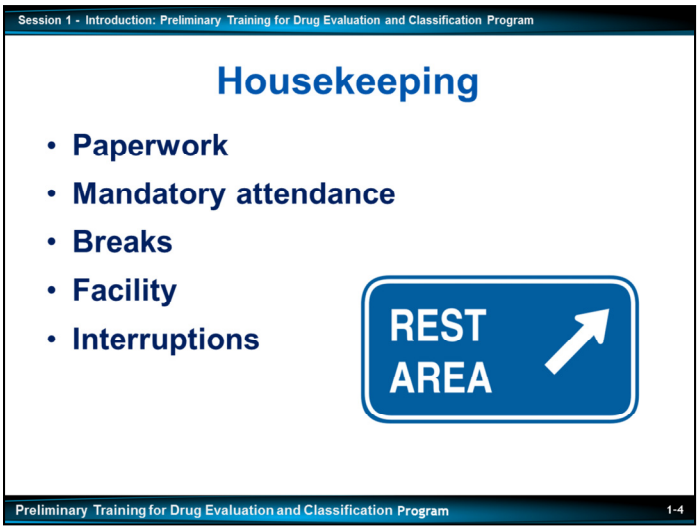
- State the goal and objectives of the course
- Define the term "drug" as it is used in the course
- Name the seven categories of drugs and give at least one example of each category

CONTENT SEGMENTS

A. Welcoming Remarks and Objectives
B. Definition and Categories of Drugs

LEARNING ACTIVITIES

Instructor-Led Presentation



A. Welcoming Remarks and Objectives

Welcoming Remarks

Faculty Introductions

Paperwork

Attendance
Attendance is mandatory at all sessions of this school.

Breaks

Facility

Interruptions

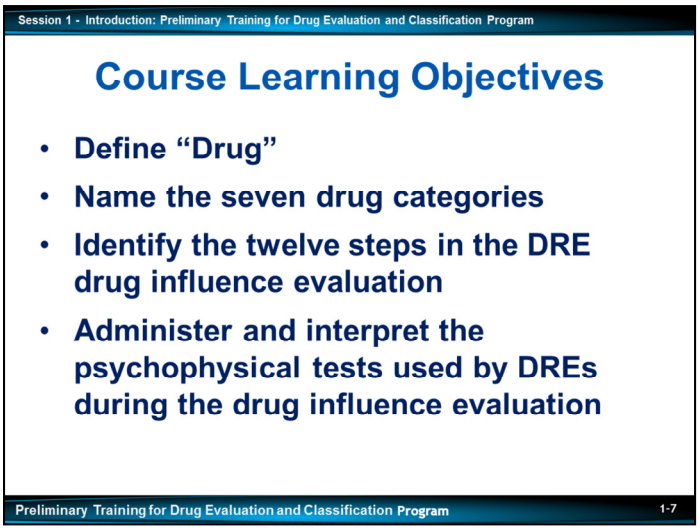
Participant Introductions

- Name
- Agency
- Affiliation
- Experience

Preliminary Training Goal

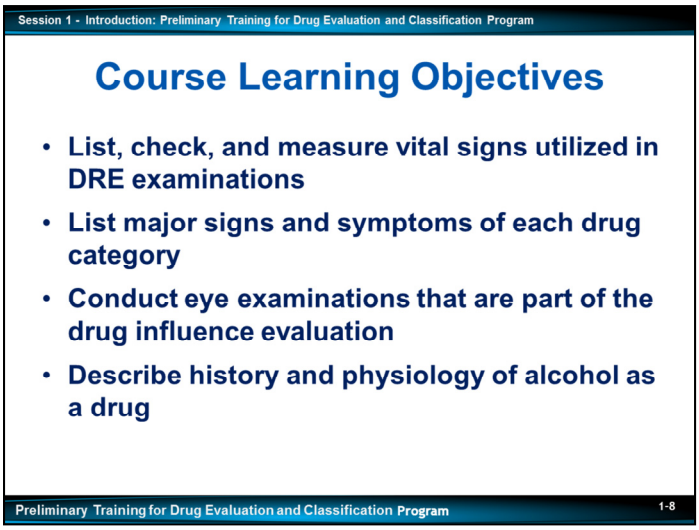
- To prepare the participants to succeed in the 7-Day DRE school

This two-day Preliminary School won't make you DREs, but it will make it easier for you to pass the 7-Day DRE School and successfully complete your certification training.



Learning Objectives of the Preliminary Training

- Define "Drug"
- Name the seven categories of drugs
- Identify the twelve components or steps in the DRE drug influence evaluation
- Administer and interpret the psychophysical (or "divided attention") tests used by DREs during the drug influence evaluation



Learning Objectives of the Preliminary Training

- List the vital signs utilized in the DRE examinations
- Check and measure a subject's vital signs
- List the major signs and symptoms of each drug category
- Conduct the eye examinations that are part of the drug influence evaluation
- Describe the history and physiology of alcohol as a drug

Key Points of Emphasis

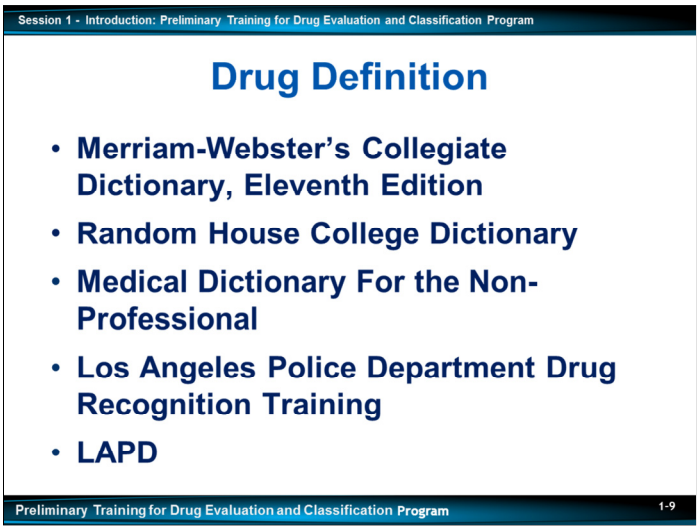
This two-day school is only the first of three stages in your training as DREs.

Next will come the 7-Day formal DRE school.

After that will come several weeks of supervised on-the-job training known as the "Certification Phase."

Preview of the Remainder of the Pre-School

Certification Progress Logs



B. <u>Definition and Categories of Drugs</u>

Alternative Definitions, Drawn From Several Sources
"A substance used as a medicine or in the preparation of medicine."

"A narcotic substance or preparation."

"A chemical substance administered to a person or animal to prevent or cure disease or otherwise to enhance physical or mental welfare."

"A habit-forming medicinal substance, especially a narcotic."

"A substance taken by mouth, injected or applied locally to treat a disorder (i.e., to ease pain)."
"A chemical substance introduced into the body to cause pleasure or a sense of changed awareness, as in the non-medical use of Lysergic Acid Diethylamide (LSD)."

"Any substance, natural or artificial, that by chemical nature alters the structure or function of a living organism."

"Any substance that, in small amounts, produces changes in the body, mind or both."

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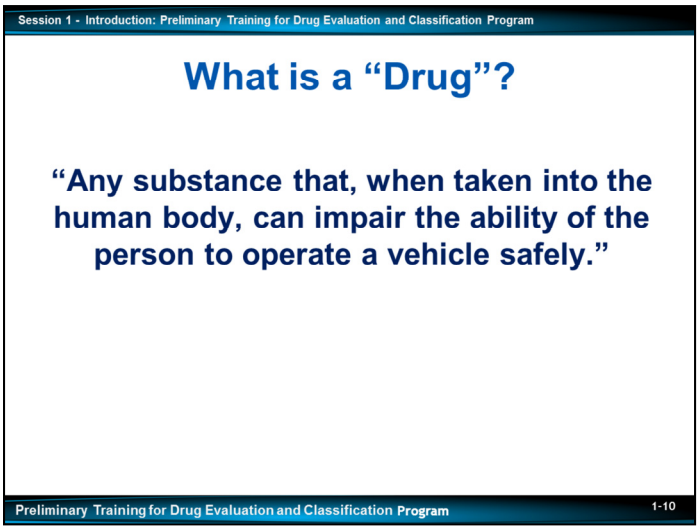


A Simple, Enforcement-Oriented Definition of Drugs
"Any substance that, when taken into the human body, can impair the ability of the person to operate a vehicle safely."

Working definition derived from the 1985 California Vehicle Code.

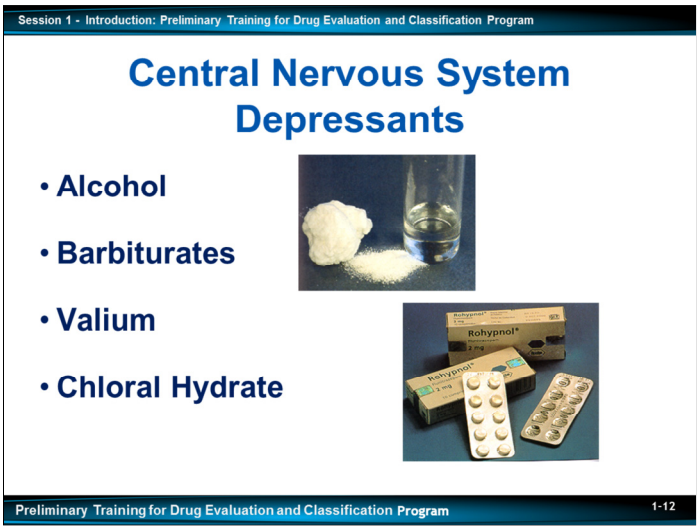
This definition includes some substances physicians don't usually think of as drugs.

Within this simple, 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.



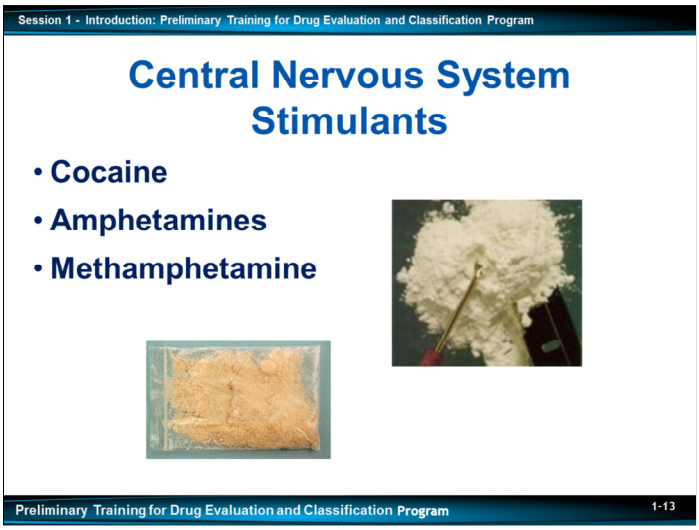
Central Nervous System (CNS) Depressants
The category of CNS Depressants includes some of the most commonly abused drugs.

Alcohol – the most familiar drug of all – is abused by an estimated 40-50 million Americans.

- Slightly more than half of Americans consider themselves drinkers
- Approximately 16.3 million people describe themselves as heavy drinkers
- Depressant drugs consistently rank among the most widely used and abused drugs in the U.S. and Canada
    - Over the past decade, an estimated 60 million prescriptions were processed for minor tranquilizers in U.S. pharmacies

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 enough doses, CNS Depressants will produce general anesthesia, i.e., depress the brain's ability to sense pain, and in very high doses, they can induce coma and death



Central Nervous System Stimulants

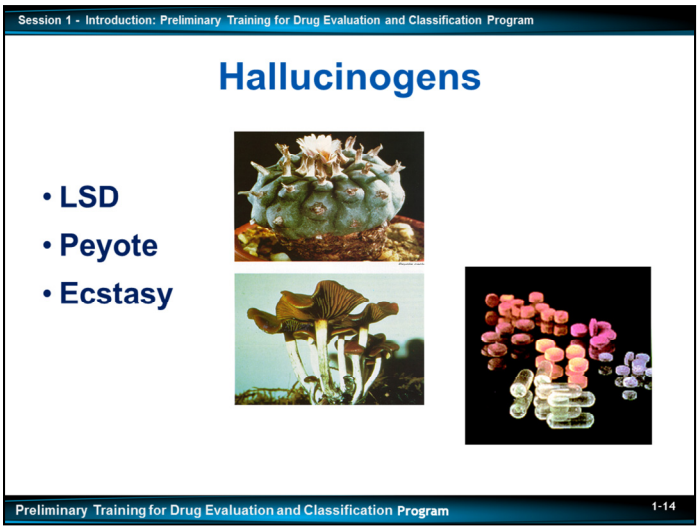
CNS Stimulants are a widely abused category of drugs.

- In 2014, an estimated 1.6 million people aged 12 or older in the U.S were current non-medical users of stimulants including 569,000 people who were current Methamphetamine users

- In 2014, there were 1.5 million Cocaine users aged 12 or older in the U.S.

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
- A grinding of the teeth, referred to as bruxism, may be noticed
- 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 (unstable beating of the heart), cardiac seizures, and death



Hallucinogens

Hallucinogens are also widely abused. In recent years an increase in the abuse of LSD, Ecstasy (MDMA), and many new Hallucinogens have been reported. In 2014 an estimated 1.2 million people aged 12 and over were current users of Hallucinogens.

- It is estimated that approximately one million Americans abuse Hallucinogens

- Hallucinogens may create hallucinations
  - That is, they may create apparent perceptions of things not truly present

- Hallucinogens may also create very distorted perceptions so 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.

- Induce a temporary condition very much like psychosis or insanity

- Can create a “mixing” of sensory modes, for example, the user “hears colors,” “sees music,” “tastes sounds,” etc., referred to as “synesthesia.”

Dissociative Anesthetics

This category includes drugs such as Phencyclidine (PCP), its analogs, and Dextromethorphan (DXM). These drugs generally inhibit pain by cutting off or "dissociating" the brain's perception of the pain.

The medical community considers PCP to be a Hallucinogen. However, because of the symptomatology PCP presents, it is included in this category.

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

PCP is similar to CNS Depressants in that it depresses brain wave activity.

- Slows down thought
- Slows reaction time
- Slows verbal responses

But PCP is similar to CNS Stimulants in that it activates the parts of the brain that control emotions, the heart, and the other autonomic systems.

- Heart rate increases
- Blood pressure increases
- Adrenalin production increases
- Body temperature rises
- Muscles become rigid

And PCP is similar to Hallucinogens in that it distorts or "scrambles" signals received by the brain.

- Sight, hearing, taste, smell, and touch may all be distorted
- User's perception of time and space may be distorted
- User may become paranoid, feel isolated, and depressed
- User may develop a strong fear of and pre-occupation with death
- User may become unpredictably violent

PCP analogs include Ketamine, Ketalar, Ketajet, and Ketaset.

DXM is an ingredient found in numerous over-the-counter cough and cold remedies.

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Narcotic Analgesics

There are two subcategories of Narcotic Analgesics:

- Opiates are derivatives of Opium
- Synthetics are produced chemically in the laboratory
  - They are not in any way derived 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.

- According to the 2014 NSDUH report, there are approximately 435,000 current users of Heroin
- Heroin is highly addictive

In addition to reducing pain, they 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.

- Persons "on the nod" may be awakened easily
- 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 fumes of certain substances that produce mind altering results.
In 2014, approximately 546,000 people aged 12 and older were current users of Inhalants.

There are three subcategories of Inhalants:

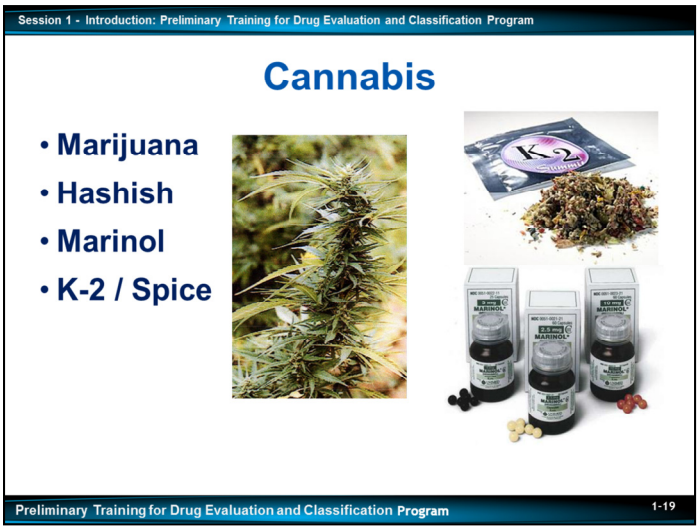
- Volatile solvents (e.g., gasoline, glue, oil-based paint, cleaning fluids, paint remover, etc.)
- Aerosols (i.e., the propellant gases in spray cans, e.g., hair sprays, insecticides, etc.)
- Anesthetic Gases (e.g., Nitrous Oxide, Ether, Amyl Nitrite, Butyl Nitrite, etc.)

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 being inattentive, stuporous, and passive to irritable, violent, and dangerous.

The abuser's speech will often be slow, thick, and slurred.



Cannabis

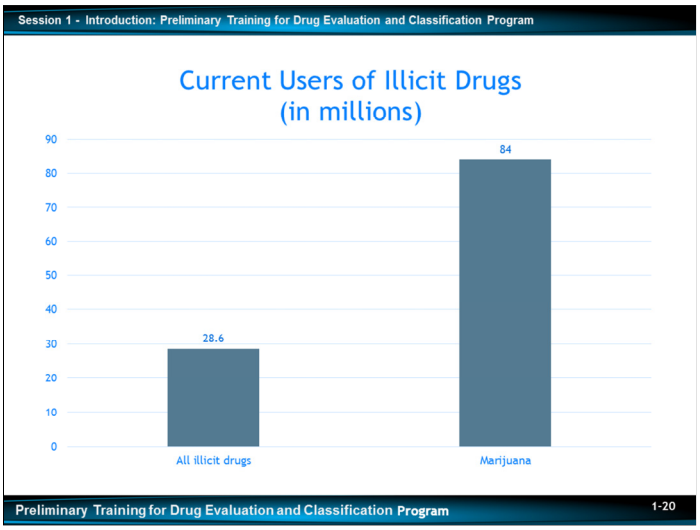
The category "Cannabis" includes the various forms and products of the Cannabis Sativa, which generally grow tall and thin outdoors, and Cannabis Indica plants, which generally grow short and wide and are better grown indoors.

The active ingredient in Cannabis is the substance known as "Delta-9 Tetrahydrocannabinol," or "THC."

Apart from alcohol, Marijuana is one of the most commonly abused drugs.

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, and bloodshot eyes.



The National Survey on Drug Use and Health defines the following terms:

- Illicit drug – Includes Marijuana, Cocaine, Heroin, Hallucinogens, Inhalants, Methamphetamine, and the misuse of prescription psychotherapeutic drugs (i.e., pain relievers, tranquilizers, stimulants, and sedatives)

- Misuse – Used in any way not directed by a doctor, including use without a prescription of one's own medication; use in greater amounts, more often, or longer than told to take a drug; or use in any other way not directed by a doctor

- Current User/Misuser – User who used the drug within the 30 days prior to being surveyed

The following summarizes the self-reported drug usage information as reported by the 2016 NSDUH Survey:

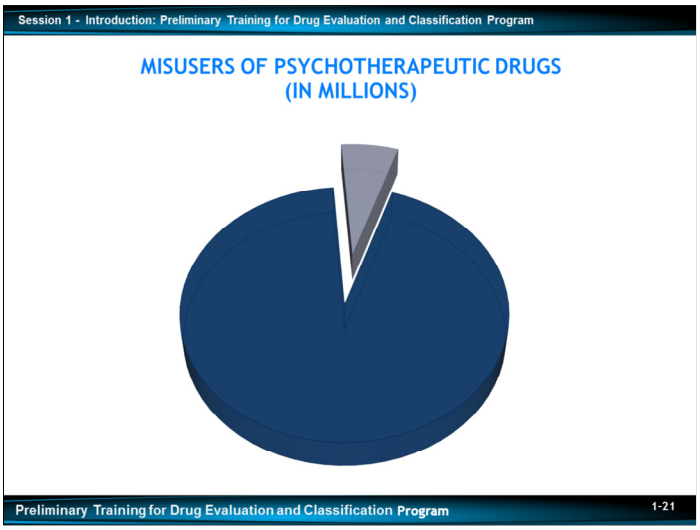
- In 2016, an estimated 28.6 million Americans aged 12 or older were current (past month) illicit drug users

- Marijuana was used by approximately 84 percent of all current illicit drug users

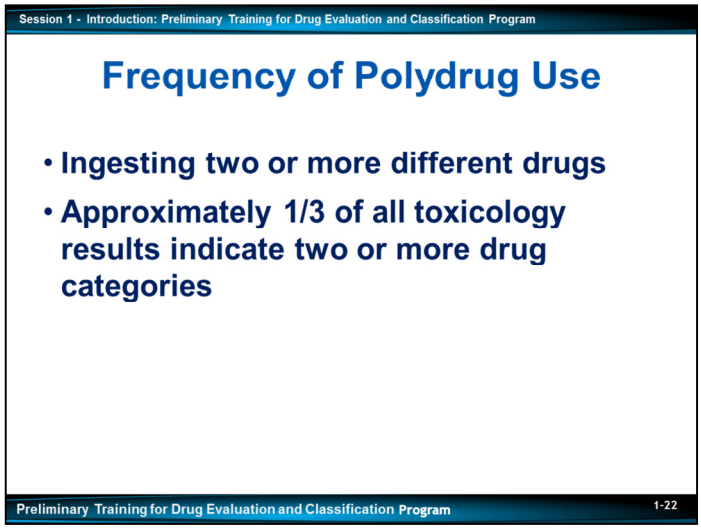
- The exact number of prescription drug users in the U.S. is unknown. However, it is estimated that 52 million people have prior to the survey, of which 6.4 million were current misusers of psychotherapeutic drugs

- Among those aged 50 to 59, the rate of past month illicit drug use continues to increase and is at approximately 3.7 million (2016)
  - This trend may partially reflect the aging into this age group of the "Baby Boomer" generation, whose lifetime rate of illicit drug use is higher than those of older cohorts

- In 2016, 11.8 million persons aged 12 or older reported driving under the influence of illicit drugs during the past year
  - This corresponds to 4.7 percent of the population aged 12 or older

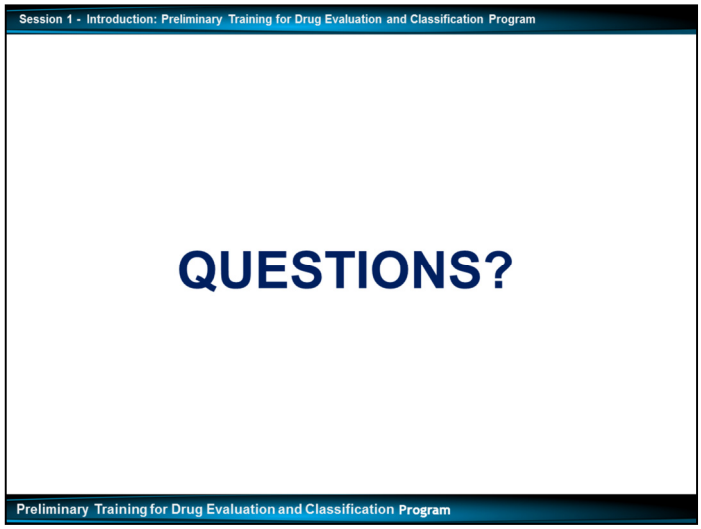


- In 2016, approximately 6.2 million people aged 12 years or older used psychotherapeutic drugs non-medically in the past year.



Polydrug Use

- The term "polydrug" use refers to ingesting drugs from two or more different drugs
- Though drug evaluation subjects may be under the influence of any one of the mentioned categories of drugs, it is not uncommon to find individuals who have taken combinations of several drugs
- Data being collected through the national DRE Database indicates approximately one-third of all toxicology results indicate two or more drug categories
- Most controlled prescription drug abusers are polydrug abusers
- One study reported that approximately 75% of persons who abuse alcohol also abuse illicit drugs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QUESTIONS?
Preliminary Training for Drug Evaluation and Classification Program

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.

ADDICTION

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)

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 from the heart.

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.

BAD TRIP

A hallucination where the user becomes panic-stricken by what he/she is seeing or hearing, and may become uncontrollably excited, or even try to flee from the terror.

BLOOD ALCOHOL CONCENTRATION (BAC)

The percentage of alcohol in a person's blood.

BREATH ALCOHOL CONTRATION (BrAC)

The percentage of alcohol in a person's blood as measured by a breath testing device.

BIPOLAR DISORDER

A condition characterized by the alteration of manic and depressive states.

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 persons 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).

CENTRAL NERVOUS SYSTEM (CNS)

A system within the body consisting of the brain, the brain stem, and the spinal cord.

CHEYNE-STOKES RESPIRATION

Abnormal pattern of breathing. Marked by breathlessness and deep, fast breathing.

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 (CV)

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 person 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.

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.

DIACETYL MORPHINE

The chemical name for Heroin.

DIPLOPIA

Double vision.

DIASTOLIC

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

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 their 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.

DRUG RECOGNITION EXPERT (DRE)

An individual who successfully completed all phases of the DRE training requirements for certification established by the IACP and NHTSA. The word “evaluator,” “technician,” or similar words may be used as a substitute for “expert,” depending upon locale or jurisdiction.

DYSARTHIA

Slurred speech. Difficult, poorly articulated speech.

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.

DYSPNEA

Shortness of breath.

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 the knowledge of persons of average education, learning and experience, who 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 a 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.

GAIT ATAXIA

An unsteady, staggering gait (walk) in which walking is uncoordinated and appears to be “not ordered.”

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.

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.

HASHISH

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

HEAD TRAUMA

A blow or bump to the head that injures the brain and may cause observable signs and symptoms which may mimic drug and alcohol impairment.

HEROIN

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

HOMEOSTASIS

Dynamic balance, or steady state, involving levels of salts, water, sugars and other material 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".

IMPAIRMENT

One of the several items used to describe the degradation of mental and/or physical abilities necessary for safely operating a vehicle.

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

One method of ingesting certain drugs. Insufflation 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. Insufflation is also known as 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 (LOC)

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 IMPAIRMENT

An opinion made by a DRE based on the evaluation that the state of a suspected impaired driver is more likely related to a medical impairment that has affected the subject's ability to operate a vehicle safely.

METABOLISM

The combined chemical and physical processes that take place in the body involving the distribution of nutrients and resulting in growth, energy production, the elimination of wastes, and other body functions. There are two basic phases of metabolism: anabolism, the constructive phase during which molecules resulting from the digestive process are built up into complex compounds that form the tissues and organs of the body; and catabolism, the destructive phase during which larger molecules are broken down into simpler substances with the release of energy.

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 the body's muscles, tissues, and organs. Motor nerves are also known as efferent nerves.

MULTIPLE SCLEROSIS

A degenerative muscular disorder.

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 by 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.

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.

PHYSICIAN'S DESK REFERENCE (PDR)

A basic reference source for drug recognition experts. The PDR provides detailed information on the physical appearance and psychoactive effects of licitly-manufactured drugs.

PHYSIOLOGY

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.

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.

POLYCATEGORY USE

Ingesting drugs from two or more drug categories.

POLYDRUG USE

Ingesting two or more different drugs.

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 rhythmic dilation and relaxation of an artery that results from the beating of the heart.

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 unpollinated female cannabis plant, with a relatively high concentration of THC.

SNORTING (See Insufflation)

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.

STANDARDIZED

Conforming to a model in comparative applications.

STANDARDIZED FIELD SOBRIETY TESTING (SFST)

There are three SFSTs, namely Horizontal Gaze Nystagmus (HGN), Walk and Turn (WAT), and One Leg Stand (OLS). Based on a series of controlled laboratory studies, scientifically validated clues of 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.

STETHOSCOPE

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

STROKE

A medical condition that occurs when a blood vessel that carries oxygen and nutrients to the brain is either blocked by a clot or a burst and may cause observable signs and symptoms which may mimic drug and alcohol impairment.

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.

SYSTEMATIC

Done or acting according to a fixed plan or system; methodical.

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.

TETRAHYDROCANNABINOL (THC)

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 a 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.

VEIN

A blood vessel that carries blood back to the heart from the body tissues

VERTICAL GAZE NYSTAGMUS (VGN)

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.

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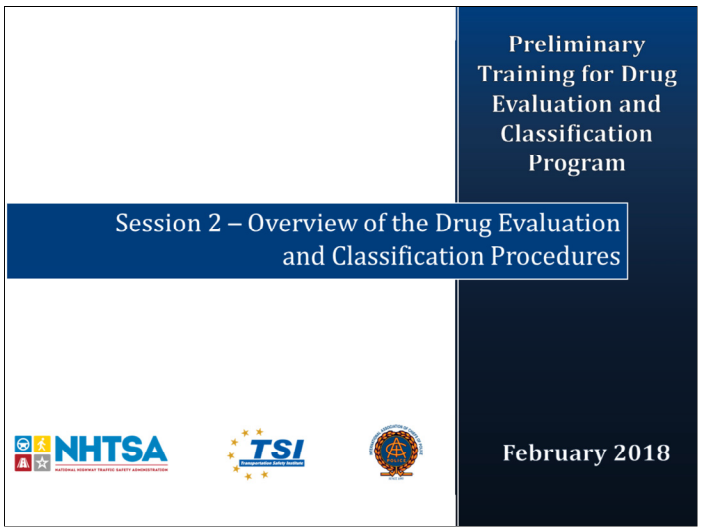
Preliminary Training for Drug Evaluation and Classification Program
Session 2 – Overview of the Drug Evaluation and Classification Procedures
NHTSA
TSI
February 2018


Session 2 - Overview of the Drug Evaluation and Classification Procedures
1 Hour
Session 2
Overview of the Drug Evaluation and Classification Procedures
TSI
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Preliminary Training for Drug Evaluation and Classification Program
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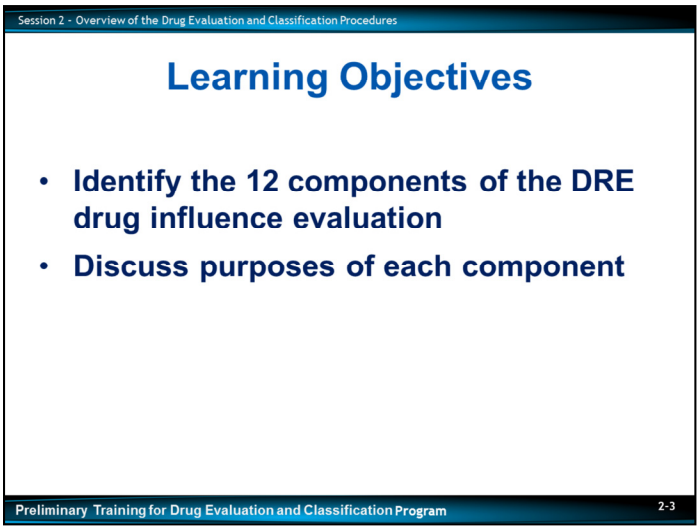


Upon successfully completing this session the participant will be able to:

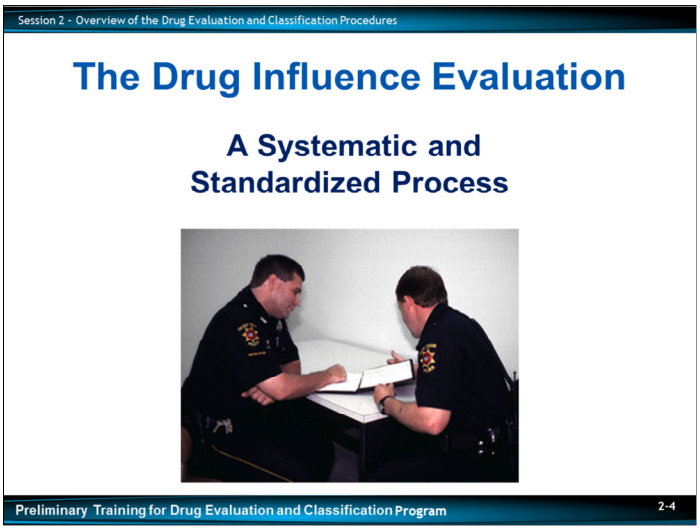
- Identify the 12 components of the DRE drug influence evaluation
- Discuss the purposes of each component

CONTENT SEGMENTS

A. Components of the Process
B. Video Demonstrations

LEARNING ACTIVITIES

Instructor-Led Presentations
Video Presentations



A. <u>Components of the Process</u>

The Drug influence Evaluation
The Drug Evaluation and Classification (DEC) Program process is a systematic and standardized method to:

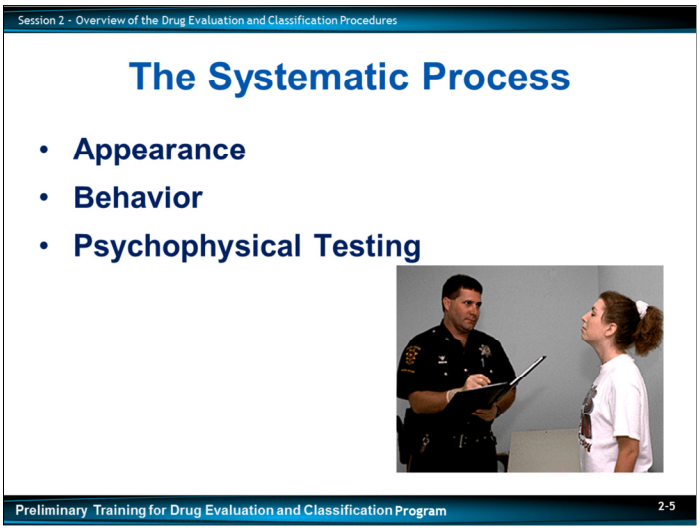
- Establish subject is impaired <u>and verifies his or her alcohol level is not consistent with the degree of impairment that is evident</u>

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

- Determine whether the impairment may stem from illness or injury requiring medical attention or is drug-related

- Determine what category (or categories) of drugs are the likely cause of the impairment

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

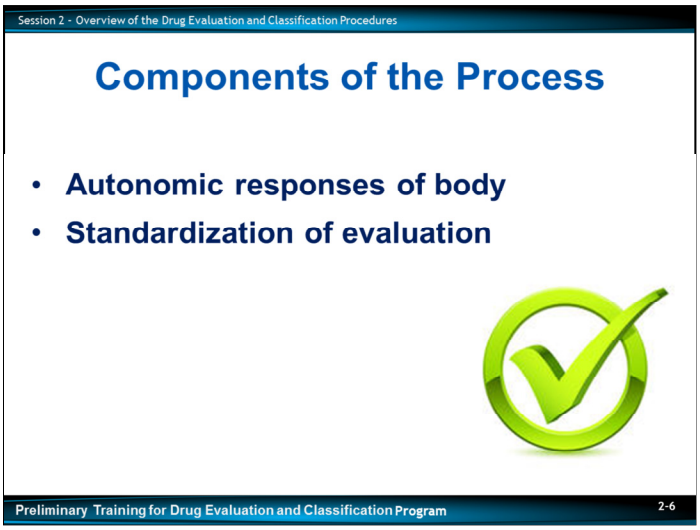


Some of these observable signs and symptoms relate to the subject's appearance.

Some of the signs and symptoms relate to the subject's behavior.

Some relate to the subject's performance of carefully administered psychophysical tests.

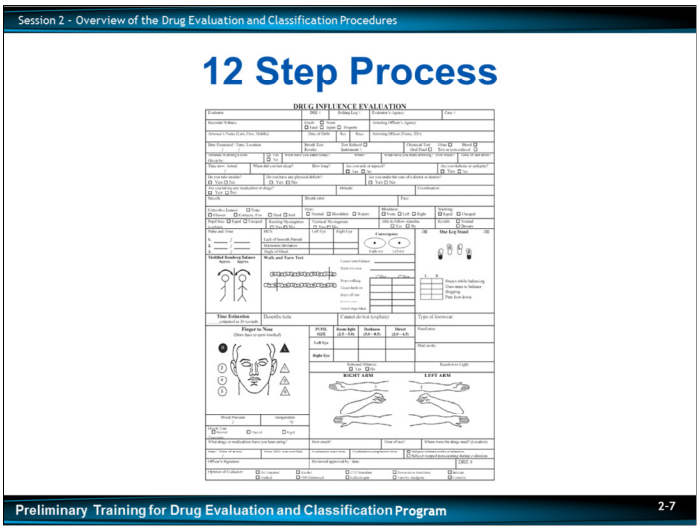
- Drugs impair the subject's ability to control his or her mind and body
- Psychophysical tests can disclose the subject's ability to control mind and body is impaired
- The specific manner in which the subject performs the psychophysical tests may indicate the type of impairment from which the subject is suffering
    - In turn, this may indicate the category or categories of drugs causing the impairment



Some of the observable signs and symptoms relate to automatic responses of the subject's body to the specific drugs present.

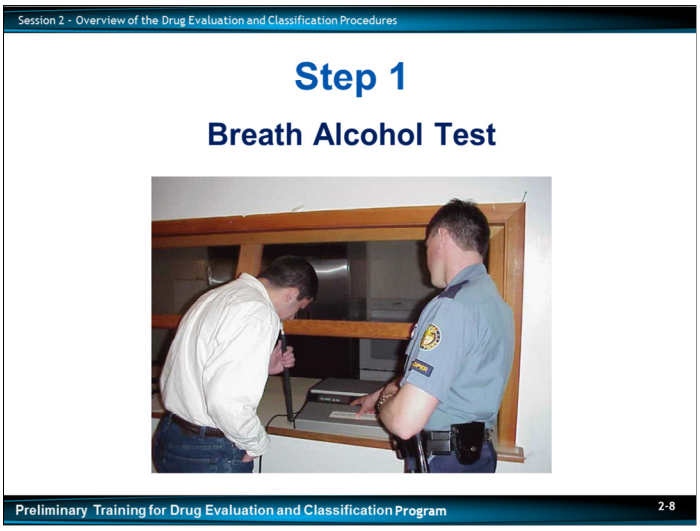
All of these reliable indicators are examined and carefully considered before a judgment is made concerning what categories of drugs are affecting the subject. The process is standardized in that it is administered the same way, to every subject, by every Drug Recognition Expert (DRE).

- Standardization helps to ensure no mistakes are made
- No steps of the process are left out
- No extraneous or unreliable "indicators" are included
- Standardization helps to promote professionalism among DREs
- Standardization helps to secure acceptance in court



12 Step Process

The DEC process has twelve components or steps.

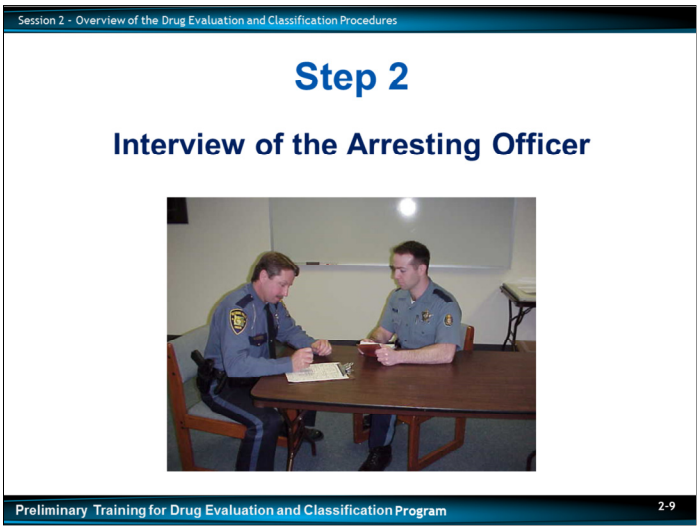


Breath Alcohol Test

Breath Alcohol Test to determine BAC

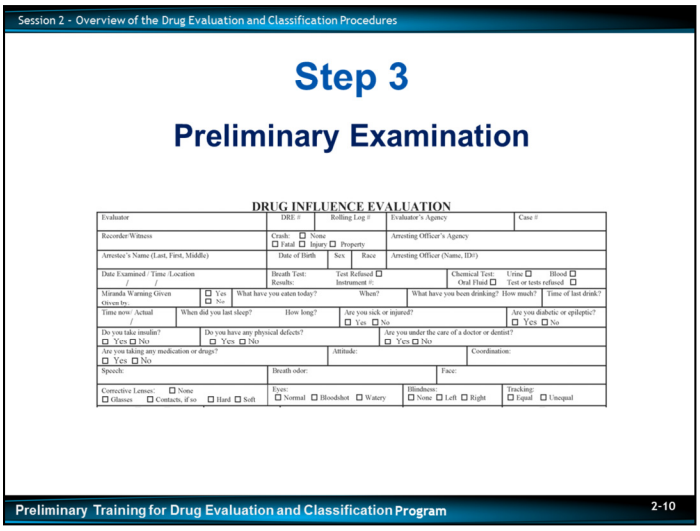
- The purpose of the breath test is to determine whether the specific drug, alcohol, may be contributing to the impairment observable in the subject

- 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 some other drug or drugs or other complicating factors are contributing to the impairment



Interview of the Arresting Officer

- In most cases, the subjects you will examine will not be people 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



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 evaluation, pursue a possible medical complication, or 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.

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, initial checks of the subject's eyes, and an initial examination of the subject's pulse.

The initial examination of the eyes may reveal signs of injury or illness. A difference in pupil size of greater than 0.5 mm may indicate an injury or existing medical condition.

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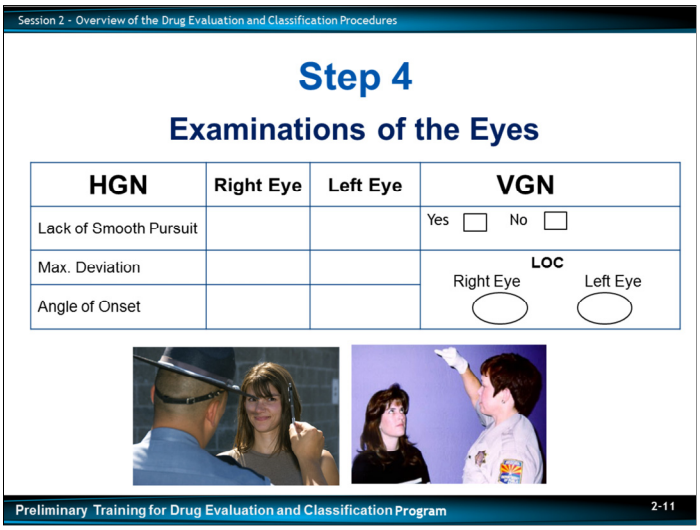
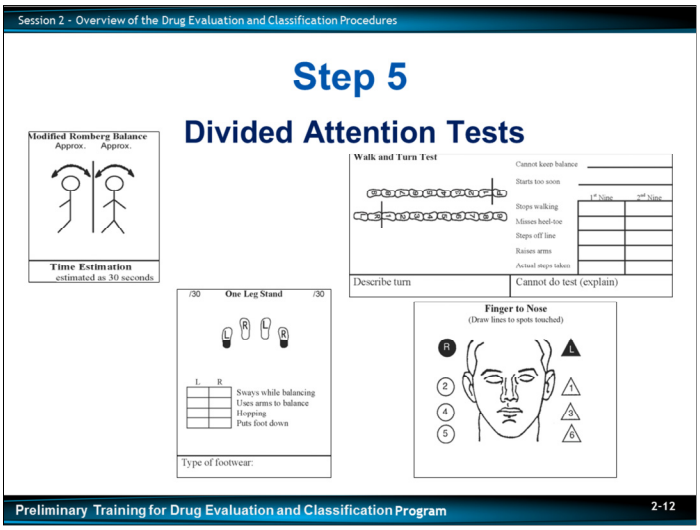


Examinations of the Eyes

This is the time when DREs will administer three tests of the subject's eyes; Horizontal Gaze Nystagmus (HGN), Vertical Gaze Nystagmus (VGN) and Lack of Convergence (LOC).

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 HGN, which is an involuntary jerking of the eyes as the eyes gaze to the side
- Alcohol is not the only drug that causes nystagmus
- HGN is not the only observable effect on the eyes that will be produced by various drugs.

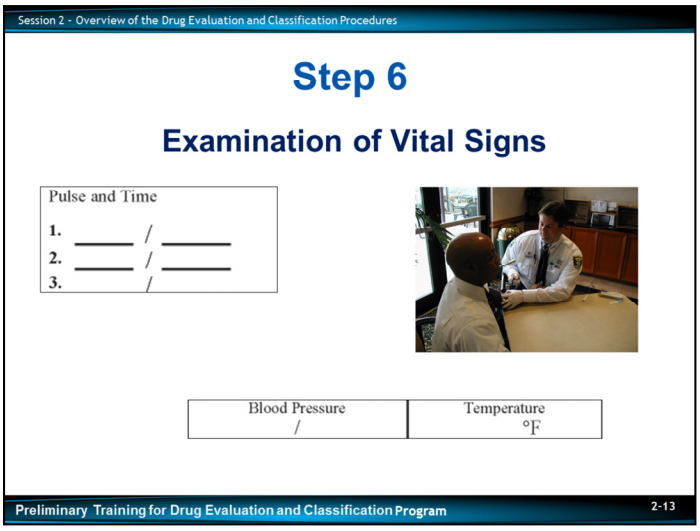


Divided Attention/Psychophysical Tests

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



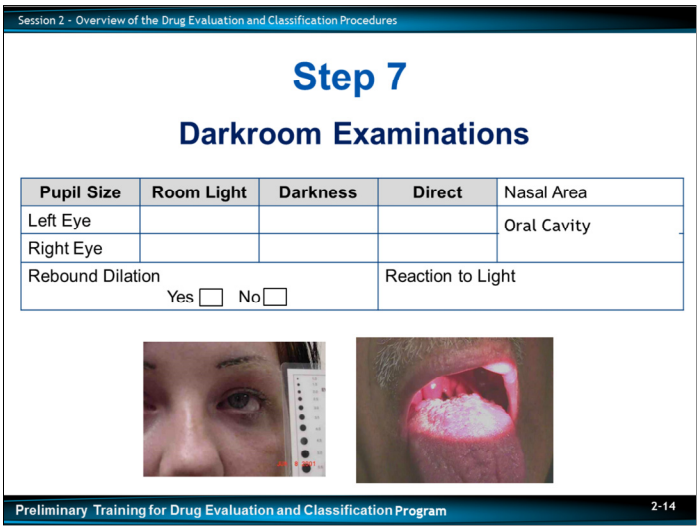
Examination of Vital Signs

Many categories of drugs affect the operation of the heart 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

- Blood pressure is measured with two medical instruments – a stethoscope and a sphygmomanometer



Dark Room Examinations

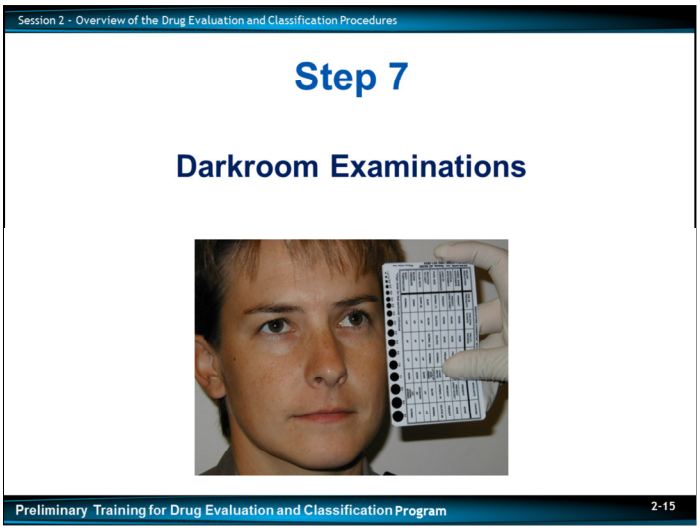
Many categories of drugs affect how the pupils of the eyes will appear and how they respond to light.

- Certain kinds of drugs will cause the pupils to grow larger, or dilate
- Some other drugs cause the pupils to be smaller, or constrict

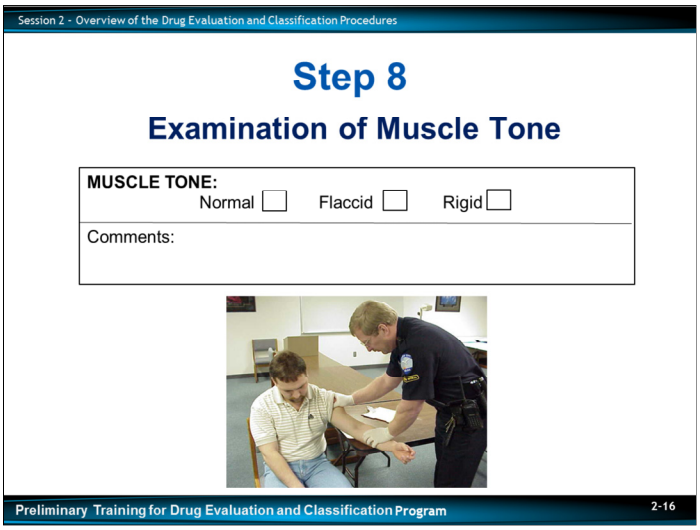
By systematically changing the amount of light entering the subject's eyes, we can observe the pupils' appearance and reaction under controlled conditions.

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.



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.

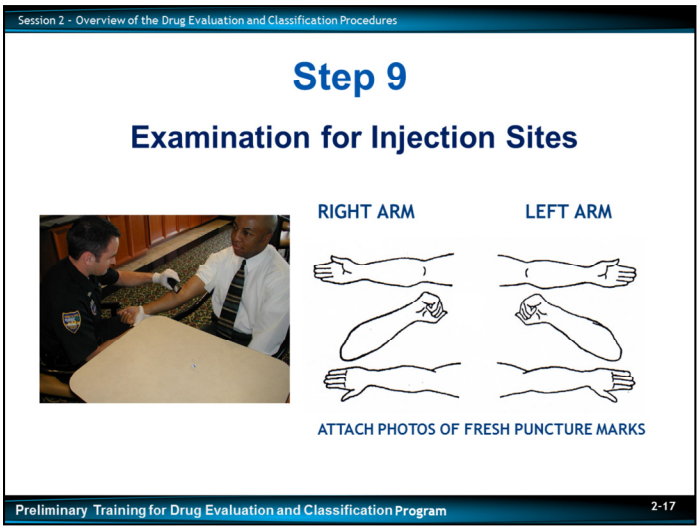


Examination of Muscle Tone

Certain categories of drugs can cause the user's muscles to become markedly tense or rigid while others can cause the muscles to be very flaccid, loose, and rubbery.

Evidence of muscle tone may be apparent when the subject attempts to perform divided attention tests.

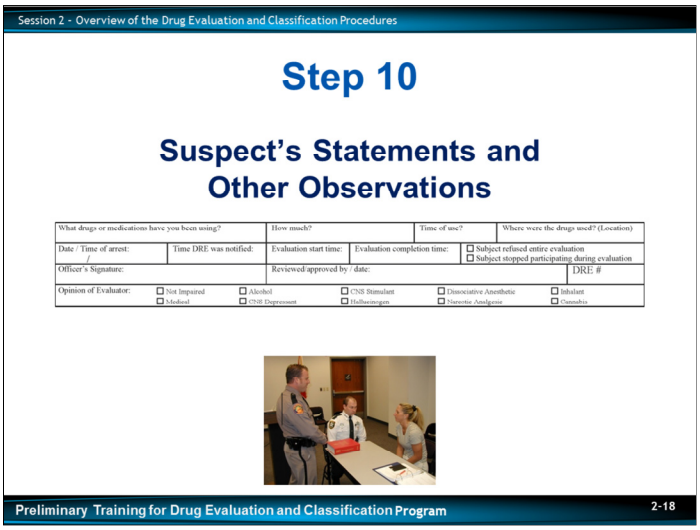
Evidence of muscle tone can also be observed when taking the subject's pulse and blood pressure.



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 injection sites on a subject provides powerful evidence he or she may be under the influence of specific types of drugs.



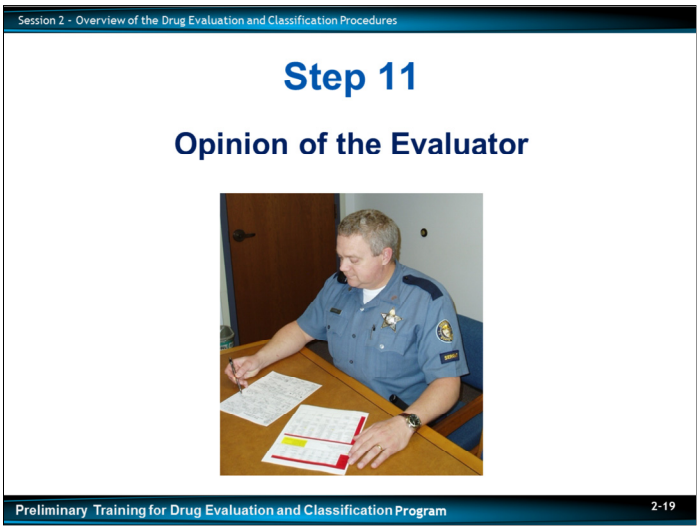
Suspect's Statements and Other Observations

At this point in the evaluation, the DRE may have reasonable grounds to believe the subject is under the influence of a drug or drugs.

The DRE may 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 his or her suspicion/opinions concerning the drug or drugs 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 the Evaluator

Based on all of the evidence and observations gleaned from the preceding steps, the DRE must reach an informed opinion as to:

- Whether the subject is under the influence of a drug or drugs
- If so, the probable category or categories of drugs causing the impairment

The DRE must record a narrative summary of the facts forming the basis for his or her opinion.

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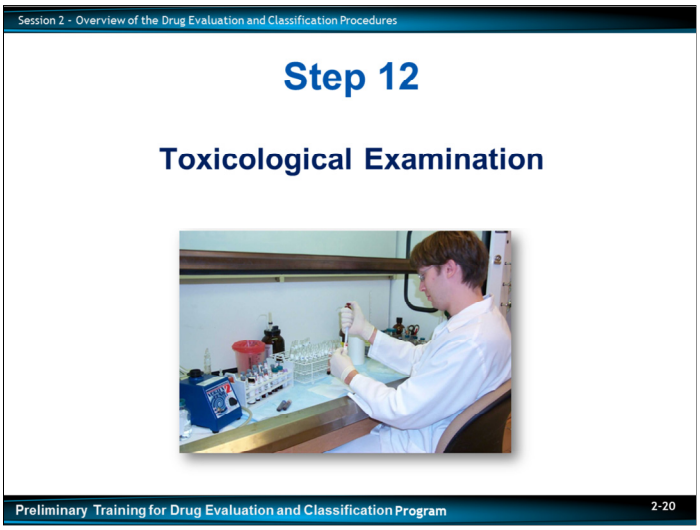
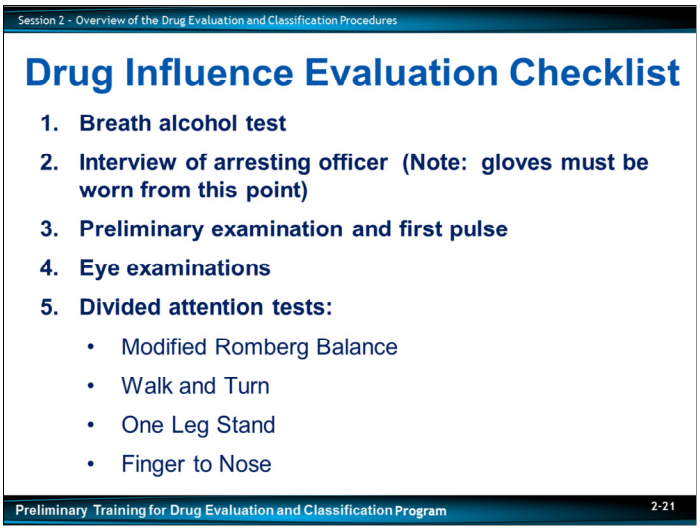


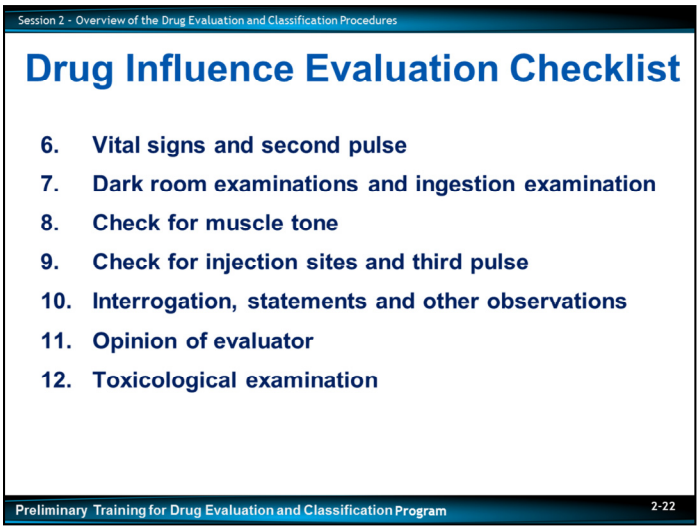
Toxicological Examination

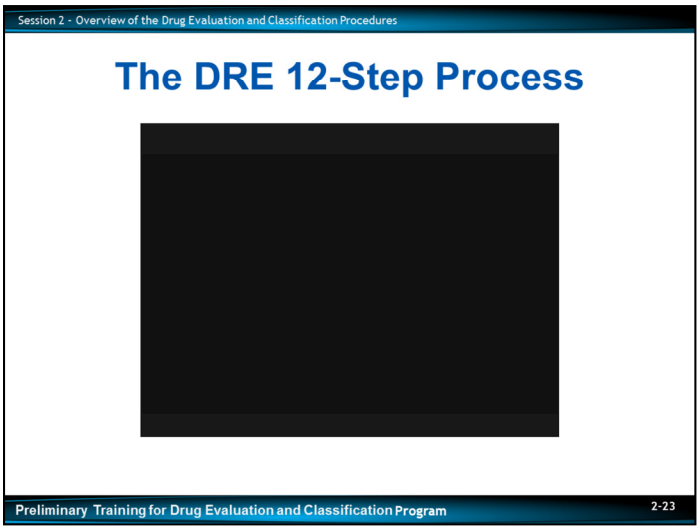
The toxicological examination is a chemical test or tests designed to obtain scientific, admissible evidence to support the DRE's opinion.

Departmental policy and procedures should be followed in requesting, obtaining, and handling the toxicological sample.

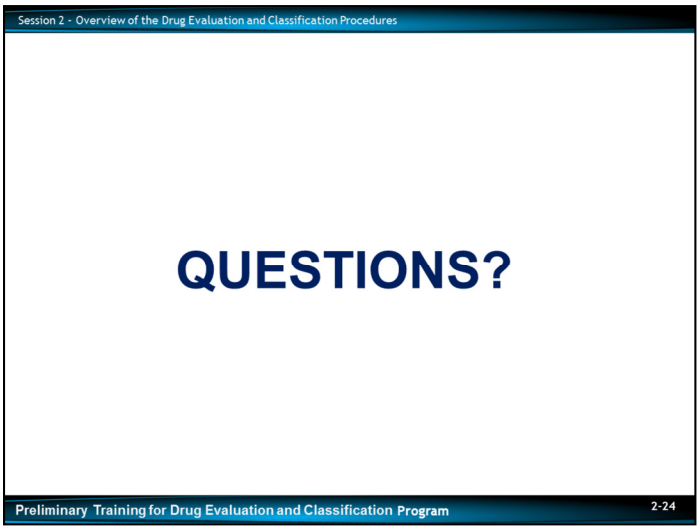


Review of Drug Influence Evaluation Checklist


Session 2 - Overview of the Drug Evaluation and Classification Procedures
Drug Influence Evaluation Checklist
6. Vital signs and second pulse
7. Dark room examinations and ingestion examination
8. Check for muscle tone
9. Check for injection sites and third pulse
10. Interrogation, statements and other observations
11. Opinion of evaluator
12. Toxicological examination
Preliminary Training for Drug Evaluation and Classification Program
2-22



B. <u>Video Demonstrations</u>


Session 2 - Overview of the Drug Evaluation and Classification Procedures
QUESTIONS?
Preliminary Training for Drug Evaluation and Classification Program
2-24

International Association of Chiefs of Police

Drug Evaluation and Classification Program

Drug Influence Evaluation Checklist

_____ 1. Breath alcohol test

_____ 2. Interview of arresting officer

_____ 3. Preliminary examination and first pulse
(Note: Gloves must be worn from this point on.)

_____ 4. Eye examinations

_____ 5. Divided attention tests:

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

_____ 6. Vital signs and second pulse

_____ 7. Dark room examinations and ingestion examination

_____ 8. Check for muscle tone

_____ 9. Check for injection sites and third pulse

_____ 10. Interrogation, statements, and other observations

_____ 11. Opinion of evaluator

_____ 12. Toxicological examination

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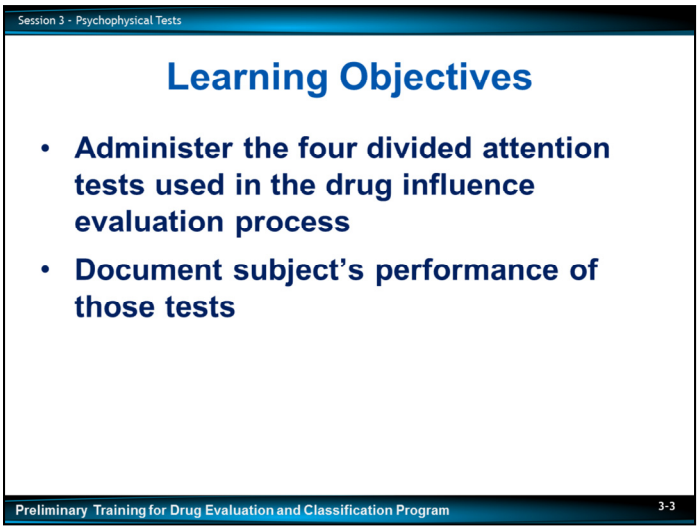
Preliminary Training for Drug Evaluation and Classification Program
Session 3 – Psychophysical Tests
NHTSA
TSI
February 2018


Session 3 - Psychophysical Tests
1 Hour, 30 Minutes
Session 3
Psychophysical Tests
TSI
NHTSA
Preliminary Training for Drug Evaluation and Classification Program
3-2



Upon successfully completing this session the participant will be able to:
- Administer the four divided attention tests used in the drug influence evaluation process
- Document the subject's performance of those tests

CONTENT SEGMENTS

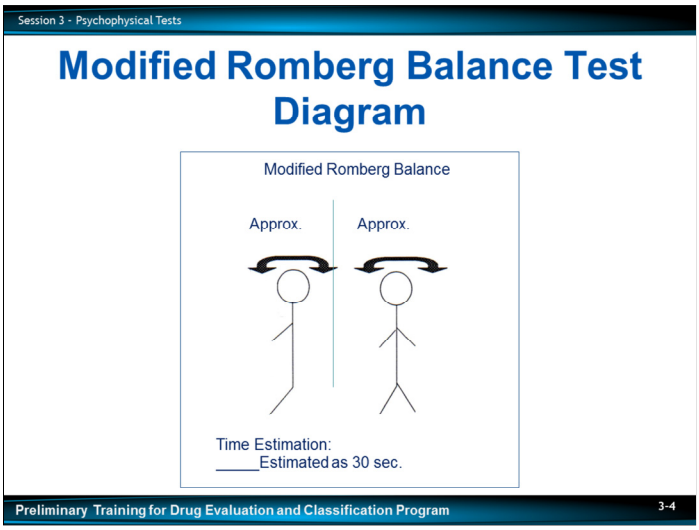
A. Modified Romberg Balance (MRB)
B. Walk and Turn (WAT)
C. One Leg Stand (OLS)
D. Finger to Nose (FTN)

LEARNING ACTIVITIES

Instructor-Led Presentations
Participant-Led Demonstrations
Hands-on Practice

Four divided attention psychophysical tests are administered in the Drug Recognition Expert (DRE) evaluation – MRB, WAT, OLS, and FTN.

The WAT and OLS, as well as Horizontal Gaze Nystagmus (HGN), have been scientifically validated by conducting controlled research to demonstrate their reliability. The MRB and FTN have not been subjected to that sort of scrutiny, however, if properly administered and recorded, they are very credible evidence of impairment.

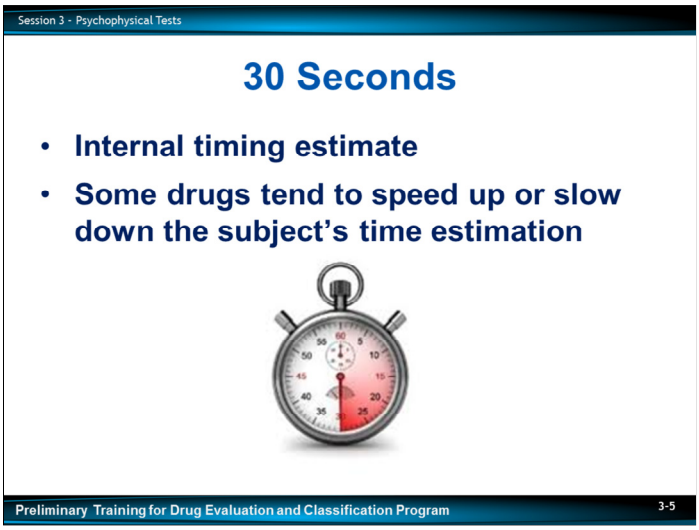


A. <u>Modified Romberg Balance (MRB)</u>

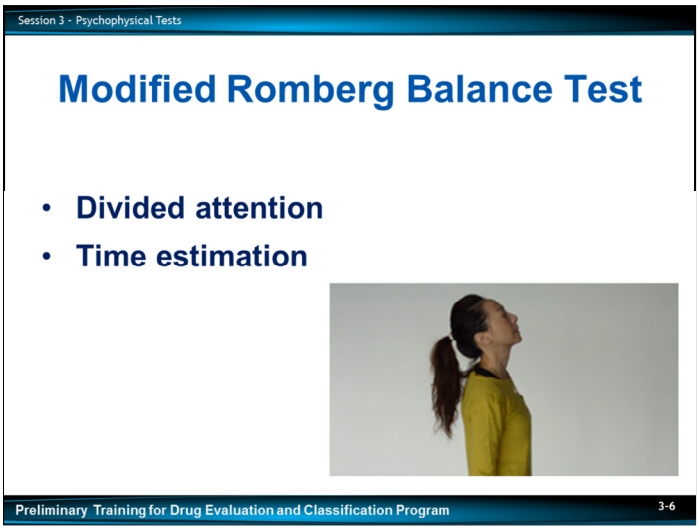
The MRB is the first divided attention test administered during the drug influence evaluation.

- The test requires the subject to stand with the feet together and the head tilted back slightly and with the eyes closed

- The test also requires the subject attempt to estimate 30 seconds; the subject must be instructed to open the eyes and tilt the head forward and say "stop" when they think thirty seconds has elapsed



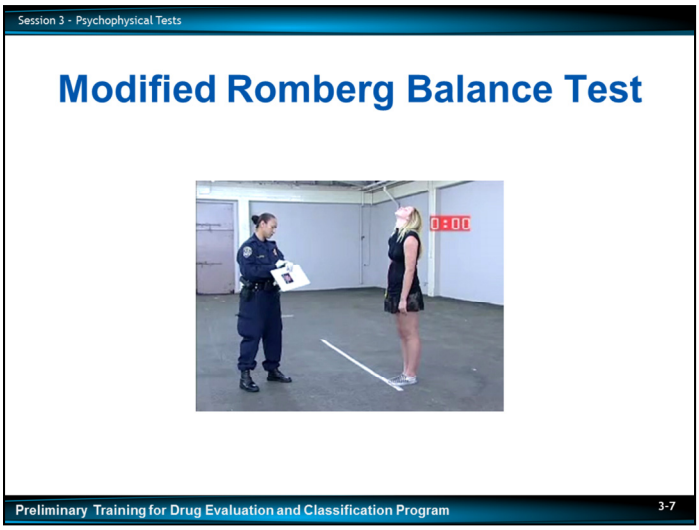
Some drugs tend to "speed up" the subject's time estimation so the subject may open the eyes after only 10 or 15 seconds have gone by. Other drugs may "slow down" the time estimation. Sometimes the drugs affect the subject's divided attention to the point where they won't remember to open the eyes until instructed to do so by the DRE.



Drug impairment can affect both divided attention and the subject's internal time estimation mechanism and can vary among people. Performance outside the range of plus or minus 5 seconds should be used cautiously and considered with the totality of the decision process.
The DRE modified version of the original Romberg Balance Test is a divided attention test as well as a possible measurement of the person's internal timing estimates.
The DRE must look at a timing device as soon as the subject starts the test and must record the actual amount of time that elapses until the subject opens his or her eyes.
The DRE should not close their eyes while demonstrating this test for safety reasons.

- The DRE must record how much time actually elapsed from the start of the test until the subject opened their eyes and said "stop"

- If the subject continues to keep their eyes closed for 90 seconds, the DRE should stop the test and record the fact it was terminated at 90 seconds



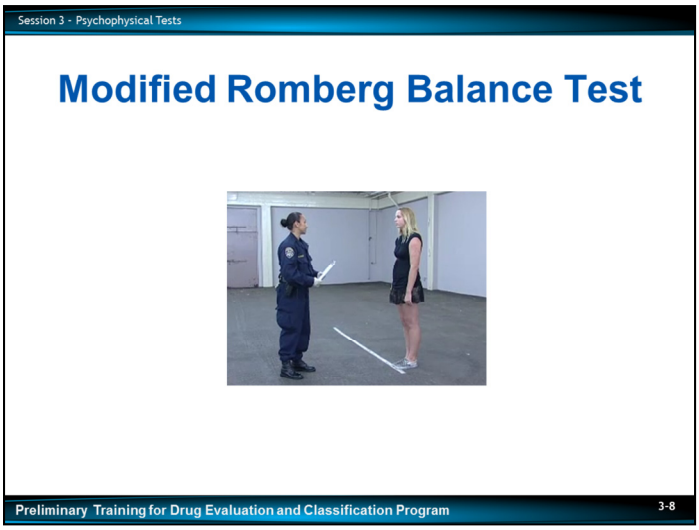
Administrative Procedures
Instruction Stage

1. Stand straight with your feet together and your arms down at your sides.
2. Remain in this position while I finish giving the instructions.
3. Do not start the test until I say “start.”
4. Ask if the subject understands the instructions

Make sure to obtain a verbal response from the subject.

5. “When I tell you start, I want you to tilt your head back slightly and close your eyes.”
6. “Once you have closed your eyes, I want you to remain in that position until you think 30 seconds has gone by.”
7. “As soon as you think 30 seconds have passed, open your eyes, tilt your head forward and say ‘Stop’."
8. Do you understand?

Make sure to obtain a verbal response from the subject.



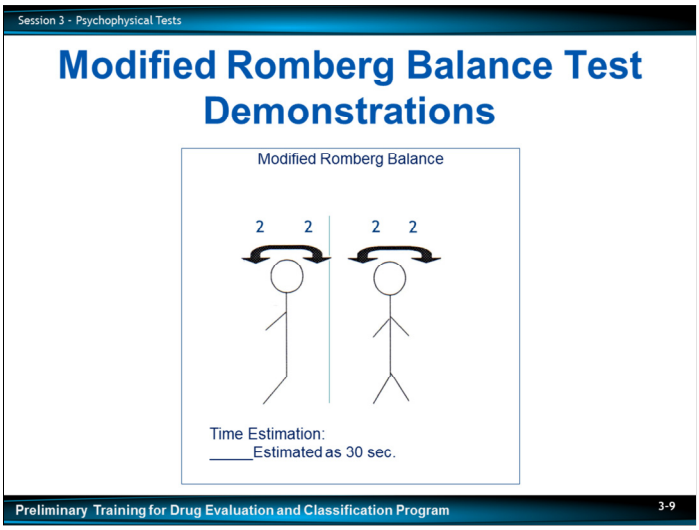
Balancing Stage

1. Look at your timing device and pick a convenient time to start the test.
2. Tell the subject to tilt their head back and close their eyes.
3. Tell the subject to begin or start the test.
4. Keep track of time while the subject performs the test.
5. Check subject for presence of tremors (eyelid and/or body) and sway.
6. When the subject opens their eyes, ask them "how much time was that?".
7. Record how much time actually elapsed from the start of the test until the subject opened their eyes or was told to stop.
    - If the subject continues to keep their eyes closed for 90 seconds, stop the test and record the fact it was terminated at 90 seconds

Make sure to document their "exact" verbal response.

- Instructor-to-instructor demonstrations

- Instructor-to-participant demonstration



Participant-Led Demonstrations

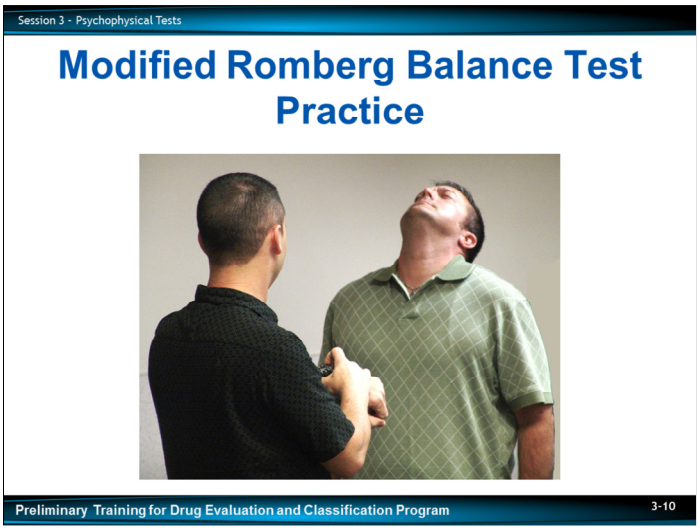
Recording Results of the MRB Test

The major items that need to be recorded for the MRB test are:

- The amount the subject sways
- The actual amount of time the subject keeps the eyes closed

To record swaying, the DRE must estimate how many inches the subject sways, either front-to-back, left-to-right, or circular.

Example: If the subject sways approximately two inches toward the left and approximately two inches toward the right, the DRE should write the number "2" on each side of the "stick figure" that shows left-to-right movement. To record the subject's time estimate, simply write the number of seconds the subject kept his or her eyes closed. Research has indicated a non-impaired subject's time estimation will typically be within +/- 5 seconds of 30 seconds.



Hands-On Practice

B. <u>Walk and Turn (WAT)</u>

WAT is the second divided attention test administered during the drug influence evaluation.

The test is administered the same way we have used it for Standardized Field Sobriety Testing (SFST) purposes.

- Monitor the practice and offer coaching and constructive criticism, as appropriate
- Review of WAT administrative procedures

The test has two stages: the instruction stage and the walking stage.

- During the instruction stage, the subject must stand heel-to-toe with the right foot ahead of the left foot with the heel of the right foot against the toe of the left foot and keeping the arms at the sides

- Demonstrate the stance the subject must maintain during the instruction stage
  - If the subject fails to maintain the starting position during your instructions, discontinue the instructions and direct the subject back to the starting position before continuing

- The subject is told to not start walking until told to do so

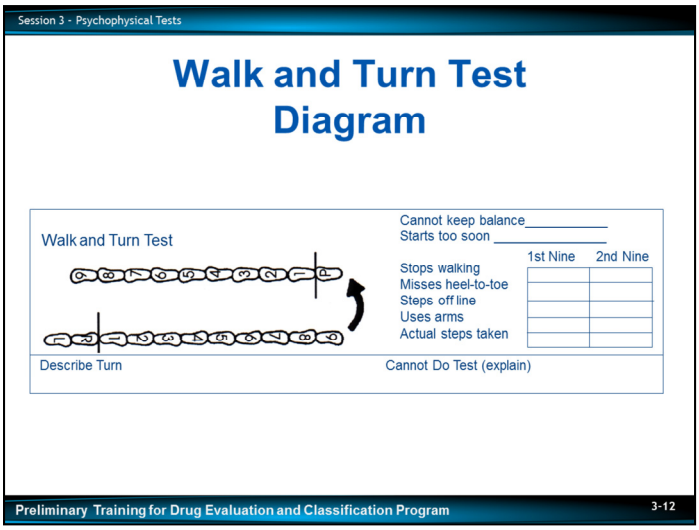
- The subject must be told to take nine heel-to-toe steps on the line, to turn around keeping the front or lead foot on the line and to turn by taking a series of small steps with the other foot, and to return nine heel-to-toe steps down the line

_____

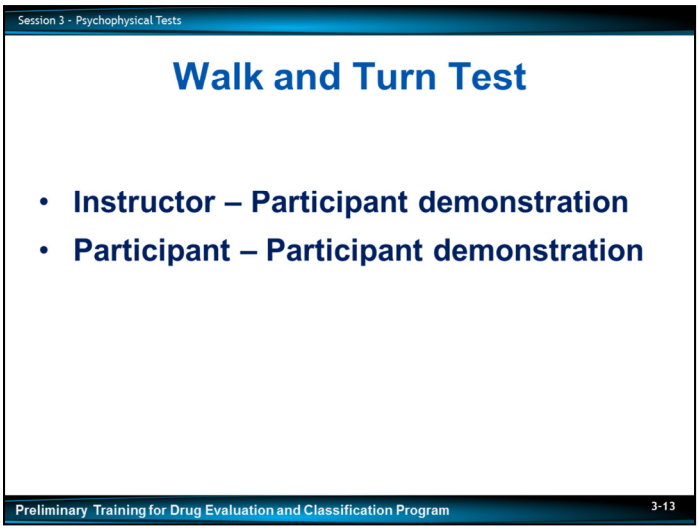
_____

_____

_____

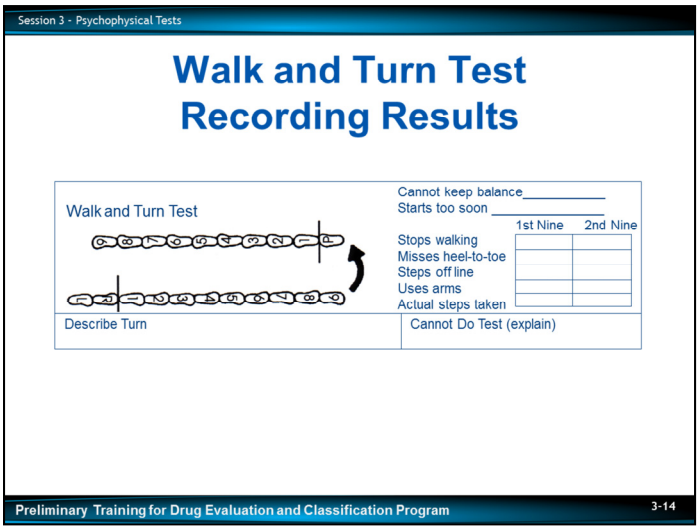


- The subject must be told to keep their arms at the sides at all times
- The subject must be told to watch his or her feet while walking
- The subject must be told to count the steps out loud
- The subject must be told not to stop walking until the test is completed
- The subject should be asked if he/she understands the instructions
- Once the subject acknowledges his/her understanding of the instructions, instruct the subject to begin the test
- If the subject stops or fails to count out loud or watch his/her feet, remind him/her to perform these tasks
    - This interruption will not affect the validity of the test and is essential for evaluating divided attention



Instructor-to-participant demonstration

Participant-to-Participant Demonstration



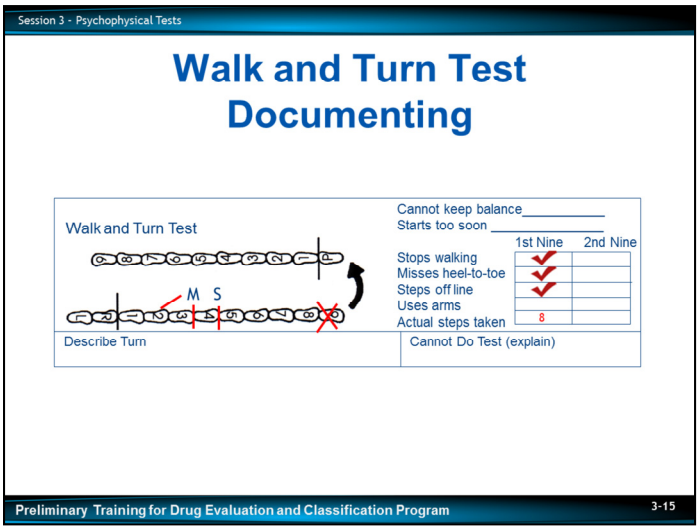
Recording Results of the WAT Test

- We record the very same clues on this test we use for SFST purposes

Instruction stage clues:

- Cannot maintain balance while listening to instructions (feet break away from the heel-to-toe stance)
  - Draw a slash mark at an angle in the direction the subject stepped out of the instruction position

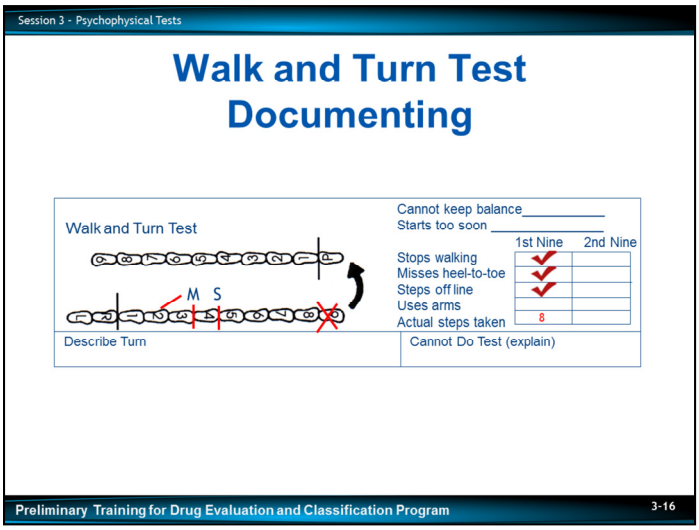
- Starts too soon (i.e., subject starts walking before told to do so)



Walking stage clues:

- Stops while walking
- Does not touch heel-to-toe (one-half inch or more)
- Steps off the line
- Uses arms for balance (six or more inches)
- Improper turn
- Incorrect number of steps (Mark an X through steps not taken)

If subject stops walking, record it by drawing a vertical line from the toe at the step at which the stop occurred. Do this for each of the nine steps.



How many times during first nine steps?

How many times during second nine steps?

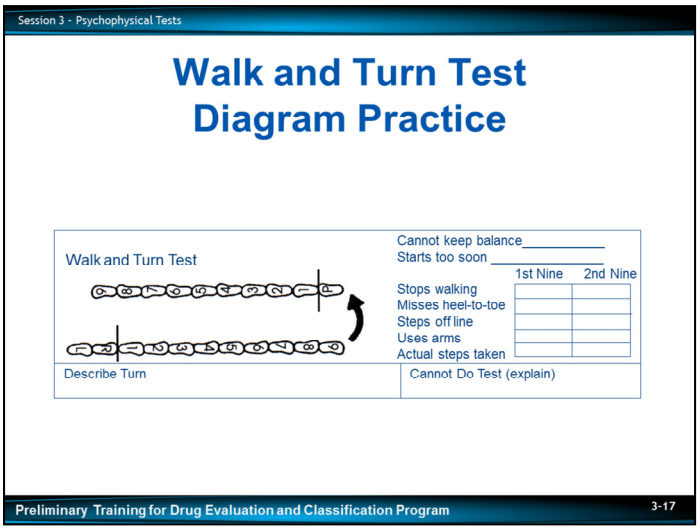
If subject fails to touch heel-to-toe, record how many times this happens.

If subject steps off the line while walking, record it by drawing a line from the appropriate footprint at the angle in the direction in which the foot stepped. Do this for each nine steps

- If the subject steps off the line, indicate with a half of slash mark at an angle in the direction the step was taken

- If the subject misses heel-to-toe, indicate with a slash mark between the feet and label with an "M"

- The "M" indicates "missed"



Hands-On Practice

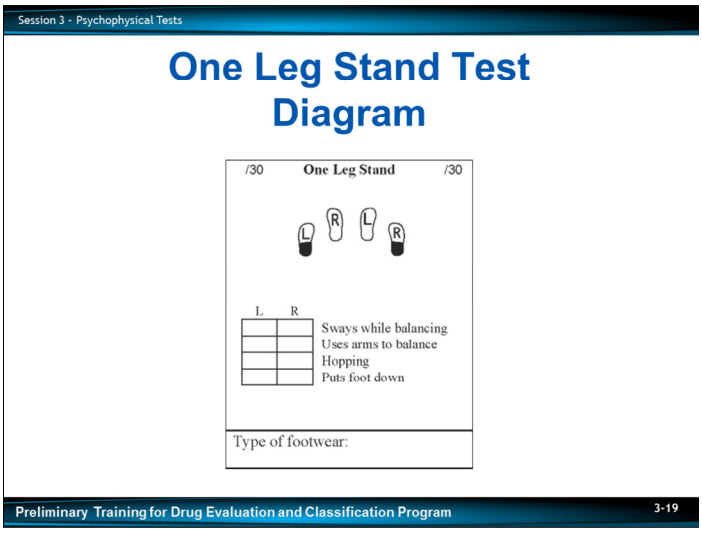
C. <u>One Leg Stand (OLS)</u>

OLS is the third divided attention test administered during the drug influence evaluation.

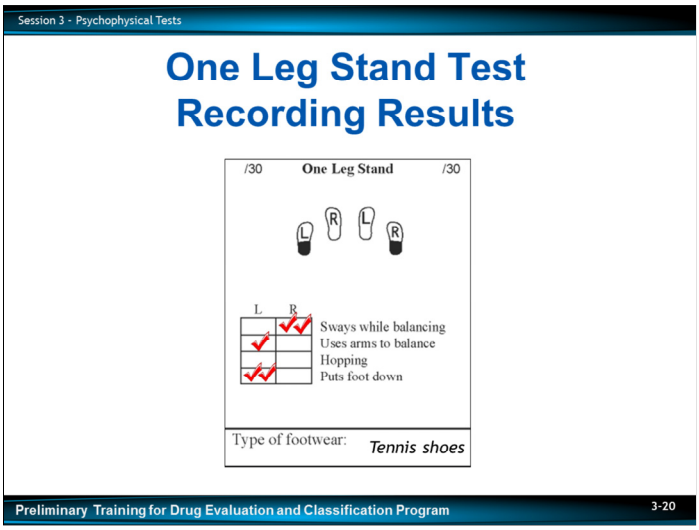
- For drug evaluation purposes, OLS is given twice to the subject
- First, the subject is required to perform the OLS while standing on the left foot
- Next, they are required to perform the test while standing on the right foot
- Otherwise, the OLS is used in the same fashion as in SFST

Review of OLS Administrative Procedures

- The test has two stages, the instruction stage and the balance and counting stage
- During the instruction stage, the subject must stand with the feet together, arms at the side, facing the examiner
- Demonstrate the stance the "subject" is required to maintain
- The subject must be told they will have to stand on the left foot and raise the right foot approximately **6** inches off the ground, with the right leg held straight and the raised foot parallel to the ground
- The examiner must demonstrate the one-leg stance
- Emphasize the subject must keep the foot raised throughout the test



- The subject must be told they must look at the raised foot during the test
- Emphasize the examiner should not look at his or her own foot while giving the instructions; for safety reasons, the examiner must keep the eyes on the subject at all times.
- The subject must be told they will have to count out loud in the following manner: “one thousand one, one thousand two, one thousand three” and so on until told to stop
- After giving the instructions, the examiner should ask the “subject” if they understand
- After the subject has completed the test on the left foot, they must be told to repeat the test on the right foot



Recording Results of the OLS

For drug evaluation purposes, we use the same clues on the OLS we use for SFST.

The OLS clues:

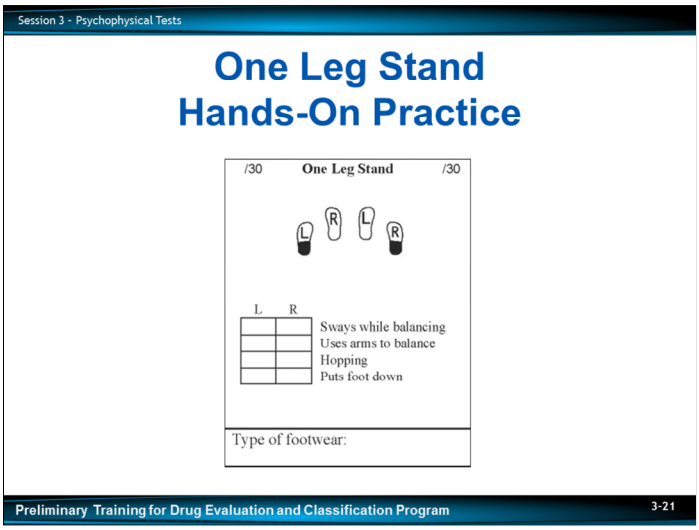
- Sways while balancing
- Uses arms for balance
- Hopping
- Puts foot down

Indicate above the feet the number they were counting when they put their foot down.

Check marks should be made or a number recorded to indicate the number of times the subject swayed, used arms for balance, hopped, or put their foot down.

The subject's actual count during the 30 seconds should be documented in the top area of the box above the foot on which the subject was standing.

DREs should also be observant for the presence of other indicators, such as body tremors and improper counting during this test.



Hands-On Practice

The original SCRI studies suggested individuals over 65 years of age, people with back, leg, or inner ear problems, or people who are overweight by 50 or more pounds may have difficulty performing this test. Less than 1.5% of the test subjects in the original studies were over 65 years of age. There was no data containing the weight of the test subjects included in the final report. Also, the SCRI studies suggest individuals wearing heels more than 2 inches high should be given the opportunity to remove their shoes.

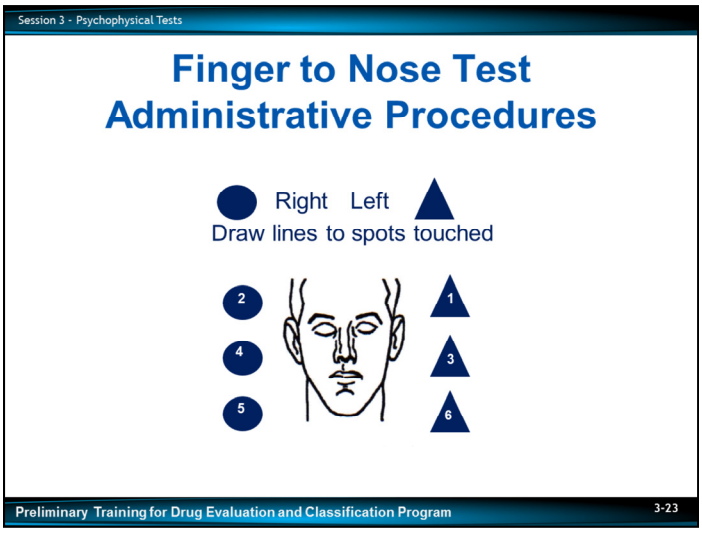
D. <u>Finger to Nose (FTN)</u>

The FTN is the final divided attention test used in the drug influence evaluation.

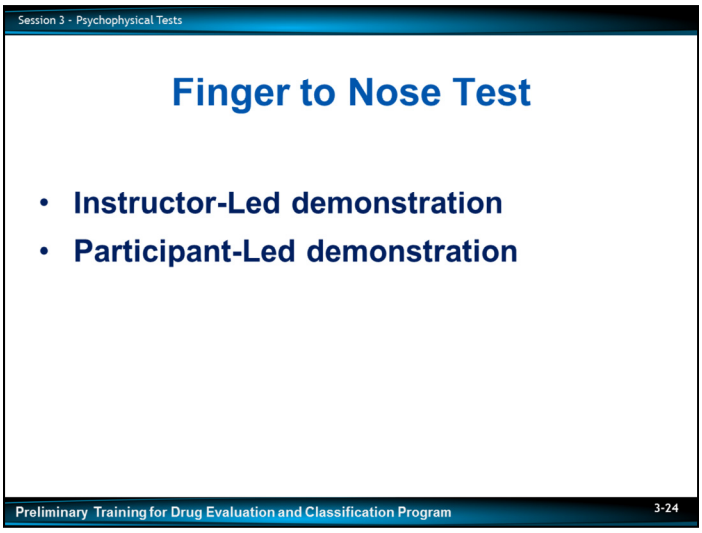
FTN differs from the other three tests in that the examiner must continue to give instructions to the subject throughout the test.

Administrative Procedures for FTN

- The subject must be told he/she will be given a series of commands, i.e., "left, right, etc." to indicate which fingertip is to be brought to the tip of the nose
- The subject must be told to stand with feet together, arms down at the sides, facing the examiner
- The examiner should demonstrate the stance
- The subject must be told to close his/her hands, rotate the palms forward and then to extend the index fingers from the closed hands
- The examiner must tell subject they will be asked to touch the tip of the index finger to the tip of the nose



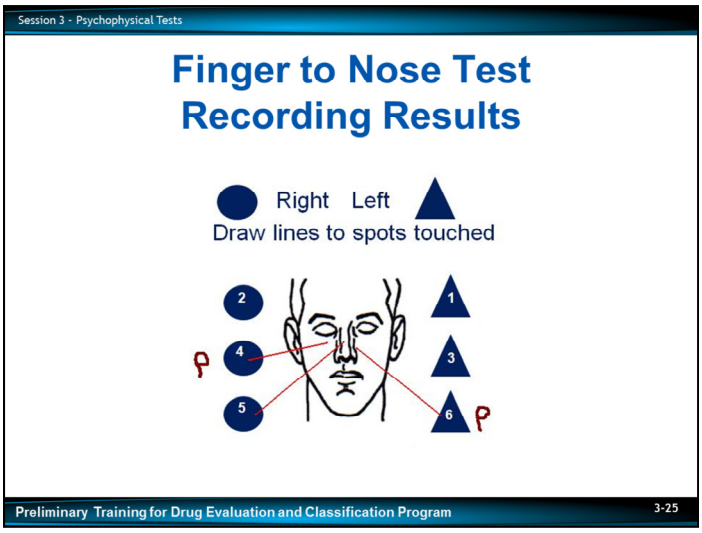
- The examiner must demonstrate to the subject how they are expected to touch the fingertip to the nose (without actually touching the nose)
- Demonstrate: When I say 'left,' touch the tip of your left index finger to the tip of your nose
- The examiner must tell the subject they are expected to return the arm to the side immediately after touching the fingertip to the nose
- Demonstrate the movement of the fingertip to the nose by standing at an angle to the subject so he/she can see the proper method for touching the nose
- The subject must be told to tilt the head back slightly and to close the eyes and keep them closed until the examiner says to open them
- The examiner should demonstrate the stance with head tilted back, arms at the sides with index fingers extended.



Instructor-Led Demonstrations

- Instructor-to-instructor demonstration
- Instructor-to-participant demonstration

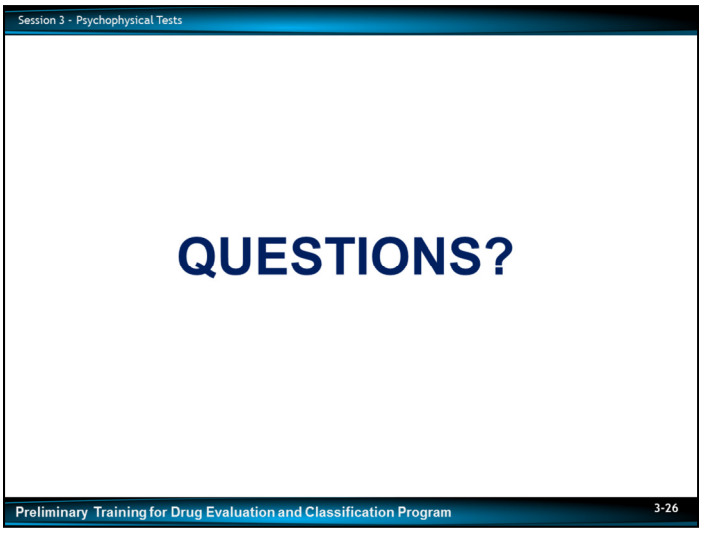
Participant-Led Demonstrations



Recording Results of the FTN Test

- The results of FTN test are recorded by drawing a "map" showing where the fingertips landed on each attempt
- A line should be drawn to the appropriate circle or triangle to indicate where the subject touched their nose
- Suggestion: If the DRE draws the line from the place where the subject touches to the appropriate circle or triangle, it enables them to draw a straighter line

Hands-on Practice


Session 3 - Psychophysical Tests
QUESTIONS?
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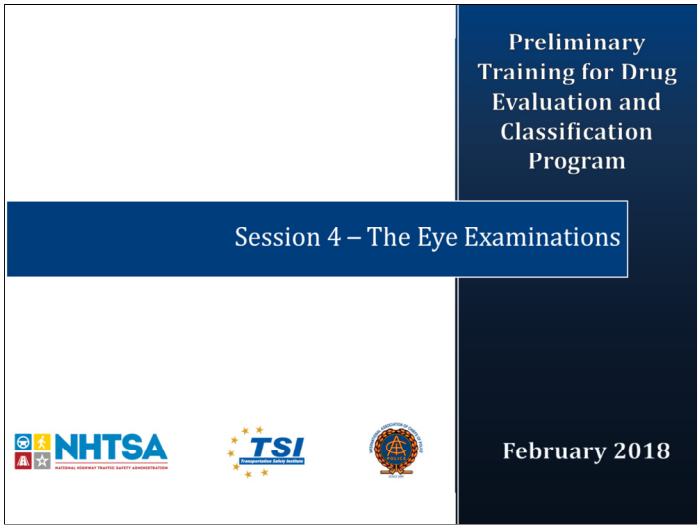
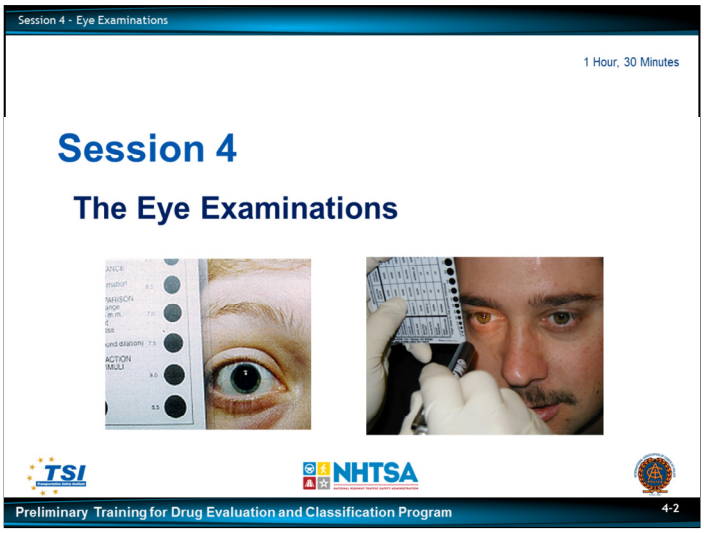

Preliminary Training for Drug Evaluation and Classification Program
Session 4 – The Eye Examinations
NHTSA
TSI
February 2018


Session 4 - Eye Examinations
1 Hour, 30 Minutes
Session 4
The Eye Examinations
TSI
NHTSA
Preliminary Training for Drug Evaluation and Classification Program
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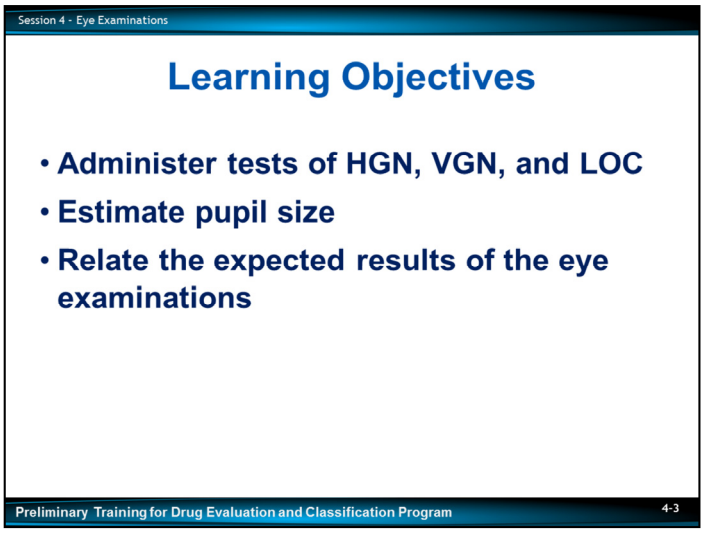


Upon successfully completing this session the participant will be able to:

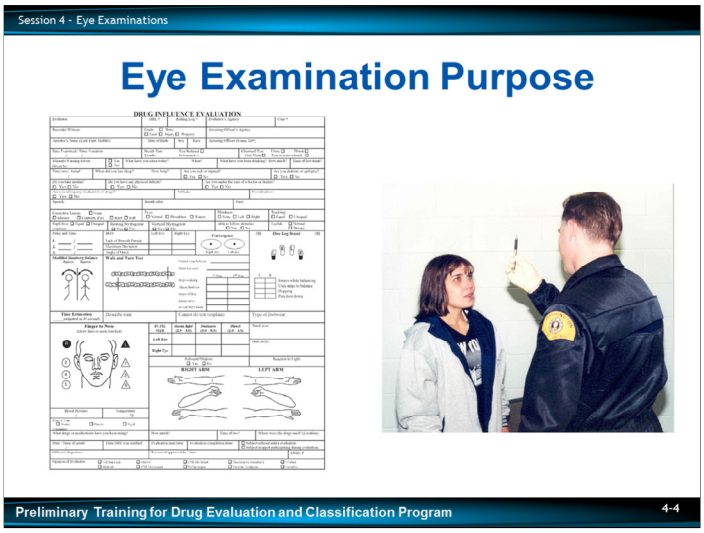
- Administer tests of Horizontal Gaze Nystagmus (HGN), Vertical Gaze Nystagmus (VGN), and Lack of Convergence (LOC)
- Estimate pupil size
- Relate the expected results of the eye examinations to the seven categories of drugs

CONTENT SEGMENTS

A. Purposes of the Eye Examinations
B. Procedures and Clues
C. Demonstrations
D. Relationship of Drug Categories to the Eye Examinations

LEARNING ACTIVITIES

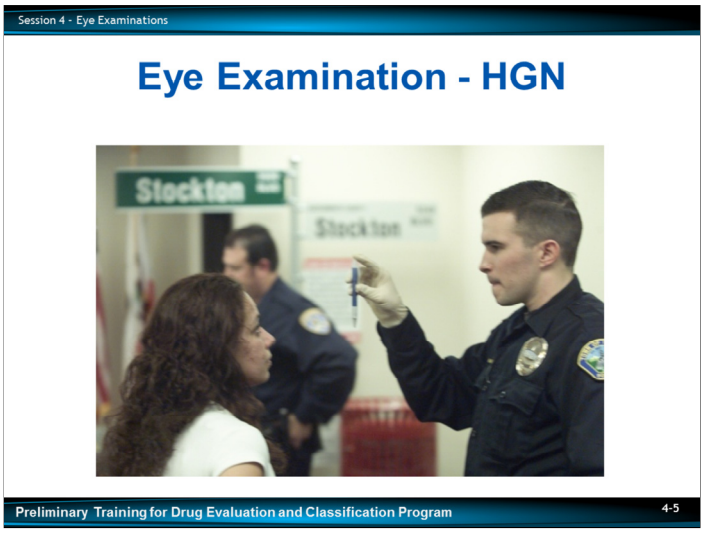
Instructor-Led Presentations
Instructor-Led Demonstrations
Hands-on Practice



A. Purposes of the Eye Examinations

The principal 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



Horizontal Gaze Nystagmus (HGN)

The tests of HGN and VGN provide important indicators of the drug categories that may or may not be present.

- Prior to the administration of the HGN, the subject's eyes should be checked for Equal Pupil Size, Resting Nystagmus and Equal Tracking

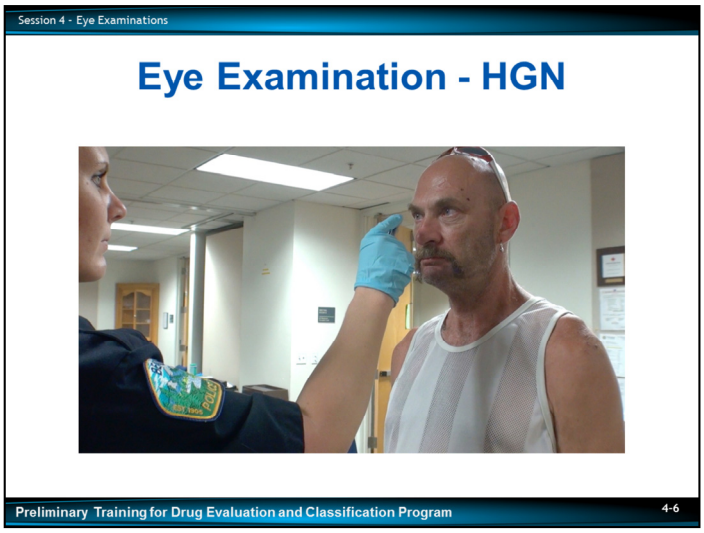
- The check for Equal Pupil Size is simply done by visibly checking to see if both pupils are equal in size
  - Both pupils should be of approximately equal size
  - A difference of ½ mm would still constitute equal pupil size
  - 1 mm difference or more may indicate a possible medical condition

- The check for Equal Tracking is done by moving the stimulus smoothly across the subject's entire field of vision checking to see if the eyes track together or if one lags behind

- If the subject's pupils are noticeably unequal in size or if Resting Nystagmus is present or if the eyes do not track together, there may be a chance of a medical condition or pathological disorder

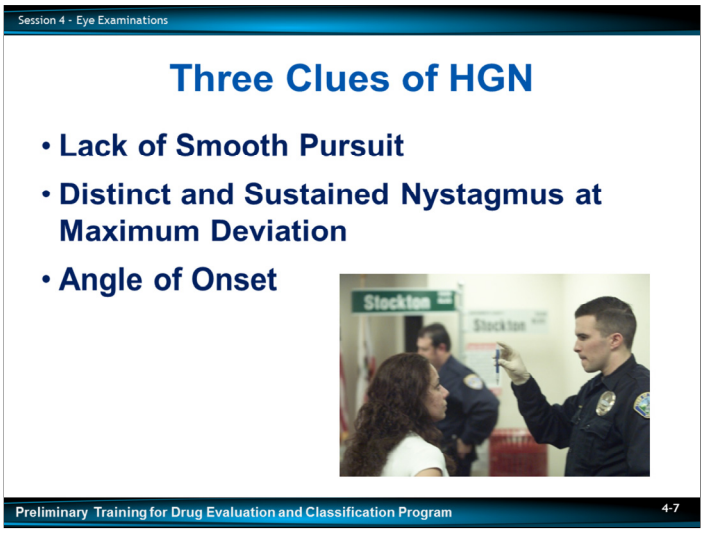
- This part of the examination may require more than one check to ensure a medical condition or pathological disorder does not exist

- If HGN is observed, it is likely the subject may have taken a CNS Depressant, Dissociative Anesthetic, an Inhalant, or a combination of those



Officers are reminded to ask questions about the subject's eye and general health conditions prior to administering the HGN test. If a subject responds or volunteers information he or she is blind in one eye or has an artificial eye, and the subject has Equal Tracking, the officer should make note of that and may proceed with the HGN test. If there are any abnormal findings on the pre-test checks, the officer may choose not to continue with the testing. If HGN testing is continued, officers are reminded this does not follow the standardized protocol and should acknowledge such in any report.

If HGN testing is conducted on a person with a blind eye, typical inconsistent findings could be related to the blind eye not being able to see or track the stimulus or when the normal eye can no longer see the stimulus, e.g., when checking Distinct and Sustained Nystagmus at Maximum Deviation on the blind eye side.



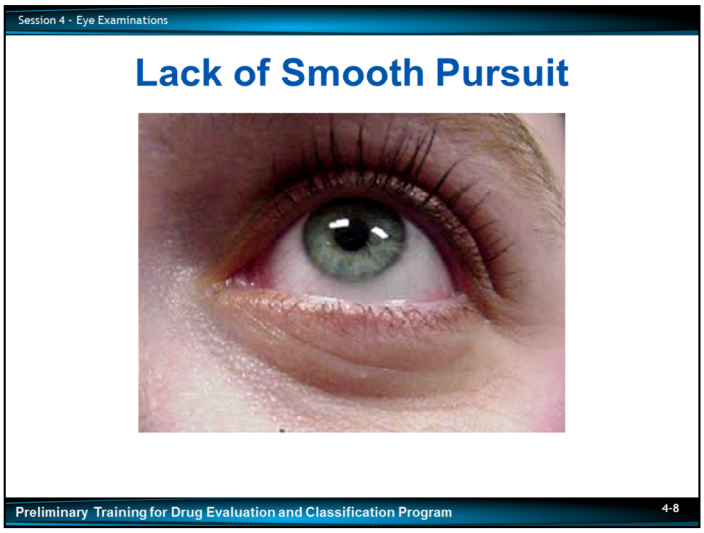
B. <u>Procedures and Clues</u>

Three Clues of Horizontal Gaze Nystagmus

Prior to the administration of the HGN test, the subject's eyeglasses should be removed and the eyes are checked separately for Equal Pupil Size, Resting Nystagmus, and Equal Tracking. **(Look for and be aware of contacts, especially colored contacts, because some colored contacts may affect the ability to compare and estimate pupil size.)**

As pointed out earlier, if the eyes do not track together or if the pupils are noticeably unequal in size, the chance of a medical disorder or injuries causing the nystagmus may be present. Prior to the administration, Resting Nystagmus may also be observed at this time.

HGN test consists of three separate checks, administered independently to each eye.



Lack of Smooth Pursuit

The first check is for "Lack of Smooth Pursuit."

- Position the stimulus approximately 12 to 15 inches from of the subject's nose
- Hold the tip of the stimulus slightly above the subject's eye level
- Instruct the subject to hold their head still and follow the stimulus with the eyes only
- Move the stimulus smoothly, all the way to the subject's left, then all the way to the right, then back again all the way to the left, then once again all the way back to the right
- The stimulus should move at a speed requiring approximately two seconds to bring it from the center to side or approximately 4 seconds from side to side
- While the eye is moving, examine it for evidence of a Lack of Smooth Pursuit

Use these or similar analogies:

- A <u>smoothly pursuing</u> eye will move without friction, much the way 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 moving across a dry windshield

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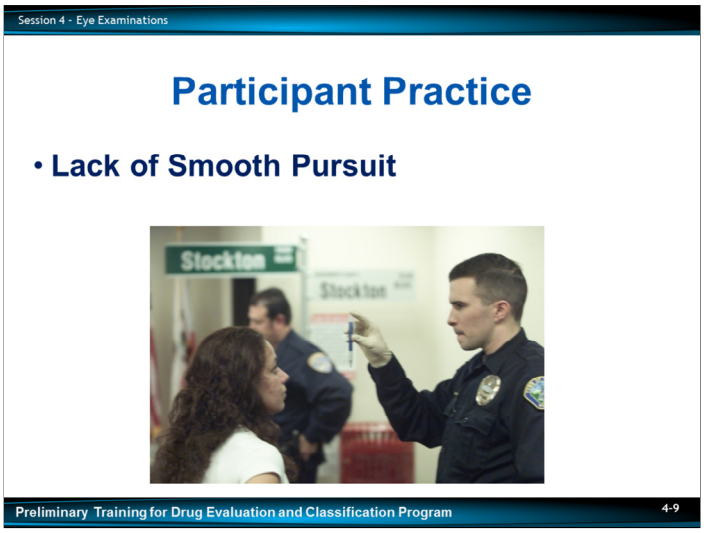

Participant Practice

Participants' initial practice of the check for Lack of Smooth Pursuit.

Clue No. 2: Distinct and Sustained Nystagmus at Maximum Deviation
Once you have completed the check for Lack of Smooth Pursuit, you will check the eyes for distinct and sustained nystagmus when the eye is held at maximum deviation, beginning with the subject's left eye.

The Mechanics of Clue Number 2
Once again, position the stimulus approximately 12 - 15 inches (30 - 38 cm) in front of subject's nose and slightly above eye level.

Move the stimulus to the individual's left side until there is no more white of the eye visible.

Hold the left eye in that position for a minimum of four (4) seconds. Four seconds will not cause Fatigue Nystagmus. This type of nystagmus may begin if a subject's eye is held at maximum deviation for more than 30 seconds.
With this clue, the examiner looks for distinct and sustained jerking.

A slightly or barely visible tremor is not sufficient to consider this clue present.

A definite, strong jerking must be seen.

Participant Practice
Participants' initial practice of the check for Distinct and Sustained Nystagmus at Maximum Deviation.

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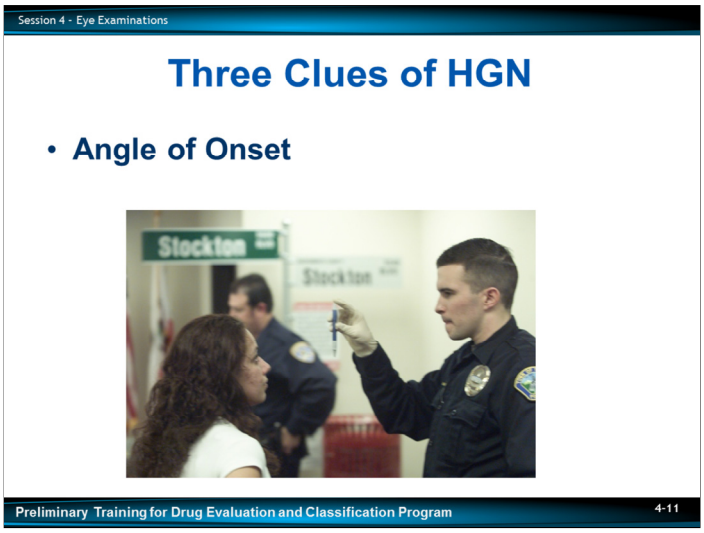
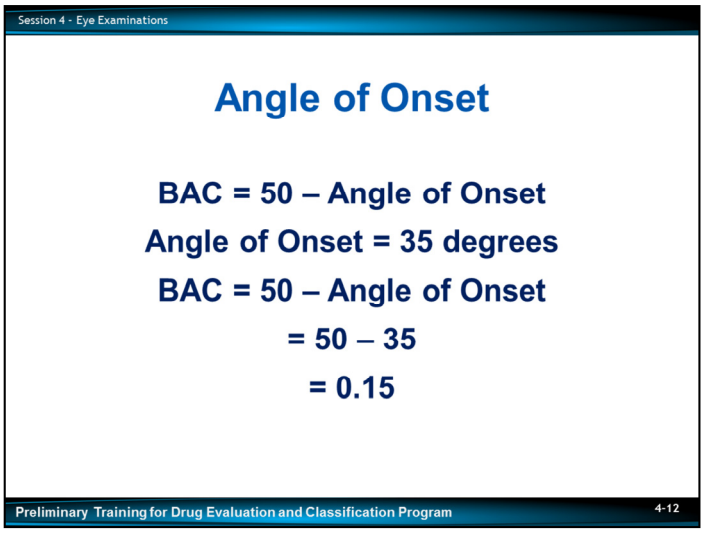


Angle of Onset

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
- When you think you see the eye jerk, stop moving the stimulus and hold it still
- Verify the eye is, in fact, jerking
- Once you have established you have located the point of onset, estimate the angle
- Repeat this procedure on the subject's right eye



Angle of Onset

The consistency of onset angle and blood alcohol concentration (BAC) can be compared using the following formula:

- Explanation: BAC = 100 x blood alcohol (e.g., if blood alcohol is 0.10, BAC = 10)
- Example: If onset angle is 35 degrees, then BAC = 50 - 35 = 15
- The corresponding BAC would be approximately 0.15
- Keep in mind this formula is only a statistical approximation. It is not an exact relationship for all subjects at all times
- By comparing the subject's BAC with the angle of onset of HGN, it may be possible to determine alcohol is or is not the sole cause of the observed nystagmus
- If the Angle of Onset is significantly inconsistent with BAC, the implication may be the subject has also taken a CNS Depressant other than alcohol, Dissociative Anesthetic, an Inhalant, or the subject may have a medical condition.

A DRE is expected to be able to estimate the Angle of Onset of Nystagmus to the nearest 5 degree increment over the range from 30 to 45 degrees.

If the subject's eyes begin to jerk before they have moved to the 30 degree mark, you will not attempt to estimate the angle precisely, but will record they exhibit "immediate onset."
From 30 degrees and beyond you will record a numeric estimate of onset.

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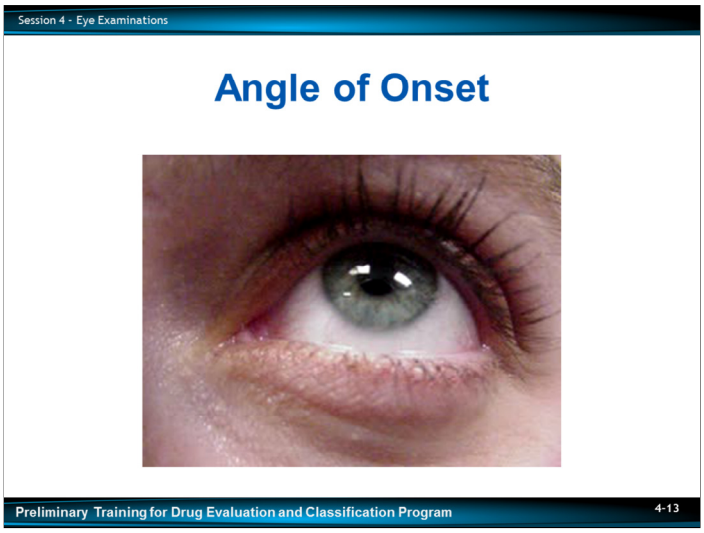
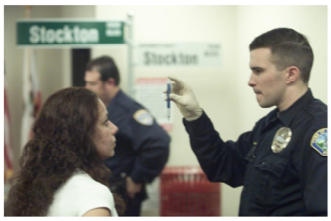


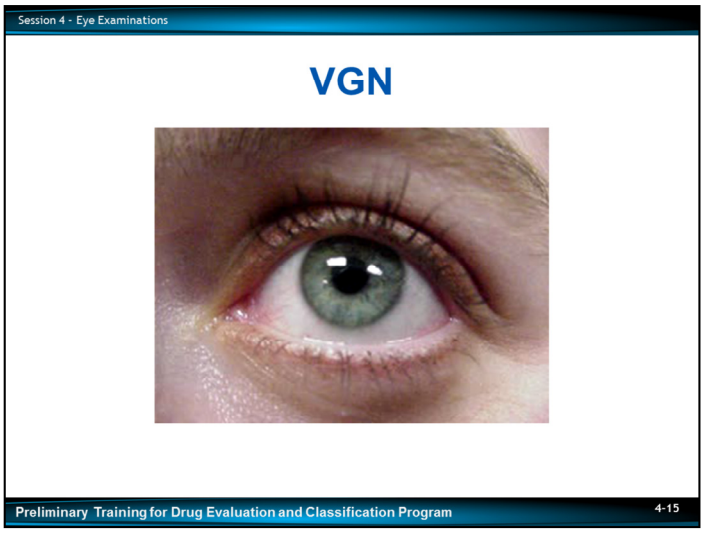
Participant Practice

- Participants' initial practice of Angle of Onset estimation

HGN

- Standardization
- Medical Complications





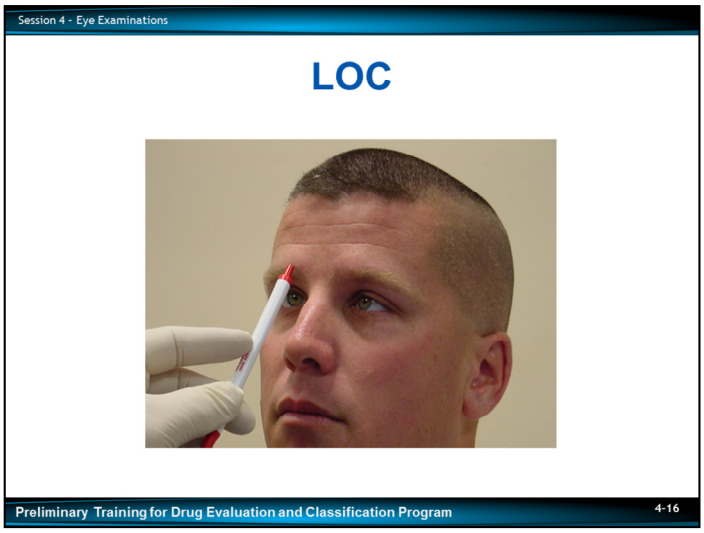
Vertical Gaze Nystagmus

- Position the stimulus horizontally, approximately 12 to 15 inches in front of the subject's nose
- Point out to the subject he or she will have to keep their head steady and try to keep their eyes focused on the stimulus as it moves upward
- Raise the stimulus until the subject's eyes are elevated as far as possible
- Watch closely for evidence of up-and-down jerking

Participant Practice

Participants' initial practice of the VGN test

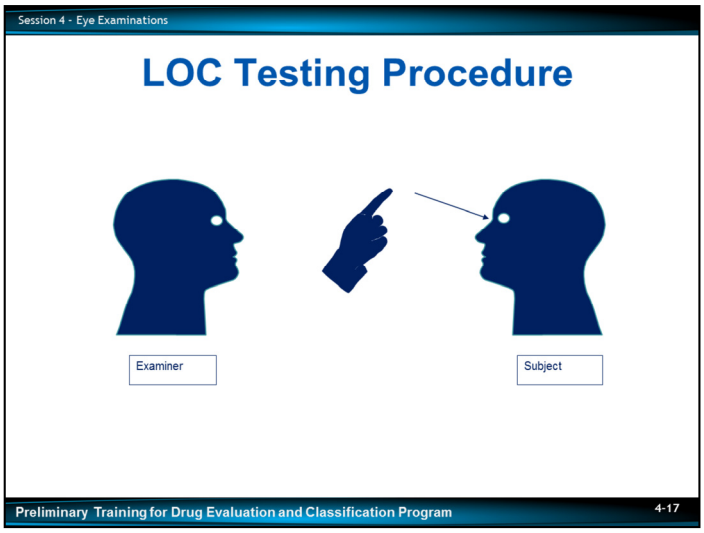
- If VGN is observed, the implication may be the subject took Dissociative Anesthetics, fairly large doses of Depressants, or Inhalants (for that individual)



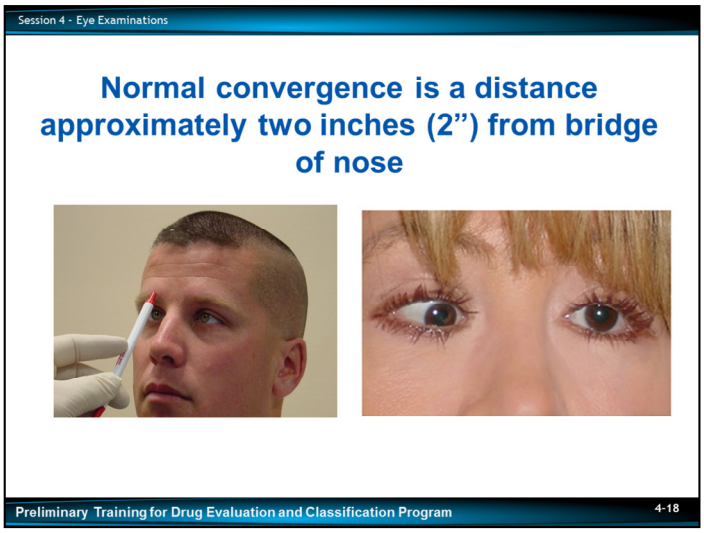
Lack of Convergence
The test for LOC determines whether the subject is able to cross his or her eyes.

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

LOC is also an indicator of the possible presence of Cannabis.

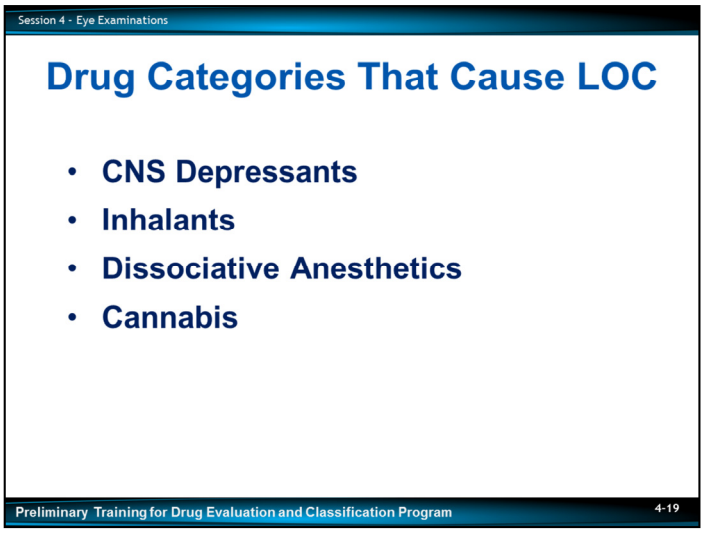


- Position the stimulus approximately 12 to 15 inches in front of the subject's nose in the same position we use for the HGN test
- Inform the subject you are going to move the stimulus around in a circle in front of his or her face and to follow the stimulus with his or her eyes only
- Inform the subject you will move the tip of the stimulus in toward the bridge of his or her nose
- Start to move the object slowly in a circle
- Verify the subject is tracking the stimulus
- Stop moving in a circular manner with the stimulus above eye level
- Slowly move the stimulus down to within approximately two inches of the bridge of the nose
- Carefully observe the subject's eyes to determine whether both eyes converge on the stimulus
- It is recommended the DRE repeat the check for LOC (i.e., conduct the check at least two times)



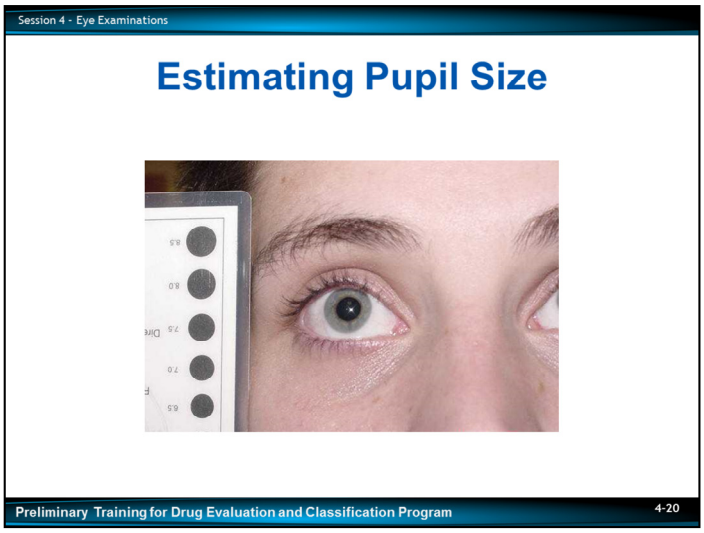
- If the eyes converge (cross) when the stimulus is approximately two inches from the bridge of the nose, then LOC is "not present"
- LOC is present if the subject's eyes do not come together and cross as they track and stay aligned on the stimulus
- In a non-impaired subject, the eyes should come together (converge) and remain converged for one second
- If the eyes do not converge or remain converged on the stimulus for one second, then LOC is present

Participant Practice
Participants' initial practice of the test for LOC.



Drug categories which usually cause LOC include:

- CNS Depressants
- Inhalants
- Dissociative Anesthetics
- Cannabis



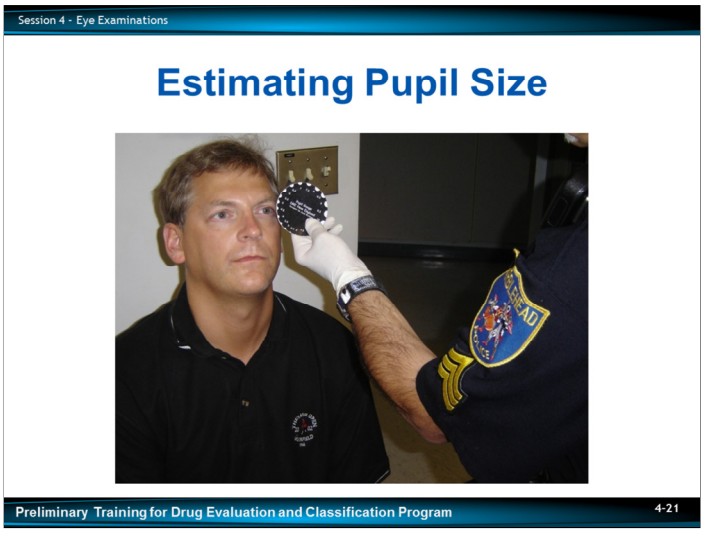
Estimation of Pupil Size

We use a device called a pupillometer to estimate the size of the subject's pupil.

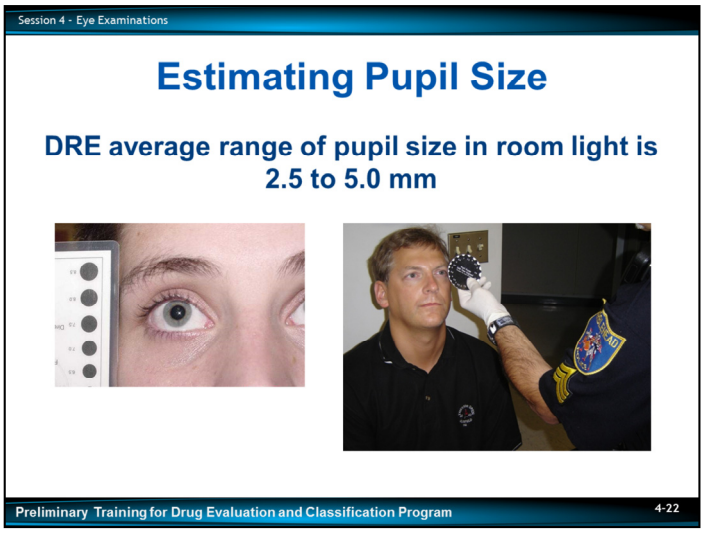
The DRE pupillometer has a series of circles or semi-circles with diameters usually ranging from 1.0 mm to 10.0 mm in half millimeter increments.

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

The pupil size estimations are recorded as the numeric value that corresponds to the diameter of the circle or semi-circle closest in size to the subject's pupil in each lighting condition.



Participants' Initial Practice of Pupil Size Estimation



8.5 or larger
8.0
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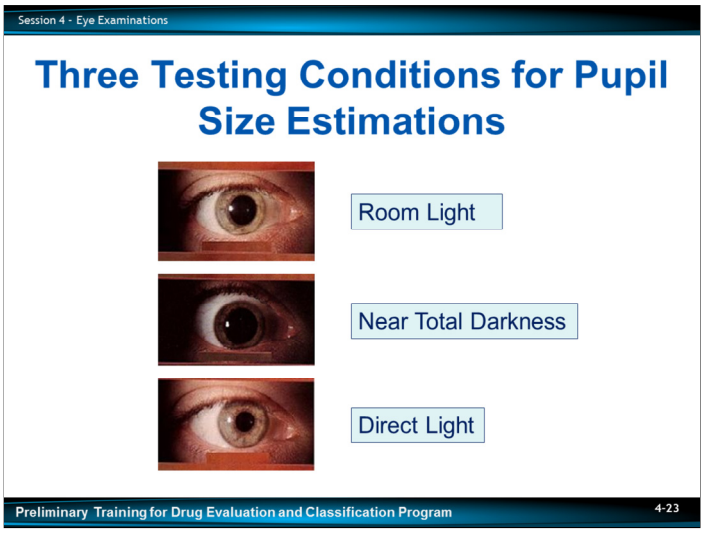


Three Lighting Conditions

We estimate pupil size under three (3) different lighting conditions:

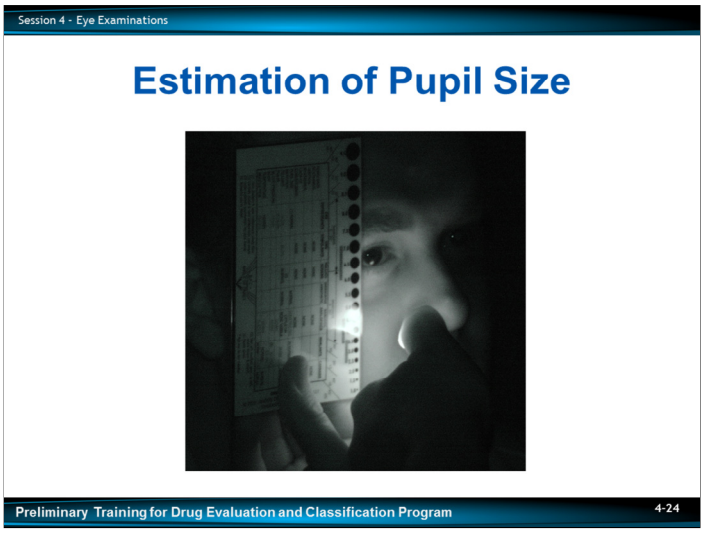
- Room Light
- Near Total Darkness
- Direct Light

Different testing conditions create different demands on the autonomic nervous system, including the pupil.

Examining the pupils in three different lighting conditions is similar to examining other clinical indicators, i.e., pulse or blood pressure in different conditions.

In the Drug Evaluation and Classification (DEC) Program and DRE training we use the terms “Normal,” “Average,” “Average Ranges,” or “DRE Average Range”.

“Normal” means a range of values which represents the “middle” or “typical” value the majority of non-impaired people would be expected to exhibit or have in a specific test.



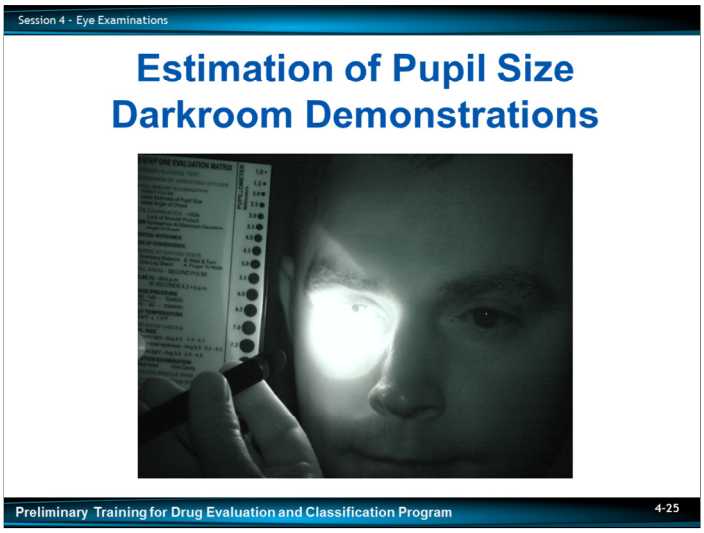
Estimation of Pupil Size under Room Light

- Pupils are examined in Room Light prior to darkening the room

Estimation of Pupil Size under Near Total Darkness and Direct Light

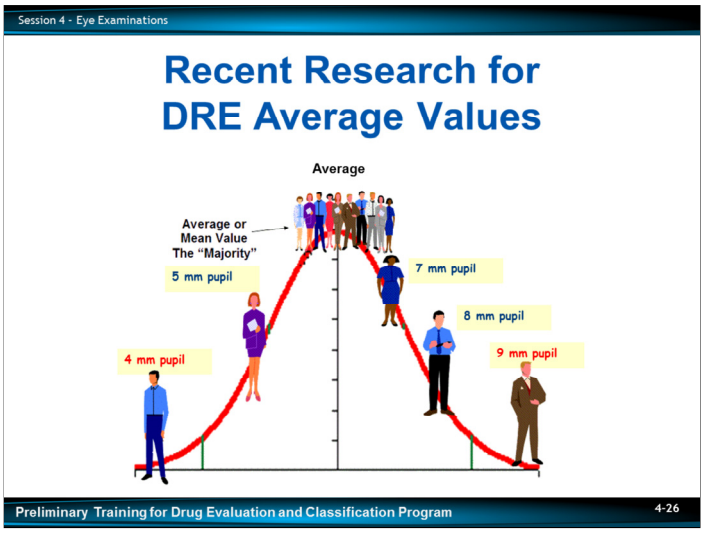
The final two pupil size estimations are made with the use of a penlight in a near totally darkened room.

- Prior to estimating the pupil sizes, we darken the room and wait approximately 90 seconds to allow both the subject's eyes and our own to adapt to the dark
- For the estimation under Near Total Darkness, completely cover the tip of the penlight with your finger or thumb so only a slight glow is exhibited and no white light emerges
- Bring the glowing tip up toward the subject's left eye until you can distinguish the pupil from the colored portion of the eye (iris)
- Position the pupillometer alongside the pupil (left eye first) and locate the circle or semi-circle closest in size to the pupil
- Repeat the procedure for the subject's right eye



- For the estimation under Direct Light, from a darkened environment, quickly illuminate the left eye and hold it there for a minimum of 15 seconds
- This can be accomplished by activating the penlight pre-positioned in front of the eye, or by activating the penlight with the light covered and positioned in front of the eye
- The objective is to capture an accurate assessment of the reaction to light by minimizing the pupil's exposure to light before the penlight can be directed solely into the eye
- The penlight should be positioned so the beam just "fits" or approximately fills the eye socket
- Bring the pupillometer up alongside the left eye and find the circle or semi-circle closest in size to the pupil
- Repeat the procedure for the right eye

Average Sizes for the Pupil
Since we estimate pupil size under three different lighting conditions (Room Light, Near Total Darkness, and Direct Light) the range of pupil sizes will vary.



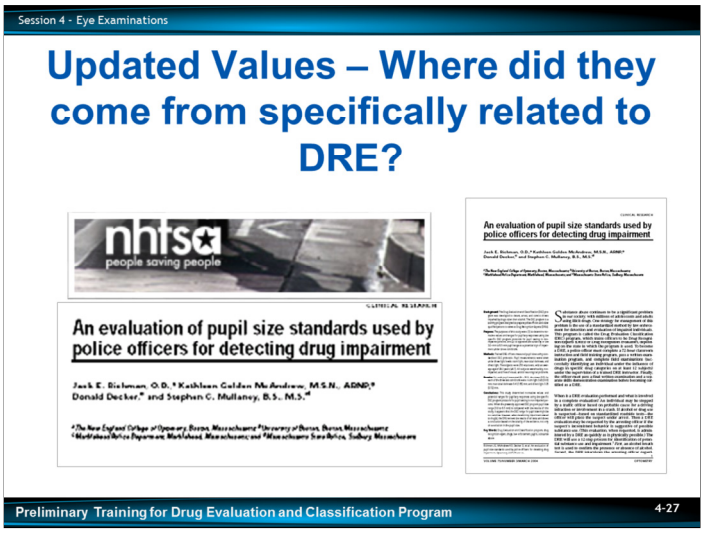
Basic Concepts Relative to Interpreting Pupil Sizes

It is important to understand a few basic concepts relative to interpreting pupil sizes. Understanding these concepts will allow DREs to better understand the relationship of pupil size to impairment.

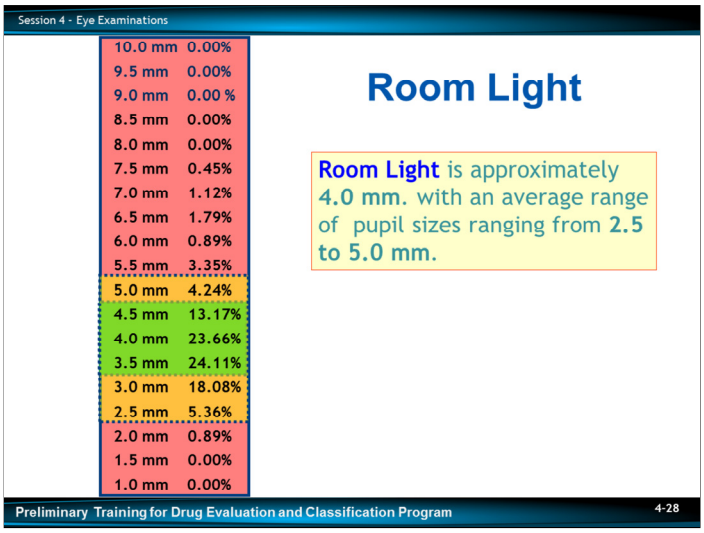
Mean values and average ranges: scientifically validated studies were conducted to determine normative values for pupil size in non-impaired persons. These studies show what one would expect a person to exhibit when their pupil sizes are checked under different lighting conditions. Sometimes average means "in the middle" or sum of all numbers divided by the number in a particular group. What we use for interpretation purposes are "average ranges" of pupil sizes.

- As a DRE, you will be making your decision of impairment based on clinical, psychophysical, and behavioral indicators
  - This includes using pupil sizes as one of the factors in determining that impairment

- With many people, even under very bright light, the pupils won't constrict much below a diameter of 2.0 mm and, even under near total dark conditions, the pupils usually only dilate to a diameter of not more than 8.5 mm

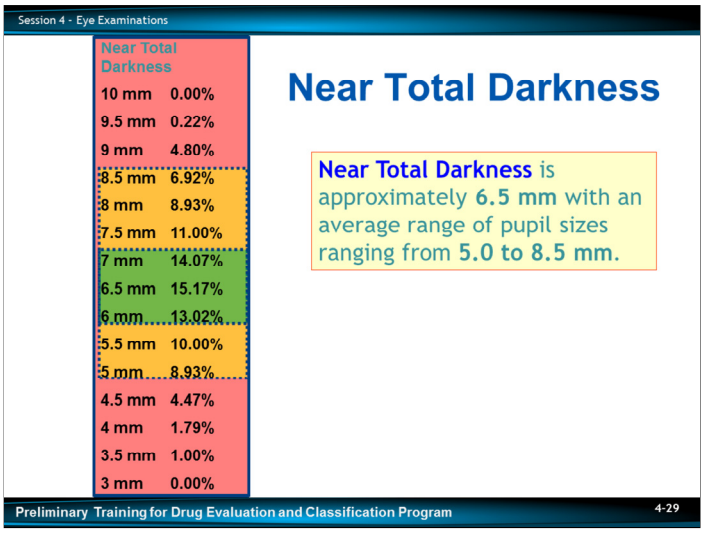


- Studies have indicated there are significant differences between the average pupil size in these three conditions
- Consequently, the use of three distinct pupil sizes range for each of the different testing conditions may be more useful to determine impairment versus non-impairment



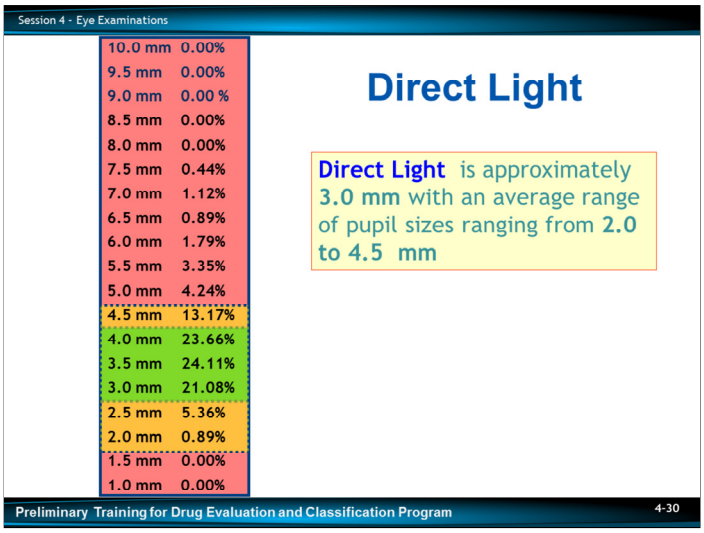
Room Light is approximately 4.0 mm with an average range of pupil sizes of 2.5 to 5.0 mm.

- 88% of non-impaired subjects fall within the range of 2.5 to 5.0 mm
- In fact, 61% of non-impaired subjects fall within 3.5 to 4.5 mm



Near Total Darkness is approximately 6.5 mm with an average range of pupil sizes of 5.0 to 8.5 mm.

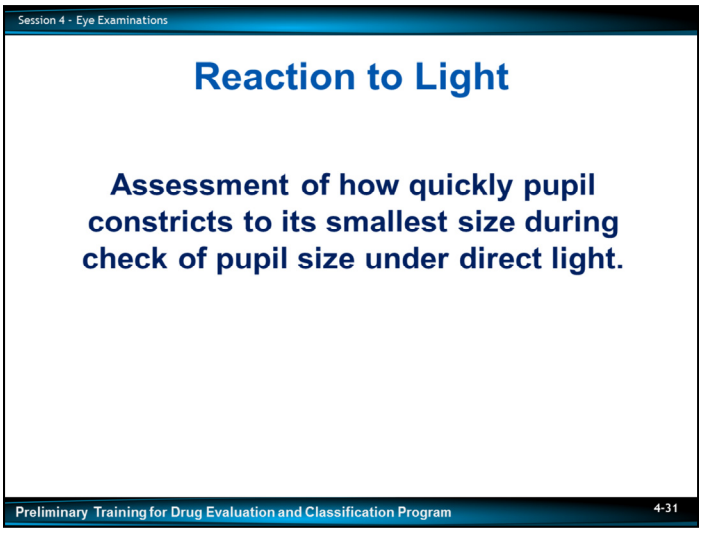
- About 88% of non-impaired subjects fall within the range of 5.0 to 8.5 mm
- In fact, 53% of non-impaired subjects fall within 6.0 to 7.5 mm



Direct Light is approximately 3.0 mm with an average range of pupil sizes of 2.0 to 4.5 mm.

- 88% of non-impaired subjects fall within the range of 2.0 to 4.5 mm
- In fact, almost 69% of non-impaired subjects fall within 3.0 to 4.0 mm

Many drugs, however, will affect the dilation or constriction of the pupils and many cause the pupil size to go outside these ranges.



Reaction to Light
Assessment of how quickly the pupil constricts to its smallest size 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 the subject's 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

For DRE purposes, we consider the pupil's reaction to be slow if it takes more than one second to reach its smallest size.

- Hold the direct light on the subject's eye for a minimum of 15 seconds to assess pupil reaction
- 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

Participants' initial practice in assessing the pupil's reaction to light.

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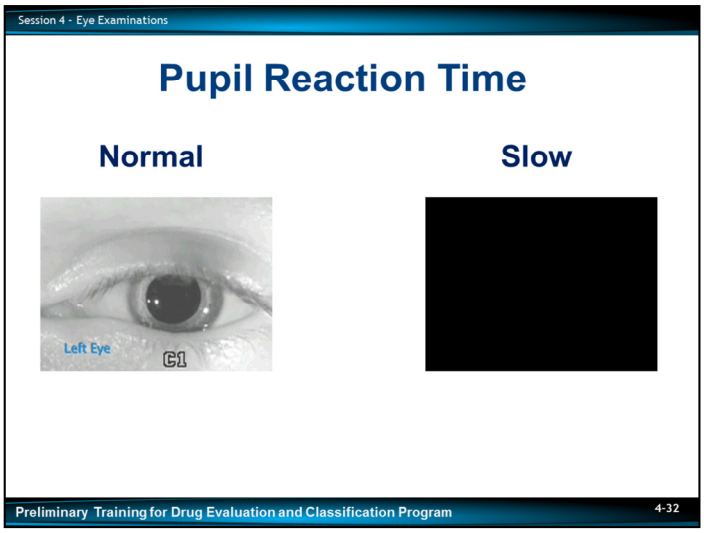
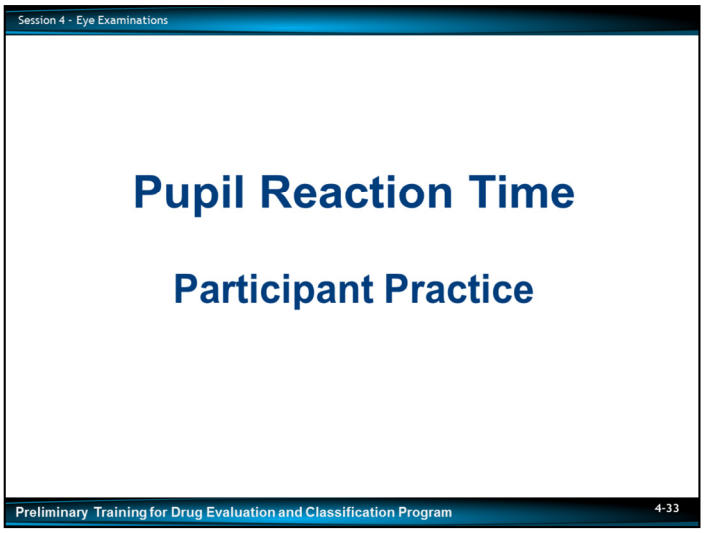


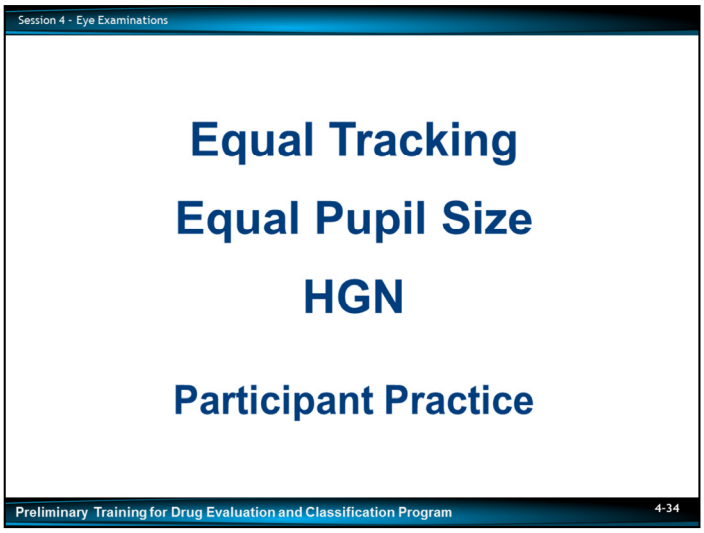
The check of the pupil's Reaction to Light takes place at the same time as the test of pupil size under Direct Light.

- Observe the subject's pupil size as the penlight is aimed directly at the subject's 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
- For DRE purposes, we consider the pupil's reaction to be slow if it takes more than one second to reach its smallest size
- Under the influence of certain categories of drugs, the pupil's reaction may be very sluggish or there may be no visible constriction at all



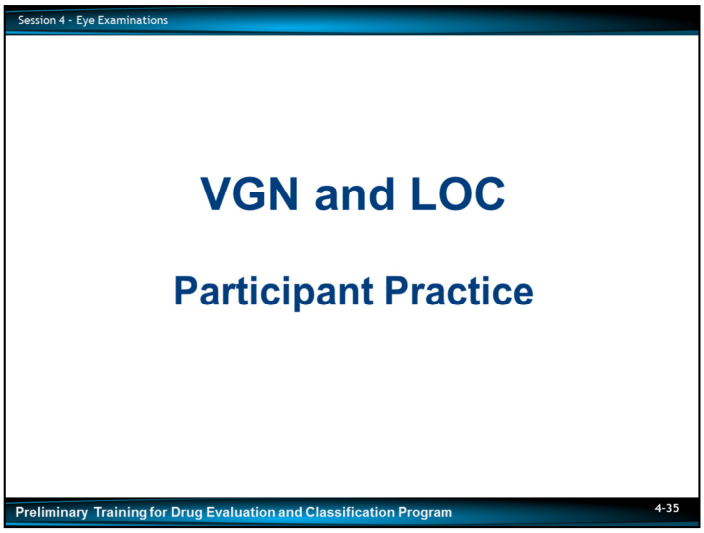
Participant Practice

Participants' initial practice in measuring the pupil's Reaction to Light.

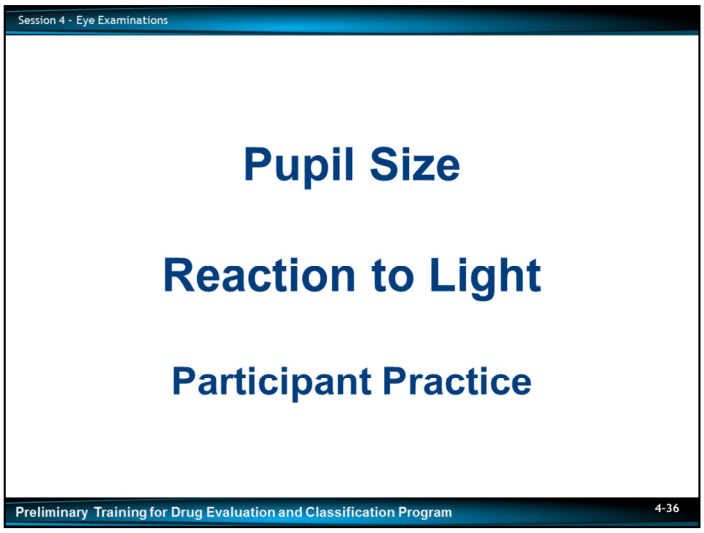


C. <u>Demonstrations</u>

Estimation of the Angle of Onset



Demonstration of VGN and LOC

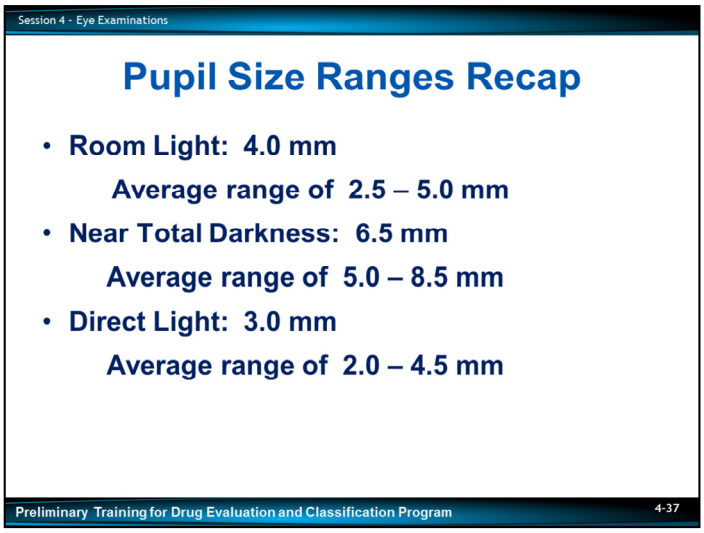


Demonstration of Pupil Size Estimation and Test for Reaction to Light

- Pupil size estimation under Room Light
- Darkroom estimations of pupil size

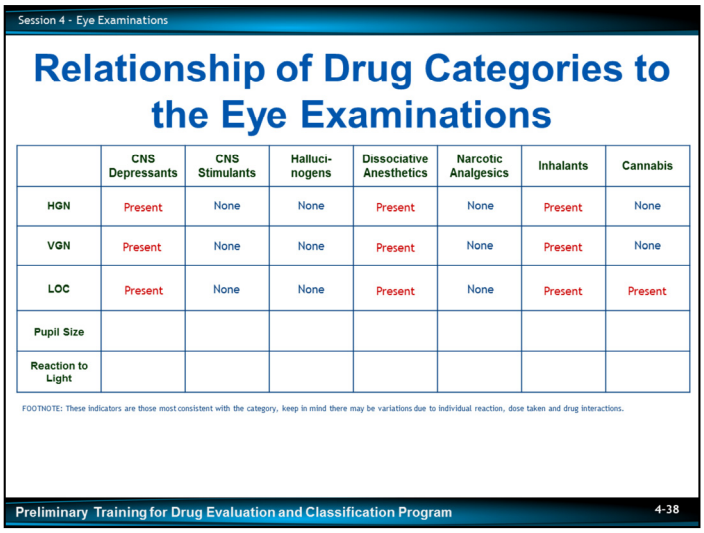
The checks of Pupil Size, Equal Tracking, and Reaction to Light provide useful indicators of the possible presence of many drug categories.

- CNS Depressants, CNS Stimulants, and Inhalants will usually cause the pupils to react slowly to light
- CNS Stimulants, Hallucinogens, and Cannabis usually will cause the pupils to dilate
- Narcotic Analgesics will usually cause the pupils to constrict with little or no visible reaction to light



To review, the DRE pupil size ranges for the majority of non-impaired people generally are:

- Room Light: 4.0 mm with an average range of 2.5 – 5.0 mm
- Near Total Darkness: 6.5 mm with an average range of 5.0 – 8.5 mm
- Direct Light: 3.0 mm with an average range of 2.0 – 4.5 mm



D. <u>Relationship of Drug Categories to the Eye Examinations</u>

Three of the seven drug categories normally will cause HGN.

- CNS Depressants, Inhalants, and Dissociative Anesthetics normally will cause HGN
- The other four categories normally will not cause HGN
- Any drug that will cause HGN also will cause VGN, if a high enough dose of the drug is taken
- Depressants, Inhalants, and Dissociative Anesthetics can all cause VGN at higher doses for that individual
- But if a drug will not cause HGN, then it will not cause VGN

All drugs that cause nystagmus also will cause the eyes to be unable to converge.

- Therefore, Depressants, Inhalants, and Dissociative Anesthetics, including PCP and its analogs usually will cause LOC.

Interestingly, there is one category of drug that does not cause nystagmus but usually does cause LOC.

Cannabis usually does cause LOC, even though it does not cause nystagmus.

The other three categories do not cause a LOC.

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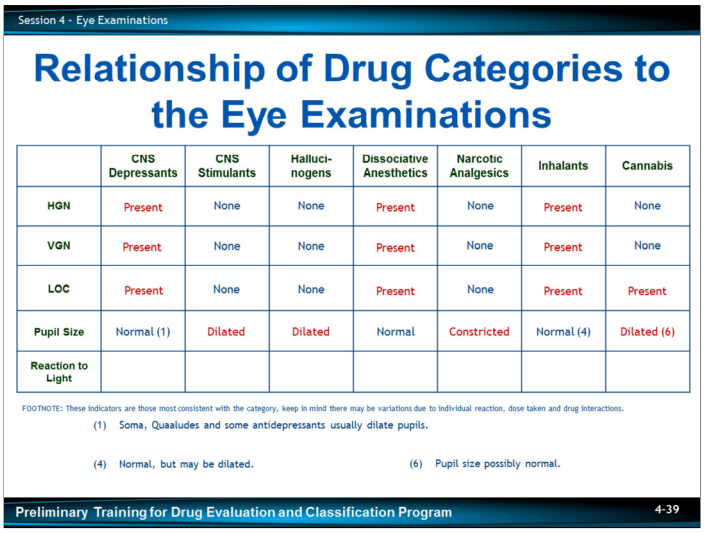


An interesting and important fact is the drugs that cause nystagmus usually don't affect pupil size and the drugs that don't cause nystagmus usually do affect pupil size.

CNS Stimulants and Hallucinogens usually cause the pupils to become larger or "dilated."

Cannabis may cause the pupils to dilate.

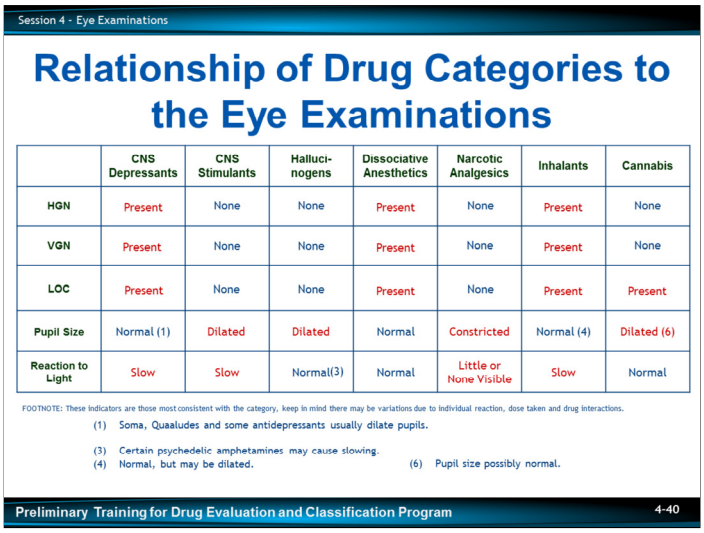
Narcotic Analgesics usually cause the pupils to become smaller or "constricted."

Dissociative Anesthetics and most Inhalants tend to leave pupil size in the average ranges.

CNS Depressants also usually leave the pupils near the average range.

However, there are some exceptions, i.e., Depressant drugs that usually dilate the pupils.

Soma, Quaaludes, and some antidepressants usually dilate pupils.

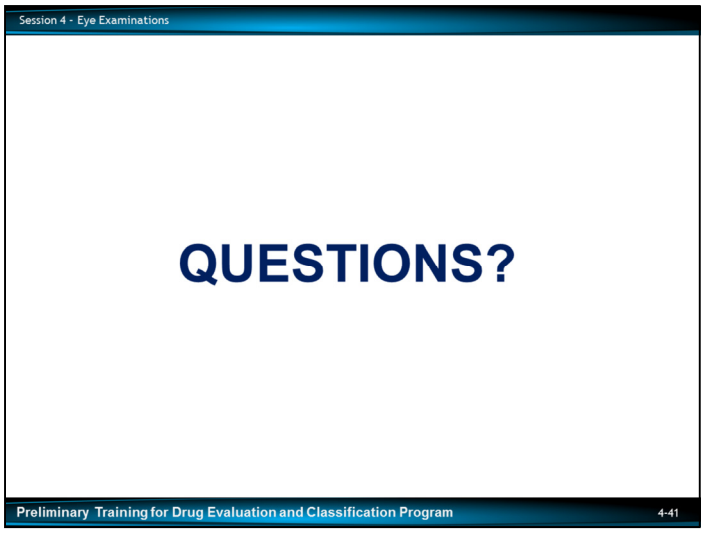


Generally, the pupillary reaction to light is either slowed by the effect of the drug or the pupil reacts normally. This effect may be difficult to observe with Narcotic Analgesics. Though there is always some reaction to light, the constricted pupil caused by Narcotic Analgesics makes it difficult to perceive a change in the pupil size.

CNS Depressants and CNS Stimulants usually cause a slowed Reaction to Light.

With Hallucinogens, Dissociative Anesthetics, and Cannabis the pupillary Reaction to Light is usually normal.

Inhalants will usually slow pupillary reaction.


Session 4 - Eye Examinations
QUESTIONS?
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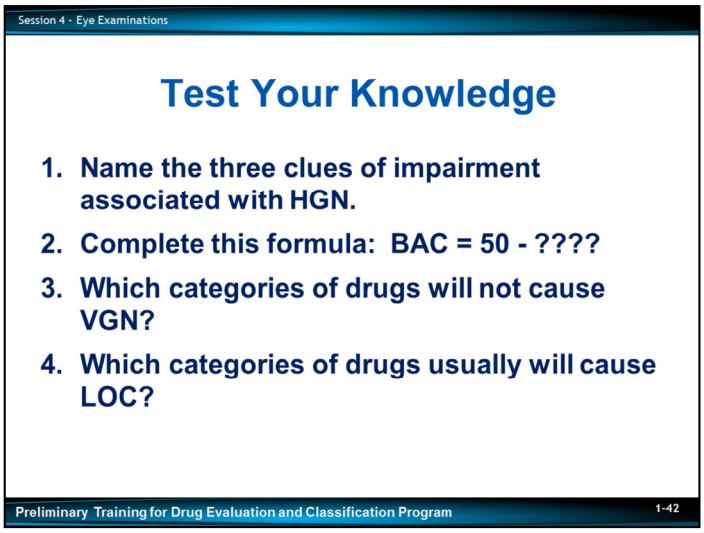

Test Your Knowledge

1. Name the three clues of impairment associated with HGN.

_____

_____

_____

2. Complete this formula: BAC = 50 - ???? _____

3. Which categories of drugs will not cause VGN?

_____

_____

_____

_____

4. Which categories of drugs usually will cause LOC? ***CNS Depressants, Inhalants, Dissociative Anesthetics, Cannabis***

_____

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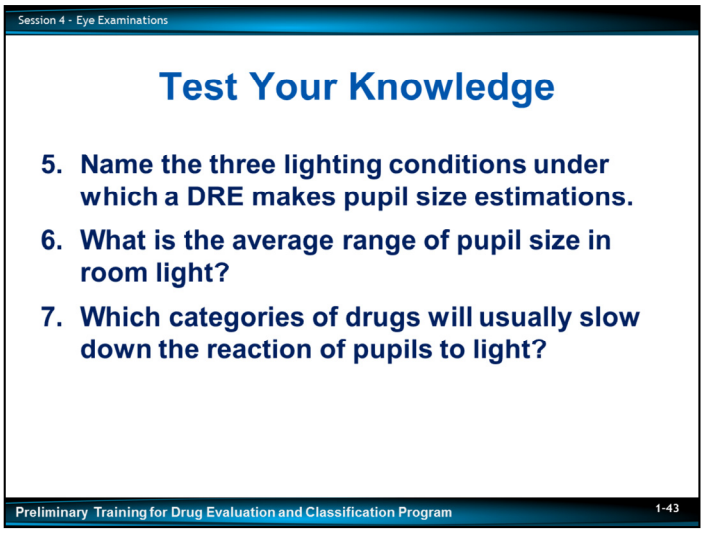

5. Name the three lighting conditions under which a DRE makes pupil size estimations.

_____

_____

_____

6. What is the average range of pupil size for room light? _____

7. Which categories of drugs will usually slow down the reaction of the pupils to light?

_____

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Understanding the Terms "Normal" vs. "Average"
in the DRE Opinion and Decision Making Process

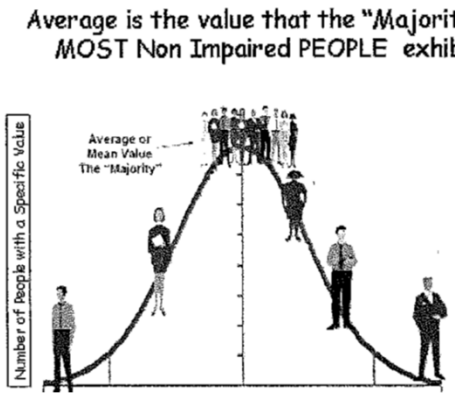
Dr. Jack E. Rickman, O.D., New England College of Optometry (Retired), Don Decker, Massachusetts DRE State Coordinator, Charles Hayes, International Association of Chiefs of Police – DRE Regional Operations Coordinator.

The Drug Evaluation and Classification (DEC) training program and the Drug Recognition Expert (DRE) examination process utilizes a standardized and systematic process assessing a variety of physical indicators to identify drug-impaired drivers. ("Drug Evaluation and Classification Program 7-Day School Training manual, 2013"). These indicators are also referred to as signs and symptoms and are based on accepted information within the medical and health care community ("Drug Effects on Psychomotor Performance" Randall C Baselt, Ph.D., Biomedical Publications).

During a DRE drug influence evaluation, the DRE uses controlled and standardized methods to assess a person's pulse, blood pressure, body temperature, pupil size, reaction to light and psychomotor functions. The DRE also evaluates the suspect's visual tracking, smooth pursuit and Horizontal and Vertical Gaze Nystagmus (HGN and VGN).

A DRE is trained to reach a conclusion (opinion) of the person's condition based on the interpretation of all these signs and indicators as well as the facts of the situation in its entirety. An opinion is not based simply on one or two elements of the evaluation, but on the totality of the information gained during the investigation.

Many of the DRE evaluation results involve the concept of "normal" or average values or average ranges therefore it is important that the DRE understand the concept of physical indicators of impairment and how they relate to their opinion making process.
Average values or ranges are based on the values for the majority of healthy non-impaired people. Average within the DRE process is the number that represents the value that the majority of non-impaired people would exhibit or have in a specific test. (Refer to graph below)



For example, the “average” or “mean value” for pupil size in near total darkness is 6.5 mm. This means that when all the sizes were measured in a large number of pupils in healthy non-impaired adults, the majority of the people had a pupil size approximately 6.5 mm. (“An Evaluation of the Pupil Size Standards Used By Police Officers for Detecting Drug Impairment” by Richman, McAndrew, Decker, and Mullaney, *Optometry, Match 2004*)

In scientific and clinical information, the terms “mean”, “average” or “average range” are commonly used. Average range typically means a range of values or results that are “close to” average, but can be plus (above) or minus (below) from the “average” value for the majority of healthy non-impaired people.

Average then is a quantity that represents the middle or typical value that the majority of healthy non-impaired people would exhibit in a specific test, i.e., pupil size, pulse rate, body temperatures. The average or mean value is the total of a group of numbers divided by the total number of values in the group typically using a standard deviation. For example, a group of non-impaired males and females would be given a specific test, e.g., pupil size estimation in near total darkness, and the results were determined for the averages in order to create the reference range for that group. Though the average pupil size was approximately 6.5 mm, the average range for the majority of non-impaired subjects was 5 mm to 8.5 mm. (Richman, et al).

In the DEC Program, the use of the terms “normal”, “average”, “average ranges” or “DRE average range” are often used interchangeably. There are situations where a DRE uses the term “normal” when referring to a non-impaired result for a particular function or test. But since the DRE does not know what “normal” is for the individual being tested, a better and more accurate descriptor would be with the “DRE average ranges” which relate to values for healthy non-impaired persons for that particular function of test. If a DRE deems that a result is “normal” or within the “normal ranges” it does not mean the person is normal from a medical standpoint. A DRE does not make a medical diagnosis which is beyond the scope and purpose of the DRE evaluation.

Summary:
From the DRE perspective the closer the test finding is to the average value for the majority of non-impaired people, the more likely the person is not exhibiting impairment in that particular function or test.

The further from the test finding to the average value for the majority of non-impaired people and the edge of the “average range for the majority of non-impaired people”, the more likely the person is exhibiting an effect related to impairment in the particular function or test.
The further the finding outside the average range for the majority of non-impaired people the greater the likelihood that the person is exhibiting impairment in the particular function or test.

CEH
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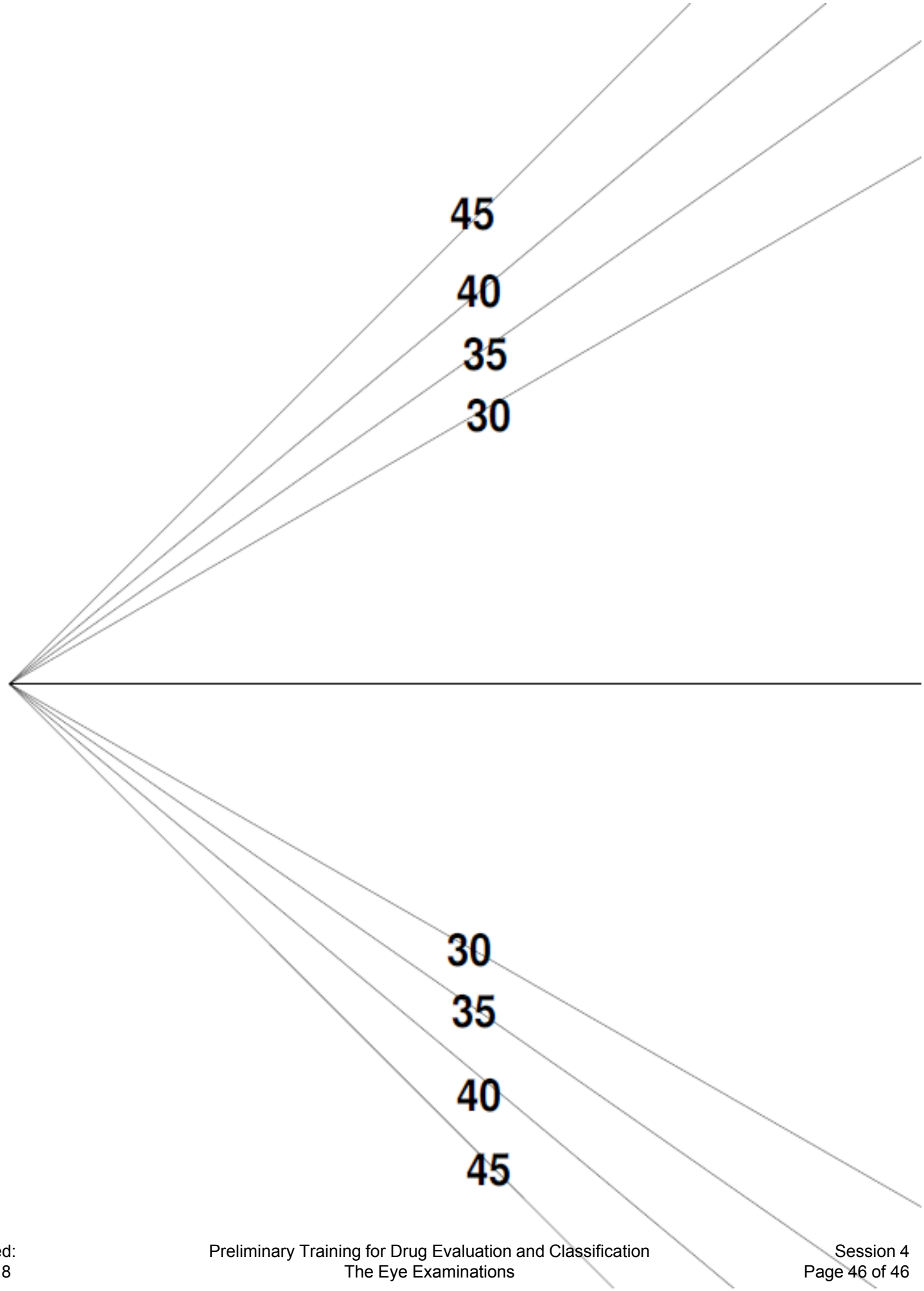
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Preliminary Training for Drug Evaluation and Classification Program
Session 5 – Alcohol Workshop
NHTSA
TSI
February 2018


Session 5 - Alcohol Workshop
2 Hours
Session 5
Alcohol Workshop
TSI
NHTSA
Preliminary Training for Drug Evaluation and Classification Program
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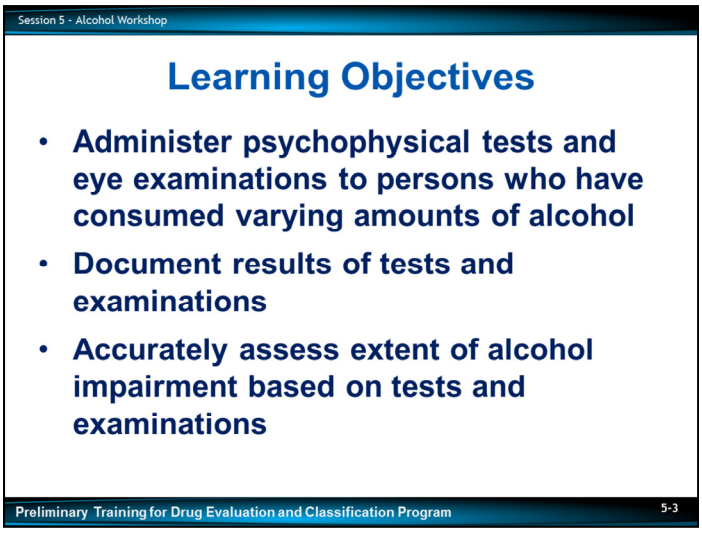


Upon successfully completing this session, the participant will be able to:

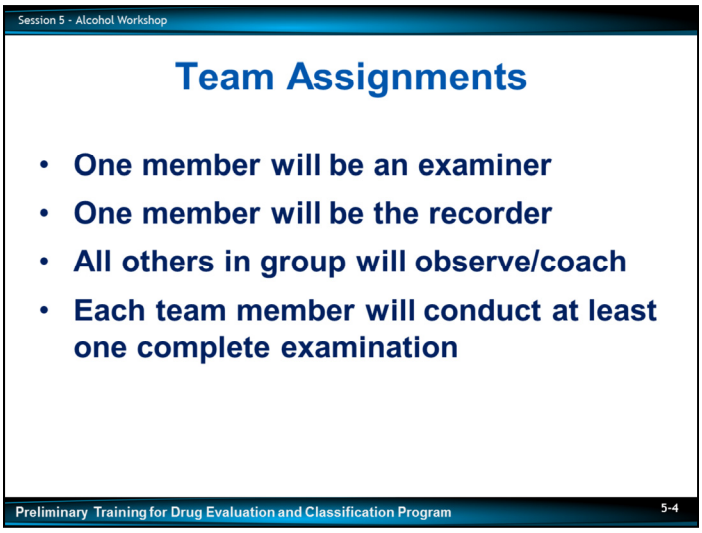
- Administer the psychophysical tests and the eye examinations to persons who have consumed varying amounts of alcohol
- Document the results of these tests and examinations
- Accurately assess the extent of a person's alcohol impairment based on the tests and examinations

CONTENT SEGMENTS

A. Assignments and Procedures
B. Testing
C. Feedback and Discussion
D. Alcohol Workshop Checklist

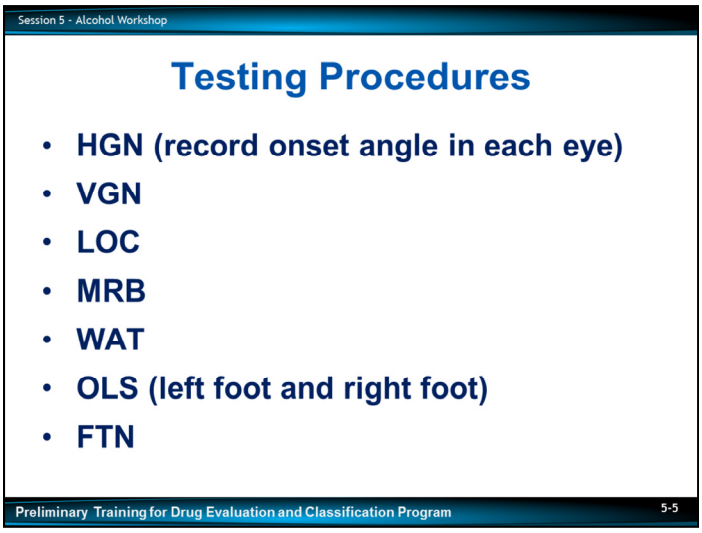
LEARNING ACTIVITIES

Hands-on Practice
Participant-Led Presentations



A. <u>Assignments and Procedures</u>

Team Assignments

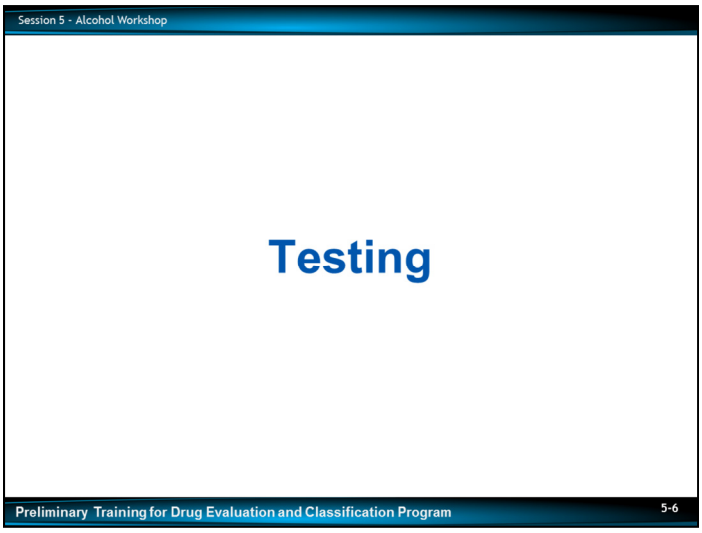


Explanation of Testing Procedures

Each team will conduct the following sequence of tests and examinations on each volunteer:

- Horizontal Gaze Nystagmus (HGN) (record angle of onset in each eye)
- Vertical Gaze Nystagmus (VGN)
- Lack of Convergence (LOC)
- Modified Romberg Balance (MRB)
- Walk and Turn (WAT)
- One Leg Stand (OLS) (standing on left leg)
- OLS (standing on right leg)
- Finger to Nose (FTN)

Upon completing the test and examinations, the team members will record their best estimate as to the volunteer's blood alcohol concentration (BAC).

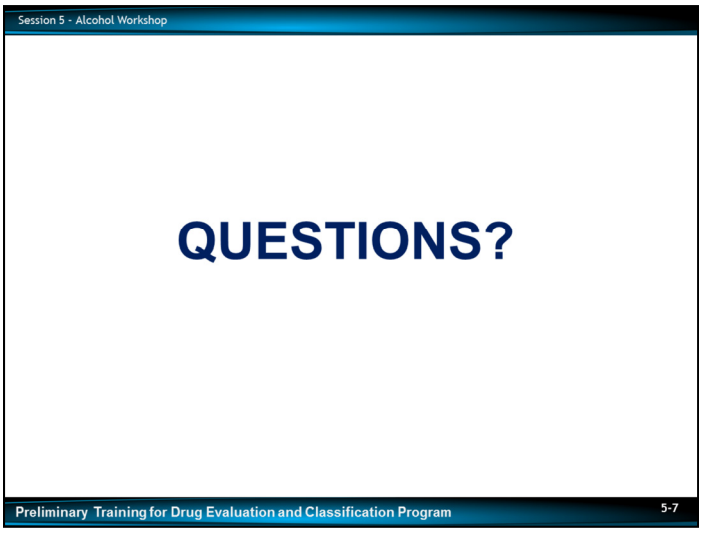


B. Testing

C. Feedback and Discussion

D. Alcohol Workshop SFST Proficiency Checklist

Refer to SFST Proficiency Checklist


Session 5 - Alcohol Workshop
QUESTIONS?
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ALCOHOL WORKSHOP PARTICIPANT STATEMENT OF INFORMED CONSENT

I, _____, hereby agree to participate in the alcohol
(Print Name)

workshop conducted on _____/_____/_____ by _____.
(Agency/Department)

I understand that I will consume alcohol, and may become impaired or intoxicated. I specifically agree that my participation as a volunteer drinker in this program makes it imperative that I refrain from driving for at least twelve hours following completion of the program.

I understand that, while participating in the program, I will be required to submit to breath tests to determine my blood alcohol concentration. I also understand that I will be required to submit to psychophysical examinations and other non-intrusive clinical tests to assess the extent of my impairment.

I represent that I am in good physical health, and that I am not an alcoholic. I attest that I am not now under the influence of alcohol or any other drug. I attest that I have not consumed any drug, medication, or other substance that would make my consumption of alcohol at this time inadvisable. I affirm that there exists no condition that should preclude my participation in this alcohol workshop as a volunteer drinker.

I have been informed of the purpose of this workshop, namely, to assist in training police officers to recognize and investigate persons impaired by alcohol and other drugs. I acknowledge that I may refuse to consume any or all of the alcohol offered to me during this workshop.
I also consent to being photographed or video recorded, by instructors, for training purposes only.

_____
Signature

Date _____/_____/_____ _____
Witness

PARTICIPANT PROFICIENCY EXAMINATION

STANDARDIZED FIELD SOBRIETY TESTs

Name_____ Date_____/_____/_____

Agency_____

I. HORIZONTAL GAZE NYSTAGMUS

1. ___ Have subject remove glasses if worn.
2. ___ Stimulus held in proper position (approximately 12”-15” from nose, just slightly above eye level).
3. ___ Check for equal pupil size and resting nystagmus.
4. ___ Check for equal tracking.
5. ___ Smooth movement from center of nose to maximum deviation in approximately 2 seconds and then back across subject’s face to maximum deviation in right eye, then back to center. Check left eye, then right eye. (Repeat)
6. ___ Eye held at maximum deviation for a minimum of 4 seconds (no white showing). Check left eye, then right eye. (Repeat)
7. ___ Eye moved slowly (approximately 4 seconds) from center to 45 angle. Check left eye, then right eye. (Repeat)
8. ___ Check for Vertical Gaze Nystagmus. (Repeat)

II. WALK AND TURN

1. ___ Instructions given from a safe position.
2. ___ Tells subject to place feet on a line in heel-to-toe manner (left foot behind right foot) with arms at sides and gives demonstration.
3. ___ Tells subject not to begin test until instructed to do so and asks if subject understands.
4. ___ Tells subject to take nine heel-to-toe steps on the line and demonstrates.
5. ___ Explains and demonstrates turning procedure.
6. ___ Tells subject to return on the line taking nine heel-to-toe steps.
7. ___ Tells subject to count steps out loud.
8. ___ Tells subject to look at feet while walking.
9. ___ Tells subject not to raise arms from sides.
10. ___ Tells subject not to stop once they begin.
11. ___ Asks subject if all instructions are understood.

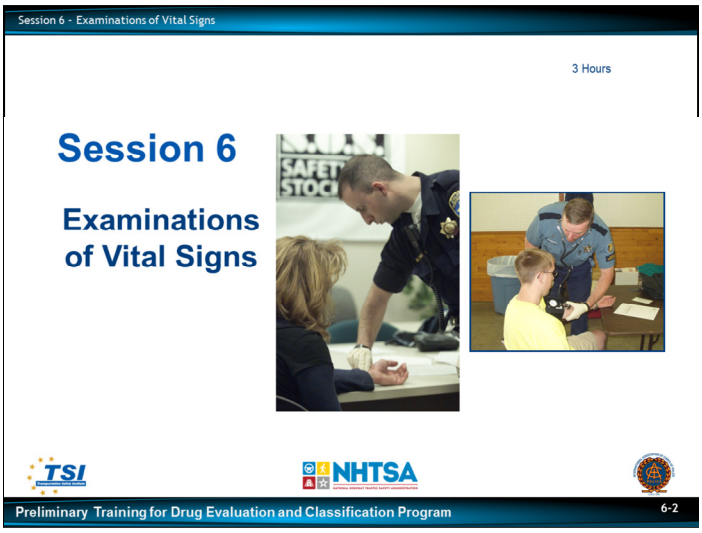
III. ONE LEG STAND

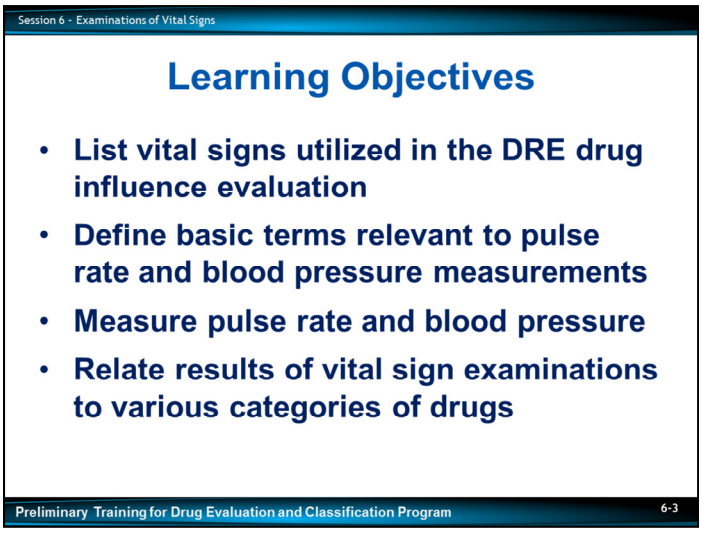
1. ___ Instructions given from a safe position.
2. ___ Tells subject to stand straight, place feet together, and hold arms at sides.
3. ___ Tells subject not to begin test until instructed to do so and asked if subject understands.
4. ___ Tells subject to raise one leg, either leg, approximately 6" from the ground, keeping raised foot parallel to the ground, and gives demonstration.
5. ___ Tells subject to keep both legs straight and to look at elevated foot.
6. ___ Tells subject to count out loud in the following manner: one thousand one, one thousand two, one thousand three, and so on until told to stop, and gives demonstration.
7. ___ Checks actual time subject holds leg up. (Time for 30 seconds.)

Instructor: _____

Note: In order to pass the proficiency examination, the student must explain and proficiently complete each of the steps listed.


Preliminary Training for Drug Evaluation and Classification Program
Session 6 – Examinations of Vital Signs
NHTSA
TSI
February 2018


Session 6 - Examinations of Vital Signs
3 Hours
Session 6
Examinations of Vital Signs
TSI
NHTSA
Preliminary Training for Drug Evaluation and Classification Program
6-2



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

- List the vital signs utilized in the Drug Recognition Expert (DRE) drug influence evaluation
- Define basic terms relevant to pulse rate and blood pressure measurements
- Measure pulse rate
- Measure blood pressure
- Relate the results of vital sign examinations to the various categories of drugs

CONTENT SEGMENTS

A. Purposes of the Examinations
B. Procedures and Cues
C. Demonstrations
D. DRE Ranges of Vital Signs
E. Relationship of Drug Categories to the Vital Signs Examinations
F. Practice

LEARNING ACTIVITIES

Instructor-Led Presentations
Participant-Led Demonstrations
Hands-on Practice

A. <u>Purposes of the Examinations</u>

The vital signs relevant to the drug influence evaluation process include:
- Pulse rate
- Blood pressure
- Temperature

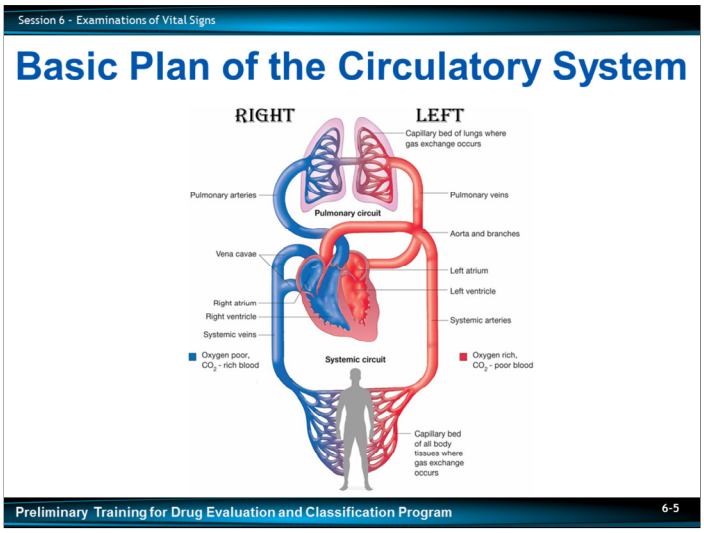
Different types of drugs affect these vital signs in different ways.

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
- Temperature may fall

Systematic examination of the vital signs gives us much useful information concerning the possible presence or absence of various categories of drugs.

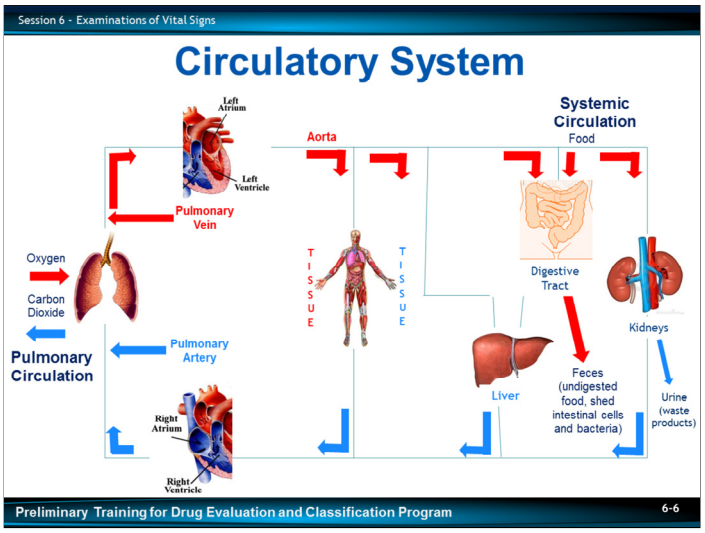


A Simple View of the Heart and Circulatory System
Before we look at the vital signs, we need to look at the circulatory system and how it works.

Heart and Circulatory System
Circulation is a closed system where blood is propelled by contractions of the heart.

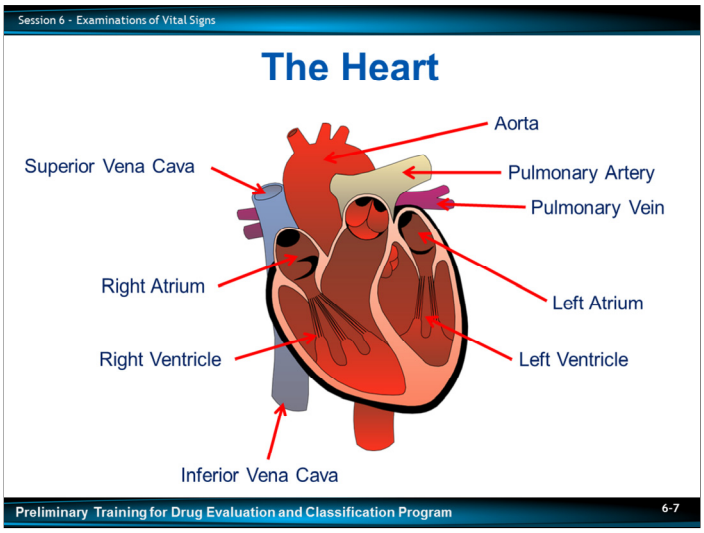
Blood is driven into arteries, arteries divide into smaller and smaller branches, and finally into meshwork of fine capillaries which pervade body tissues.

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.

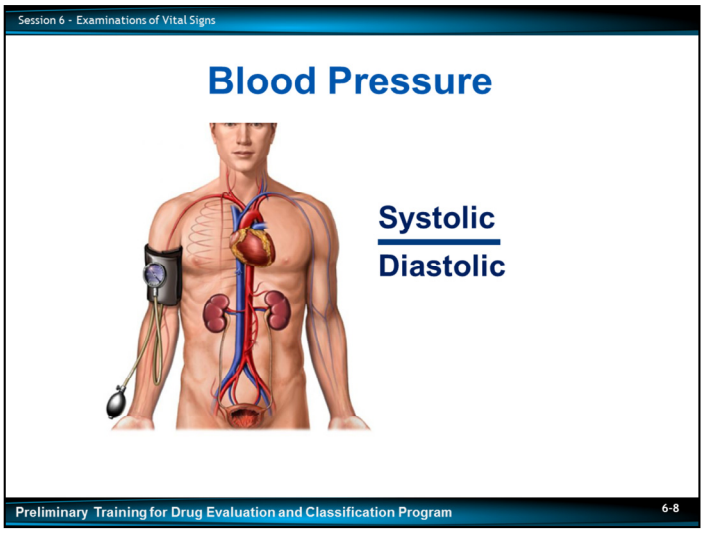
Heart rate is the number of beats per minute.

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 is the force exerted on the arteries by the circulating blood.

Blood pressure is categorized as systolic or diastolic.

Systolic pressure is the maximum force occurring during contraction.

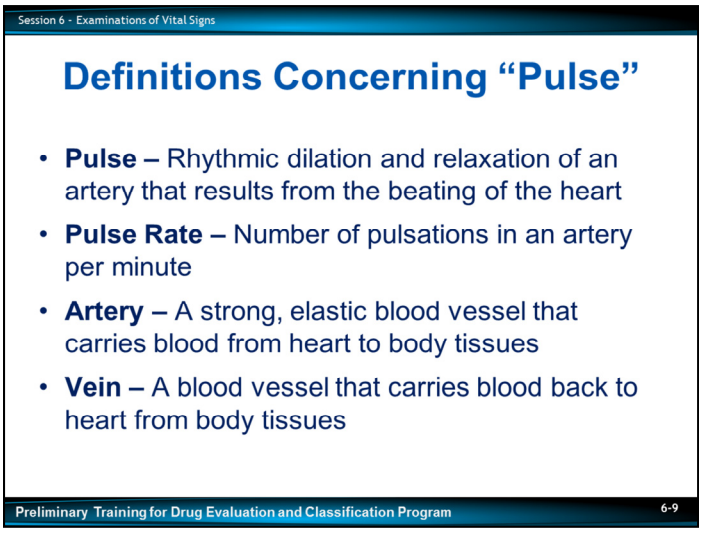
Diastolic pressure represents the minimum force occurring when the heart relaxes.
The DRE average range for systolic blood pressure is 120 to 140. The DRE average range for diastolic blood pressure is 70 to 90.

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

This will be covered in greater detail in the Physiology session in the 7-Day school.



B. <u>Procedures and Cues</u>

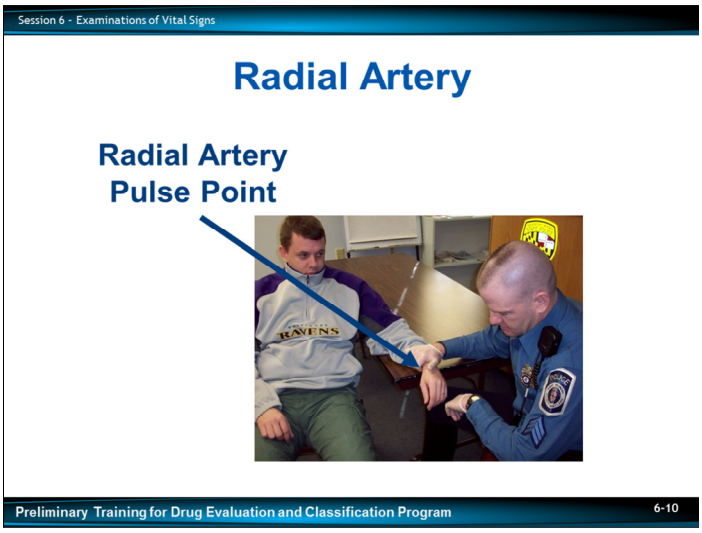
Measurement of Pulse Rate

- Pulse is the rhythmic dilation and relaxation of an artery that results from the beating 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 away from the heart
- 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.
Demonstrate this by holding your fingers on your own radial artery.

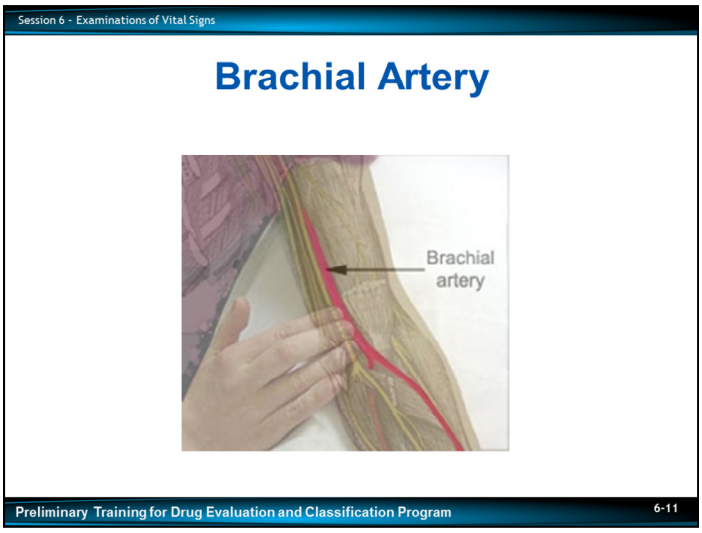
Pulse is easy to measure once you locate an artery close to the surface of the skin.



Radial Artery

One convenient pulse point involves the radial artery.

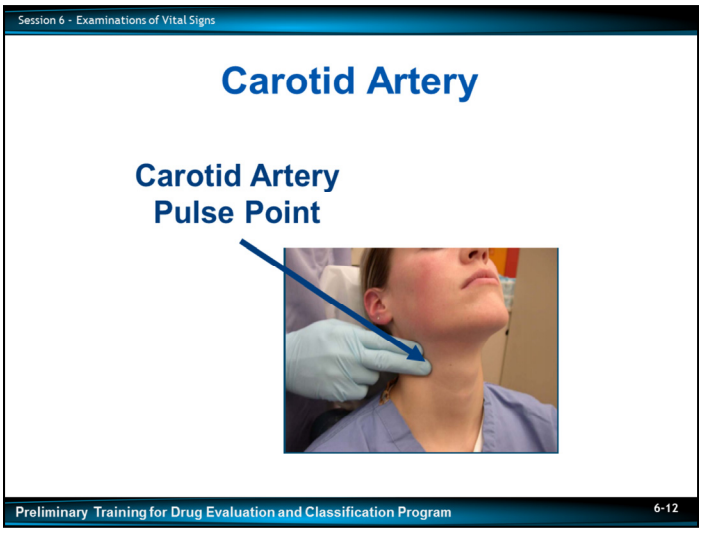
- The radial artery can be located in or near the natural crease of the wrist, on the side of the wrist next to the thumb
- Hold your left hand out, with the palm down
- Place the tips of your right hand's index finger and middle finger into the crease of your left wrist and exert a slight pressure
- Allow your left hand to curl downward or have the subject hold his or her hand in a position that will best permit the DRE to measure the radial pulse point
- You should be able to feel the pulse in your radial artery



Brachial Artery

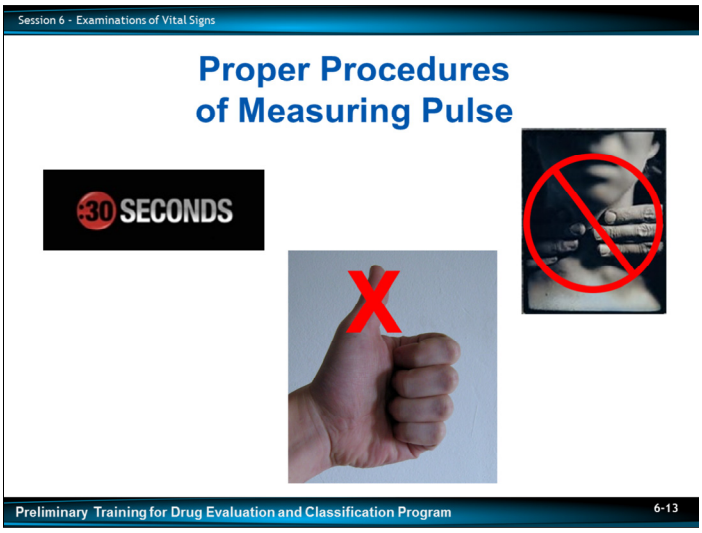
Another pulse point involves the brachial artery.

- 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
- Hold your left hand out, with the palm up, and point to the brachial artery
- 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
Another pulse point involves the carotid artery.

- The carotid artery can be located in the neck, on either side of the middle of the throat ("Adam's Apple")
- Place the tips of your right hand's index and middle fingers alongside the right side of your "Adam's Apple" or the center of the throat
- You should be able to feel the pulse in your carotid artery

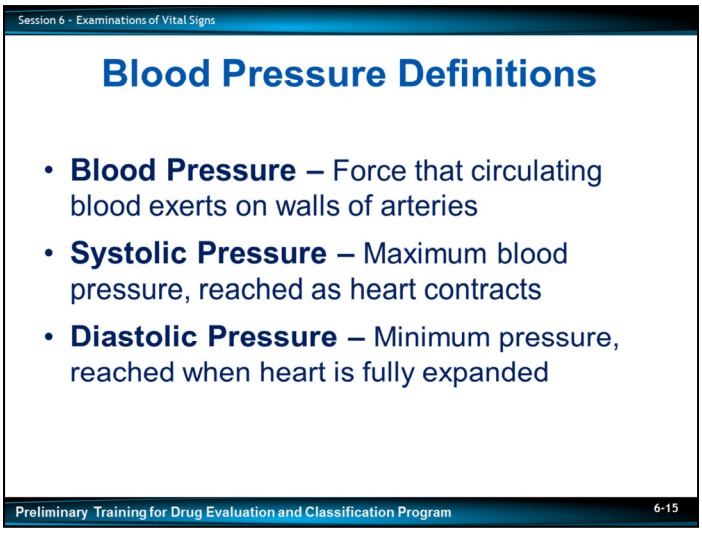


Proper Procedures of Measuring Pulse

- When measuring the pulse rate, use 30 seconds as the standard time interval
- Don't use your thumb to apply pressure while measuring a subject's pulse
- If you use the carotid artery pulse point, don't apply pressure to both sides of the middle of the throat: this can cut off the supply of blood to the brain

Participants' Initial Practice at Measuring Pulse Rate

50 or less____	76-78____
52-54____	80-82____
56-58____	84-86____
60-62____	88-90____
64-66____	92-94____
68-70____	96-98____
72-74____	100+____



Measurement of Blood Pressure

Blood pressure is the force that the circulating blood exerts on the walls of the arteries.

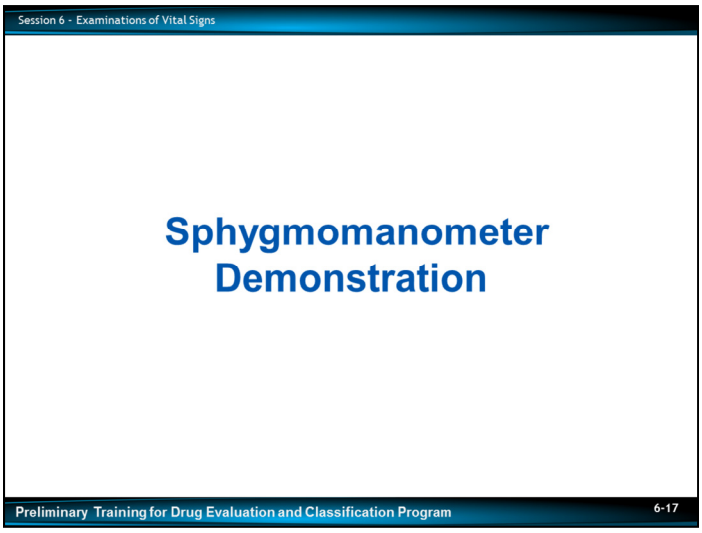
- Blood pressure changes constantly as the heart cycles between contraction and expansion
- Blood pressure reaches its maximum as the heart contracts and sends the blood surging through the arteries
  - This is called the systolic pressure
- Blood pressure reaches it minimum when the heart is fully expanded
  - This is called the diastolic pressure
- It is always necessary to measure and record both the systolic and diastolic blood pressure

Memory aid:

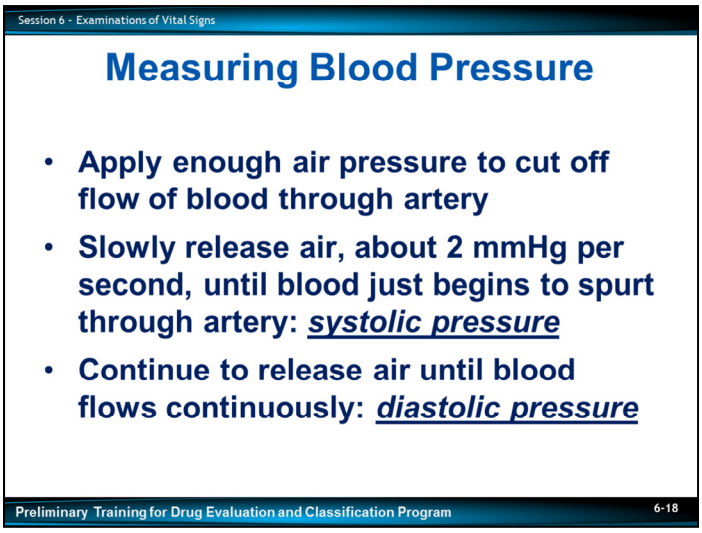
- **Systolic: "S" for "Superior"**
- **Diastolic: "D" for "Down"**

The device used for measuring blood pressure is called a sphygmomanometer.

The sphygmomanometer has a special cuff that can be wrapped around the subject's arm and inflated with air pressure.

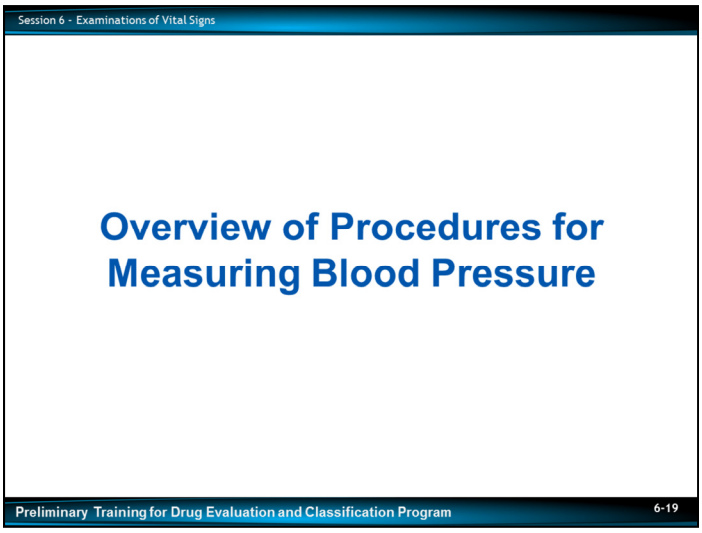


- As the pressure in the cuff increases, the cuff squeezes tightly on the arm
- When the pressure gets high enough, it will squeeze the artery completely shut
- Blood will cease flowing through the brachial artery. Since the brachial artery "feeds" the radial artery, blood will also cease flowing through 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
- Eventually, the pressure will drop enough so 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

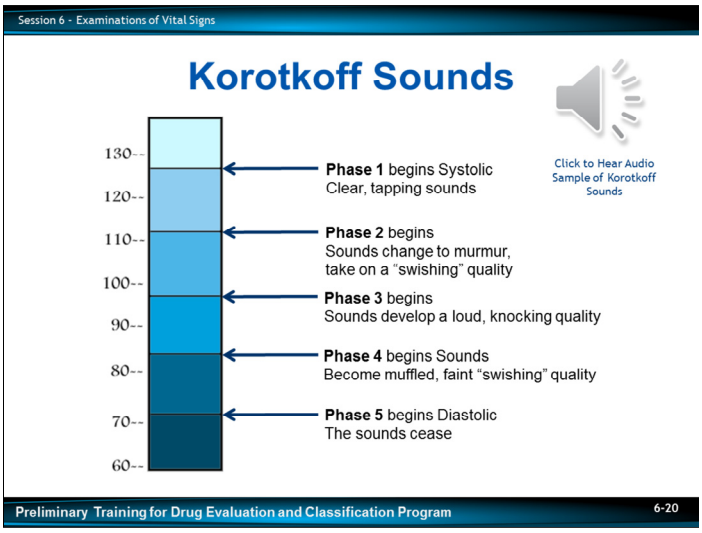


Overview of Procedures for Measuring Blood Pressure

- Apply enough air pressure to the cuff to cut off the flow of blood through the artery (approximately 180 mmHg)
- 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



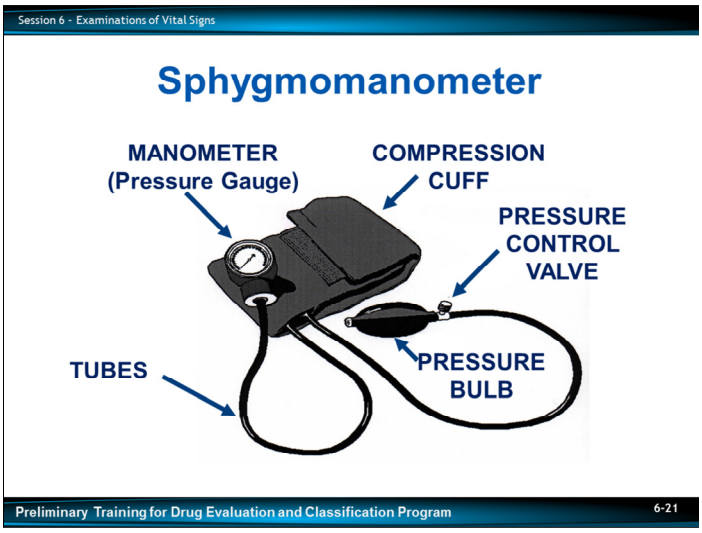
- Apply the stethoscope to the skin directly above the artery
- Apply pressure to the cuff, enough to cut off the flow of blood
- Inflate the cuff on the arm
- When no blood is flowing through the artery, we hear nothing through the stethoscope
- Slowly release the air from the cuff, letting the pressure start to drop
- Release the air in the cuff
- When we drop to the systolic pressure, we start to hear a spurting sound
- As we continue to allow the air pressure to drop, the surges of blood become steadily longer
- When we drop to the diastolic pressure, the blood slows steadily and all sounds cease



Korotkoff Sounds

The sounds we listen to are called Korotkoff Sounds. Named after Dr. Nikolai Korotkoff, a Russian physician who introduced the method of determining blood pressure in 1905.

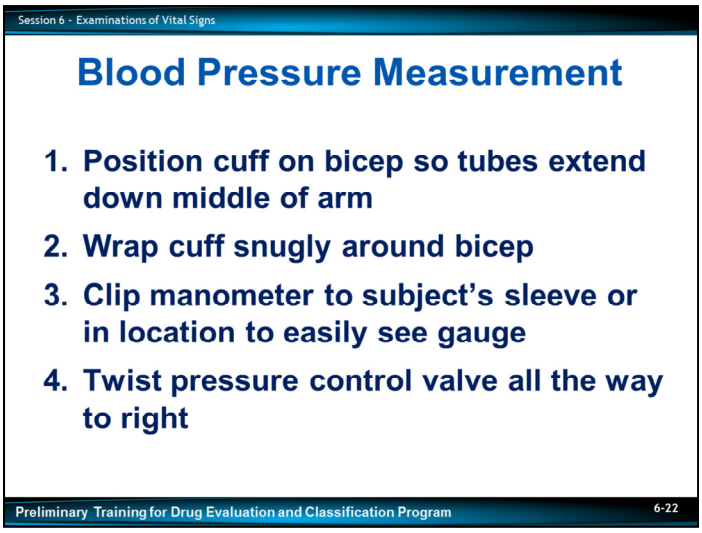
Phase 1: the first appearance of clear, tapping sounds that gradually increase in intensity.
The beginning of Phase 1 corresponds to the systolic pressure.
Phase 2: the sounds change to a murmur and take on a swishing quality.
Phase 3: the sounds develop a loud, knocking quality (not quite as clear as Phase 1).
Phase 4: the sounds suddenly become muffled and again have a faint swishing quality.
Phase 5: the sounds cease.
The beginning of Phase 5 corresponds to the diastolic pressure.



Familiarization with the Sphygmomanometer
The compression cuff contains an inflatable rubber bladder.

A tube connects the bladder to the manometer, or pressure gauge.

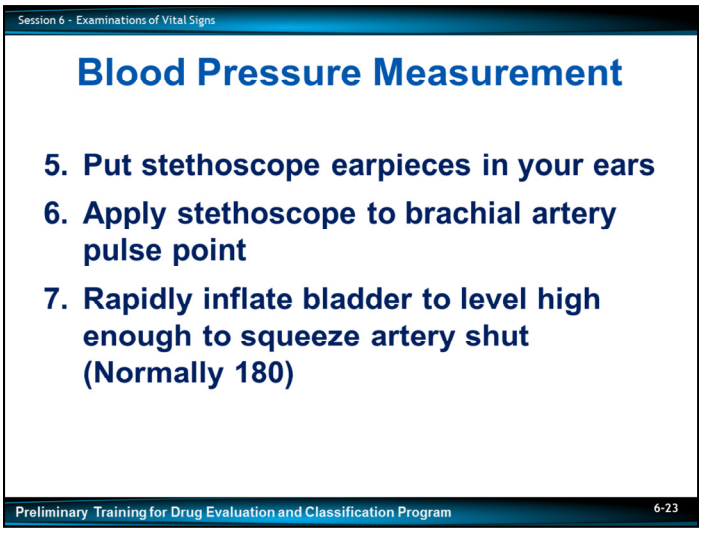
- Another tube connects the bladder to the pressure bulb, which can be squeezed to inflate the bladder
- The pressure control valve permits inflation of the bladder and regulates the rate at which the bladder is deflated
- To inflate the bladder, the pressure control valve must be twisted all the way 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

Position the cuff on the bicep so the tubes extend down the middle of the arm.

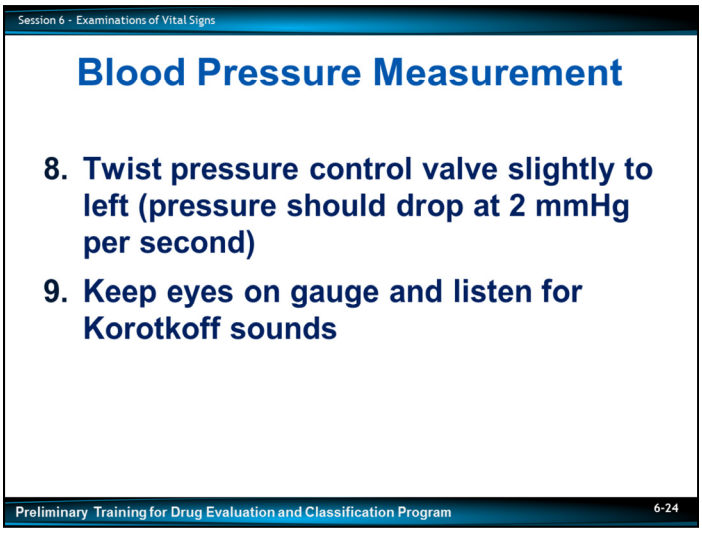
1. Wrap the cuff snugly around the bicep.
2. Clip the manometer (pressure gauge) on the subject's sleeve, so it is readily viewable.
3. Twist the pressure control valve all the way to the right.



5. Put the stethoscope earpieces in your ears

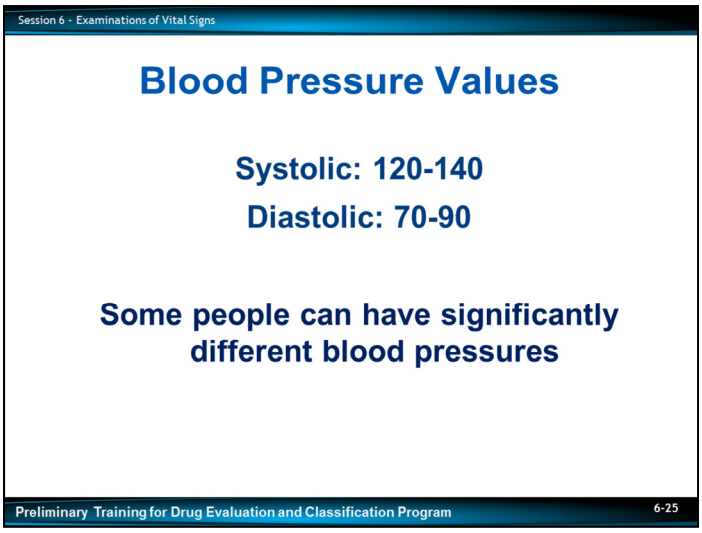
Make sure the earpieces are turned forward, i.e., toward the nose.

6. Place the diaphragm or bell of the stethoscope over the brachial artery.
7. Rapidly inflate bladder to a level high enough to squeeze the artery shut (normally 180 mmHg).



8. Twist the pressure control valve slightly to the left to release the pressure slowly (pressure should drop at 2 mmHg per second).
9. Keep your eyes on the gauge and listen for the Korotkoff sounds.

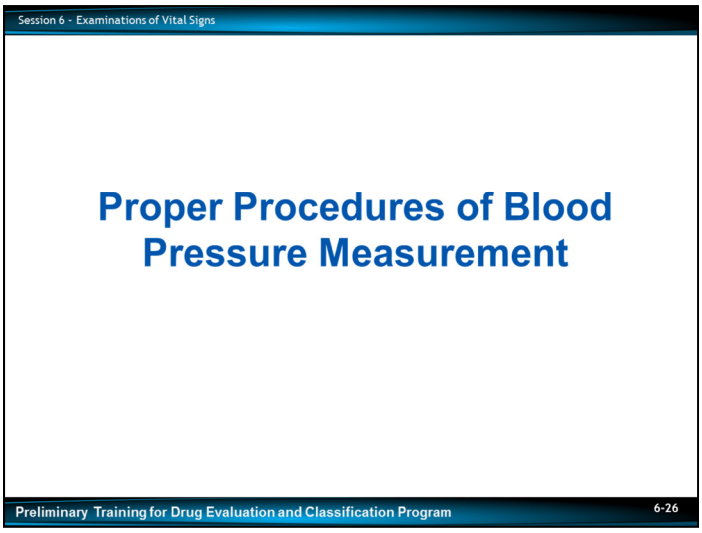
The needle on the pressure gauge generally will “bounce” slightly when blood starts to spurt through the artery.



DRE Average Blood Pressure Values
Values of blood pressure are:

- Systolic: 120-140
- Diastolic: 70-90

Some people can have significantly different blood pressures: there is a wide variation in human blood pressure.

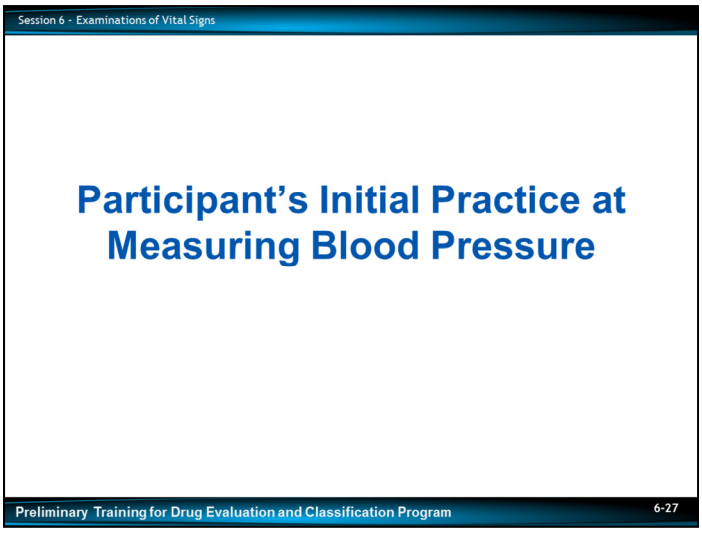


Proper Procedures of Blood Pressure Measurement

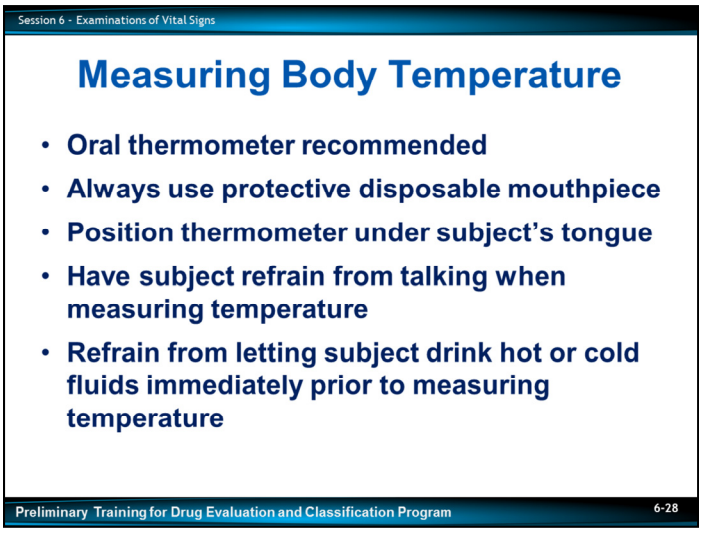
If you inflate the bladder and then need to repeat the measurement, wait at least three minutes to allow the subject's artery to return to normal.

If difficulty is encountered in hearing the Korotkoff sounds, try having the subject raise his or her arm and clench the fist to allow blood flow back to the heart.

Hold the bell of the stethoscope with your fingers; don't slide it under the cuff – that will distort the measurement.



Participant's Initial Practice at Measuring Blood Pressure



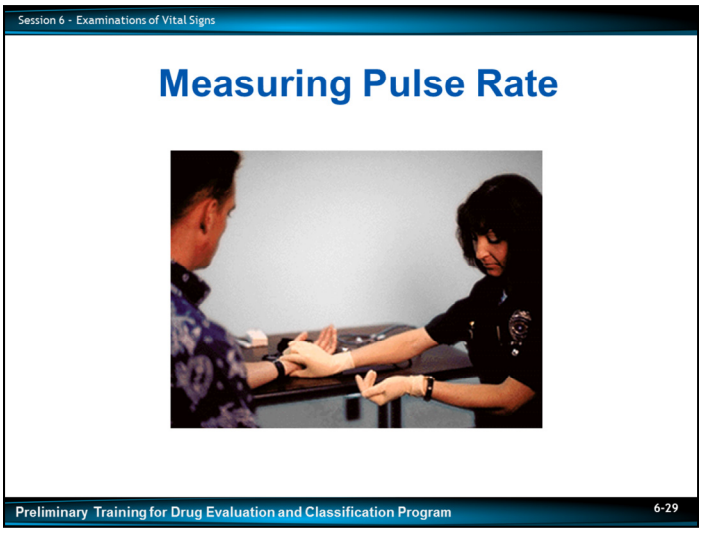
C. <u>Demonstrations</u>

Measurement of Temperature

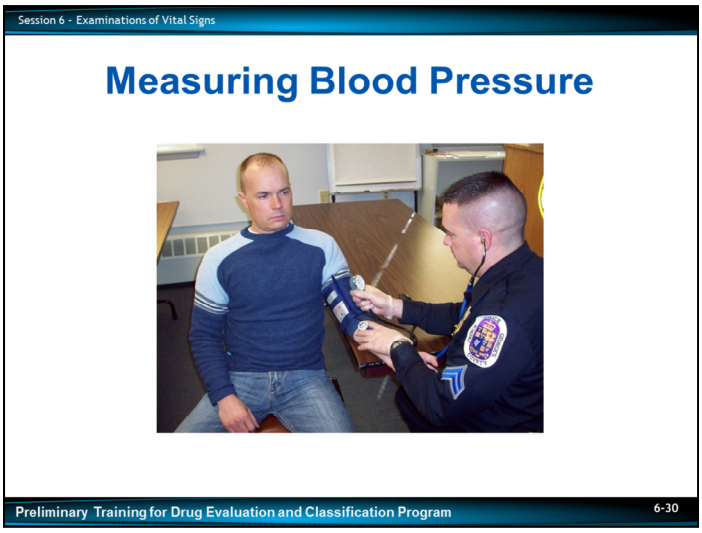
- The range for body temperature taken orally is 98.6 degrees +/- 1 degree
- Temperature is measured orally using a thermometer

A fresh disposable mouthpiece should be used each time

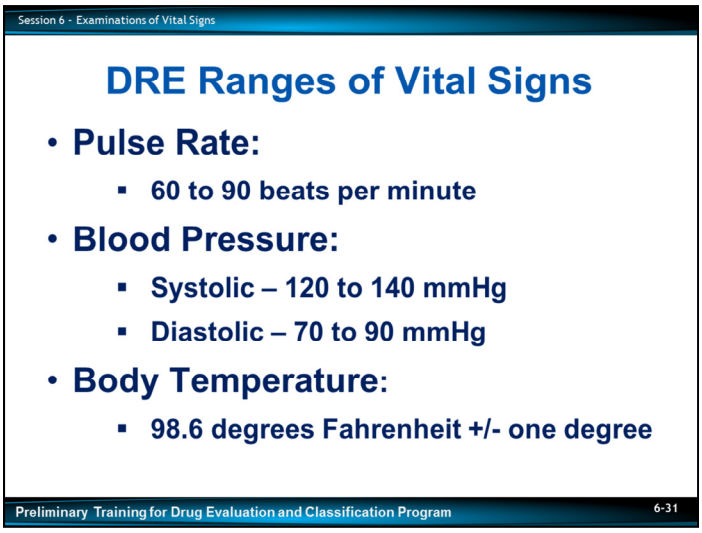
- Position thermometer under the subject's tongue
- Have subject refrain from talking when measuring temperature
- Ensure the subject does not take any hot or cold liquids by mouth prior to taking the temperature
- Hot and cold liquids immediately prior to the temperature examination may affect the result



Pulse Rate Measurement Demonstrations



Blood Pressure Measurement Demonstrations

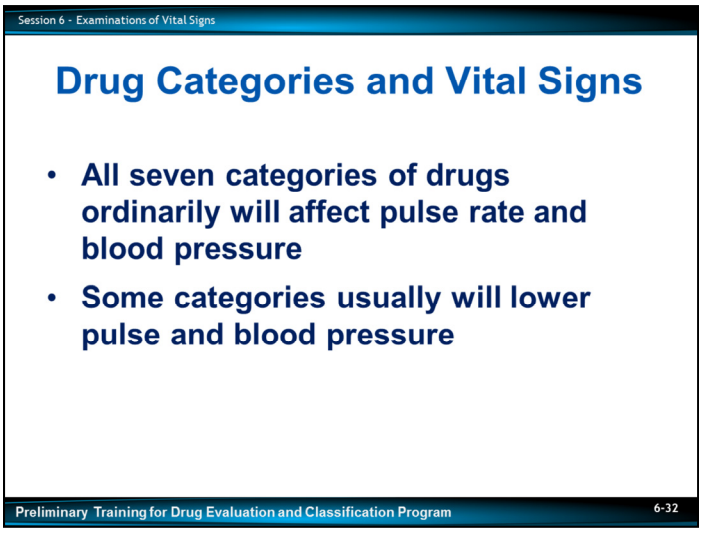


D. <u>Ranges of Vital Signs</u>

Human vital signs vary between individuals. However, the Drug Evaluation and Classification (DEC) Program has identified a set of ranges for each of the three vital sign examinations used in the drug influence evaluation process. These ranges, which are referred to as "DRE average ranges" can also be described as the "expected value" for a non-impaired healthy person. When checking a person's heart rate (pulse) and blood pressure, DREs are assessing the person's cardiovascular system for other reasons that are <u>not</u> diagnostic, but rather, a sign or indicator of being outside of the expected range of a non-impaired healthy person.

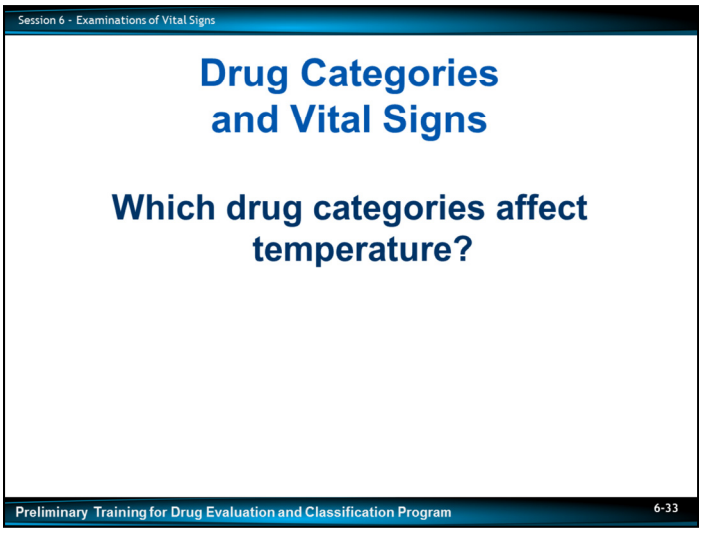
DEC Program ranges:

- Pulse rate: 60 to 90 beats per minute
- Blood pressure: Systolic: 120-140 mmHg and Diastolic: 70-90 mmHg
- Body temperature: 98.6 degrees, plus or minus 1 degree



E. <u>Relationship of Drug Categories to the Vital Signs Examinations</u>

- All seven categories of drugs ordinarily will affect pulse rate and blood pressure
- Some categories usually will lower pulse and blood pressure
- CNS Depressants and Narcotic Analgesics usually lower pulse and BP
- Quaaludes, ETOH, and possibly some antidepressants may cause the pulse to increase
- The other five categories all tend to elevate pulse rate
- Most of the drug categories that elevate pulse rate also elevate blood pressure
- CNS Stimulants, Hallucinogens, Dissociative Anesthetics, and Cannabis all usually cause blood pressure to rise
- The vast majority of Inhalants, namely, the volatile solvents and the aerosols, also elevate blood pressure
- But the remaining small group of Inhalants, the anesthetic gases, actually lowers the blood pressure
- So for Inhalants, the effect on blood pressure will be up or down



Three of the categories usually will cause the body temperature to rise.

The drug PCP and its analogs from the Dissociative Anesthetics category usually increase body temperature; PCP users have been known to remove their clothing to cool down.

CNS Stimulants and Hallucinogens also will usually increase body temperature.

The effect of Inhalants on body temperature depends on the specific substance inhaled.

Some Inhalants may cause temperature to increase or be down.

But other Inhalants may leave the temperature near normal.

One category usually causes body temperature to be lowered.

Narcotic Analgesics usually lower body temperature.

The remaining two categories usually do not affect temperature.

_____

_____

_____

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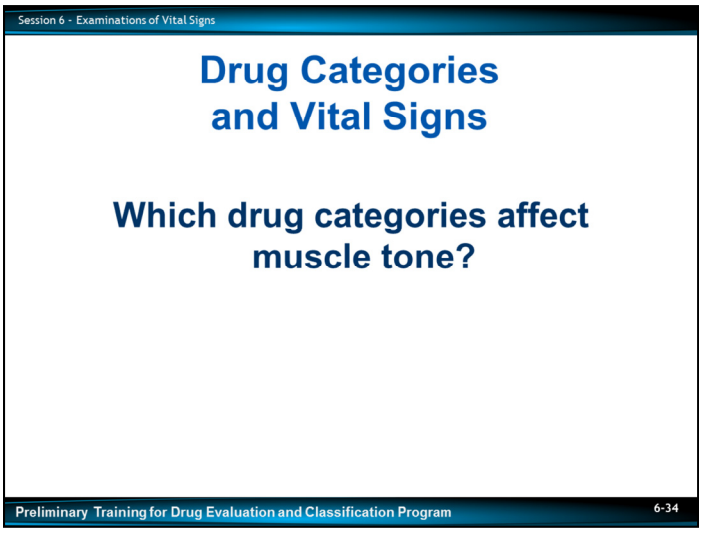


Three of the categories usually will cause the muscle tone to be rigid.

CNS Stimulants, Hallucinogens, and Dissociative Anesthetics will usually cause a rigid muscle tone.

Two categories usually cause muscle tone to be flaccid.

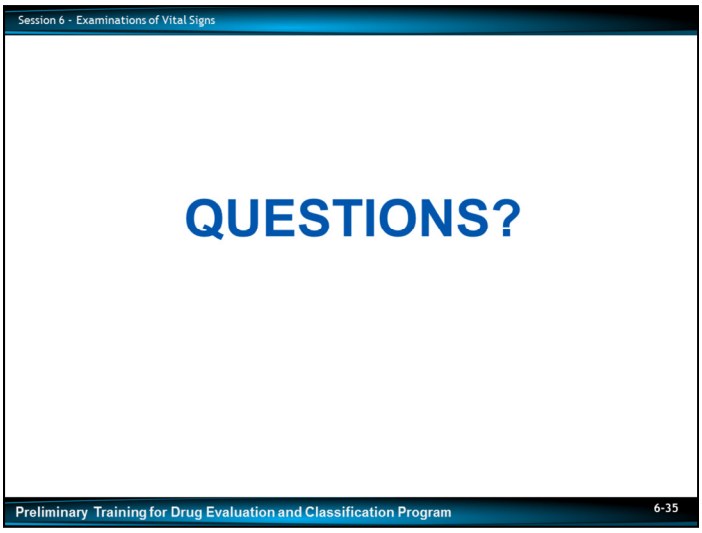
CNS Depressants and Narcotic Analgesics usually cause a flaccid muscle tone.

One category usually causes normal muscle tone.

Cannabis usually causes normal muscle tone.

One category will usually cause either normal or flaccid muscle tone.

Inhalants usually cause either normal or flaccid muscle tone.


Session 6 - Examinations of Vital Signs
QUESTIONS?
Preliminary Training for Drug Evaluation and Classification Program
6-35

Semi-Blank Matrix

Indicator	CNS Depressant	CNS Stimulant	Hallucinogen	Dissociative Anesthetic	Narcotic Analgesic	Inhalant	Cannabis
HGN							
VGN							
LOC							
Pupil Size							
Reaction to Light							
Pulse							
Blood Pressure							
Body Temperature							
Muscle Tone							

1.

2.

3.

4.

5.

6.


Preliminary Training for Drug Evaluation and Classification Program
Session 7 – Overview of Signs and Symptoms
NHTSA
TSI
February 2018

INDICATOR	CNS Dep	CNS Stim	Hallucinogens	Dissoc. Anesthetics	Narcotic Analgesics	Inhalants	Cannabis
HGN							
Vertical Gaze Nystagmus							
Lack of Convergence							
Pupil Size							
Reaction to Light							
Pulse Rate							
Blood Pressure							
Body Temperature							
Muscle Tone							

INDICATORS CONSISTENT WITH DRUG CATEGORIES

	CNS Depressants	CNS Stimulants	Hallucinogens	Dissociative Anesthetics	Narcotic Analgesics	Inhalants	Cannabis
HGN	Present	None	None	Present	None	Present	None
VGN	Present (High Dose)	None	None	Present	None	Present (High Dose)	None
LOC	Present	None	None	Present	None	Present	Present
Pupil Size	Normal (1)	Dilated	Dilated	Normal	Constricted	Normal (4)	Dilated (6)
Reaction to Light	Slow	Slow	Normal (3)	Normal	Little to None Visible	Slow	Normal
Pulse Rate	Down (2)	Up	Up	Up	Down	Up	Up
Blood Pressure	Down	Up	Up	Up	Down	Up/Down (5)	Up
Body Temperature	Normal	Up	Up	Up	Down	Up/Down/ Normal	Normal
Muscle Tone	Flaccid	Rigid	Rigid	Rigid	Flaccid	Normal or Flaccid	Normal

FOOTNOTE: These indicators are those most consistent with the category, keep in mind there may be variations due to individual reaction, dose taken and drug interactions.

(1) Soma, Quaaludes and possibly some antidepressants usually dilate pupils.

(2) Quaaludes, ETOH and some antidepressants may elevate.

(3) Certain psychedelic amphetamines may cause slowing.

(4) Normal, but may be dilated.

(5) Down with anesthetic gases, up with volatile solvents and aerosols.

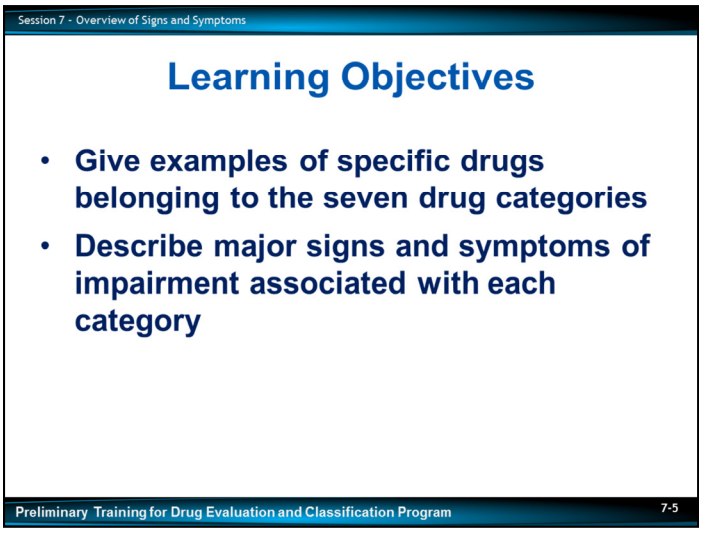
(6) Pupil size possibly normal.

INDICATORS CONSISTENT WITH DRUG CATEGORIES

	CNS DEPRESSANTS	CNS STIMULANTS	HALLUCINOGENS	DISSOCIATIVE ANESTHETICS	NARCOTIC ANALGESICS	INHALANTS	CANNABIS
HGN	PRESENT	NONE	NONE	PRESENT	NONE	PRESENT	NONE
VGN	PRESENT (HIGH DOSE)	NONE	NONE	PRESENT	NONE	PRESENT (HIGH DOSE)	NONE
LACK OF CONVERGENCE	PRESENT	NONE	NONE	PRESENT	NONE	PRESENT	PRESENT
PUPIL SIZE	NORMAL (1)	DILATED	DILATED	NORMAL	CONSTRICTED	NORMAL (4)	DILATED (6)
REACTION TO LIGHT	SLOW	SLOW	NORMAL (3)	NORMAL	LITTLE OR NONE VISIBLE	SLOW	NORMAL
PULSE RATE	DOWN (2)	UP	UP	UP	DOWN	UP	UP
BLOOD PRESSURE	DOWN	UP	UP	UP	DOWN	UP/DOWN (5)	UP
BODY TEMPERATURE	NORMAL	UP	UP	UP	DOWN	UP/DOWN/ NORMAL	NORMAL
MUSCLE TONE	FLACCID	RIGID	RIGID	RIGID	FLACCID	NORMAL OR FLACCID	NORMAL

FOOTNOTE: These indicators are those most consistent with the category; keep in mind that there may be variations due to individual reaction, dose taken and drug interactions.

(1) Soma, Quaaludes and some antidepressants usually dilate pupils
(2) Quaaludes, ETOH and some antidepressants may elevate
(3) Certain psychedelic amphetamines may cause slowing
(4) Normal, but may be dilated
(5) Down with anesthetic gases, up with volatile solvents and aerosols
(6) Pupil size possibly normal



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

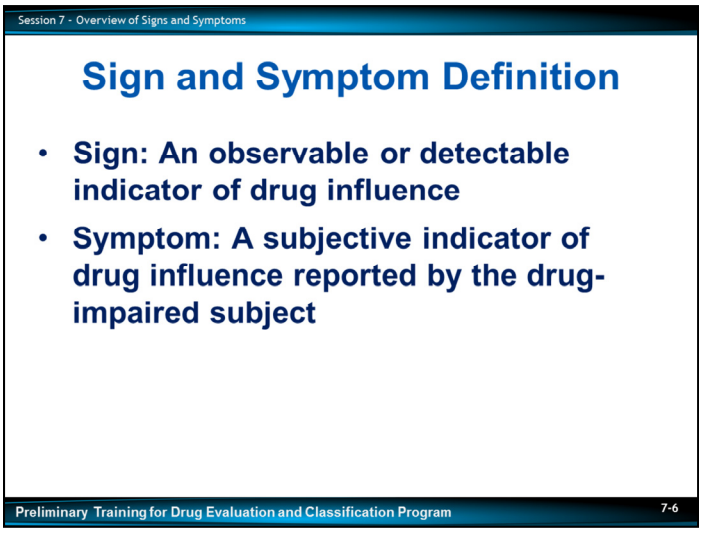
- Give examples of specific drugs belonging to the seven drug categories
- Describe the major signs and symptoms of impairment associated with each category

CONTENT SEGMENTS

A. CNS Depressants
B. CNS Stimulants
C. Hallucinogens
D. Dissociative Anesthetics
E. Narcotic Analgesics
F. Inhalants
G. Cannabis
H. Wrap-Up

LEARNING ACTIVITIES

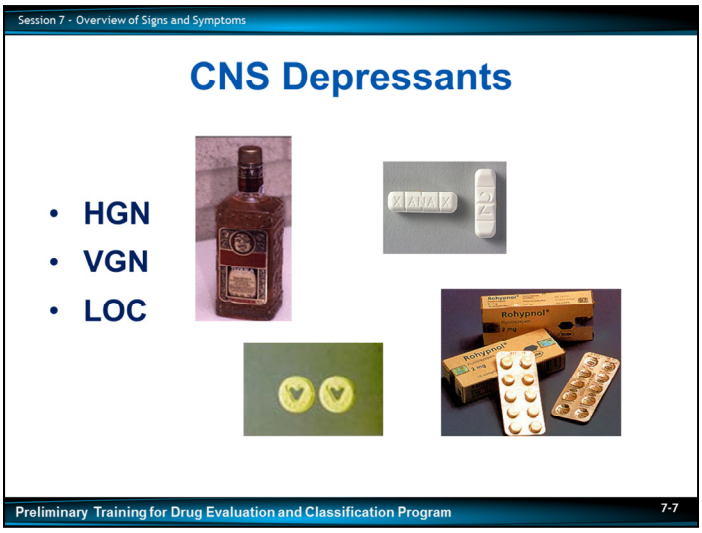
Interactive Discussion



Sign and Symptom Definition

- Sign: An observable or detectable indicator of drug influence (i.e., dilated pupils, high blood pressure)

- Symptom: A subjective indicator of drug influence reported by the drug-impaired subject (i.e., "I feel nauseous")



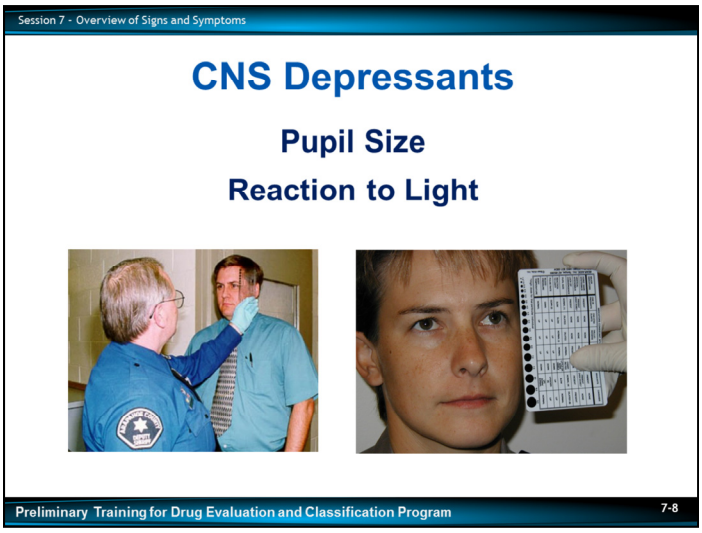
A. <u>CNS Depressants</u>

Central Nervous System (CNS) Depressants is a category that includes many different drugs.

Indicators of CNS Depressant Influence Found in Eye Exams
Horizontal Gaze Nystagmus (HGN) usually will be present.

Vertical Gaze Nystagmus (VGN) may be present, especially with high doses (for that individual) of Depressants.

Under the influence of Depressants, Lack of Convergence (LOC) usually will be present.

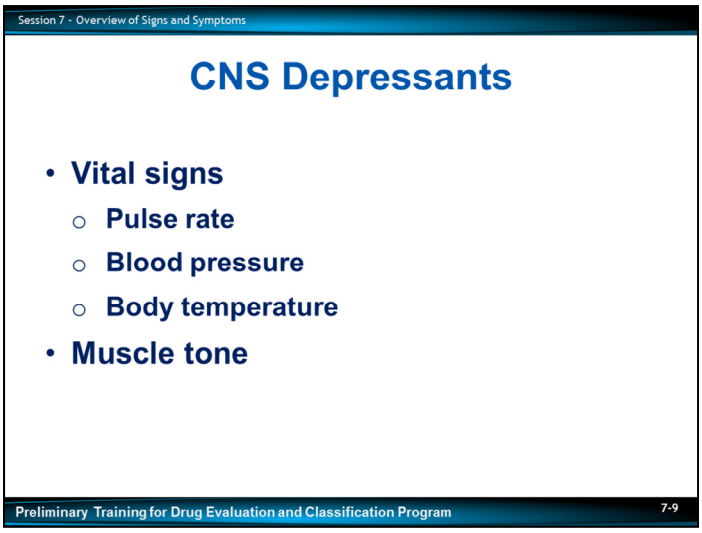


With depressants there is usually no effect on pupil size; therefore, the pupils will generally be in the average range or expected range.

But some specific Depressant drugs do affect pupil size.

Soma, Methaqualone (Quaaludes), and some antidepressants usually dilate pupils.

Depressants generally will cause pupillary Reaction to Light to be slow.



Indicators of CNS Depressant Influence Found in Checks of the Vital Signs
Depressants usually lower pulse rate.

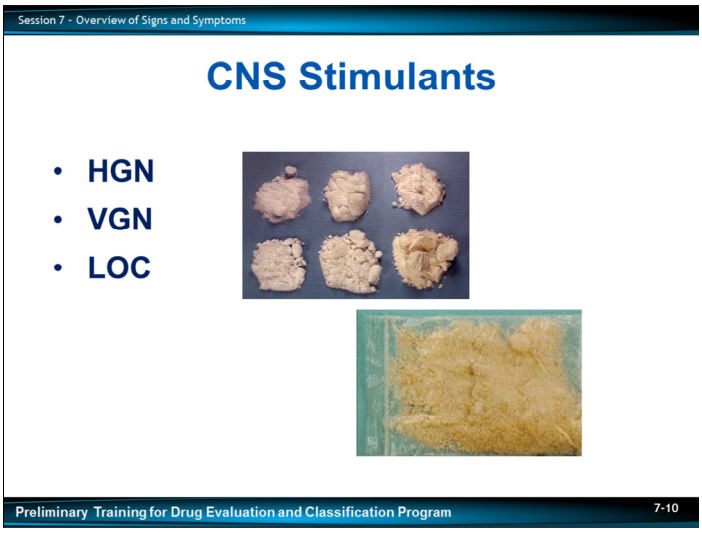
But some specific Depressant drugs may elevate the pulse.

Methaqualone (Quaaludes), alcohol, and possibly some antidepressants may cause elevation in pulse rate.

Depressants usually lower blood pressure.

Depressants usually do not effect body temperature ranges. Leave temperature near the Drug Recognition Expert (DRE) temperature and normal.

Depressants usually cause flaccid muscle tone.

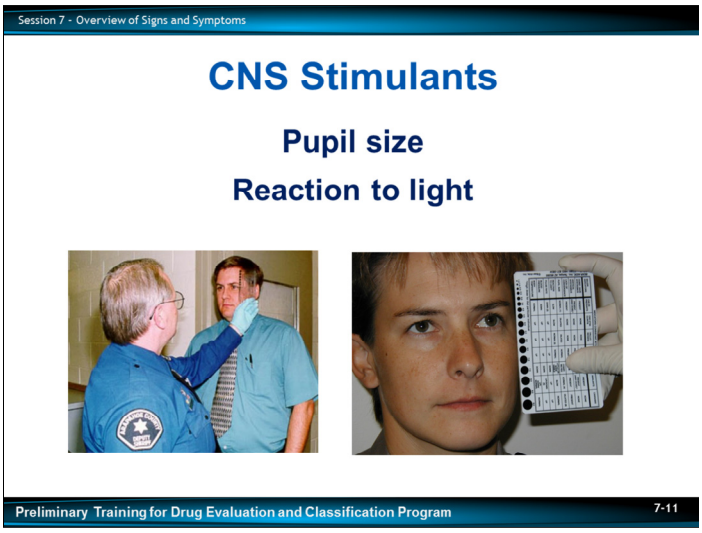


B. <u>CNS Stimulants</u>

The category called CNS Stimulants includes many drugs.

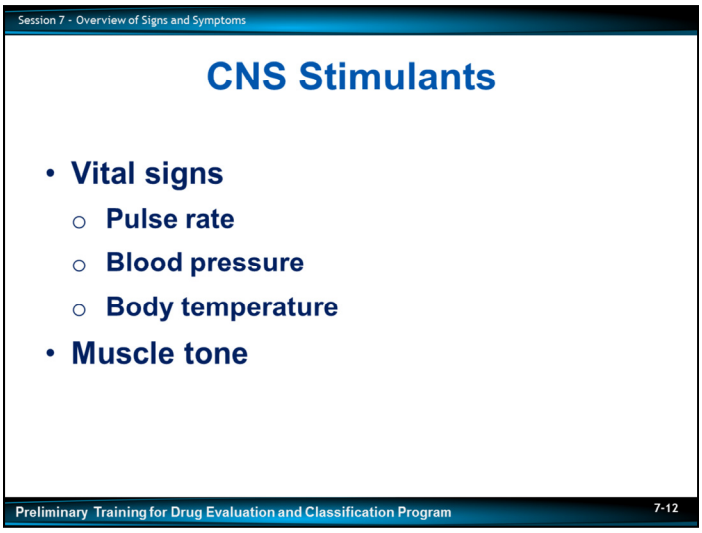
Indicators of CNS Stimulant Influence Found in Eye Exams
HGN will not be present.

VGN will not be present.



CNS Stimulants usually cause the pupils to dilate.

We have seen CNS Depressants effect pupillary reaction; similarly, CNS Stimulants may cause a slowing in the pupillary reaction to light.



Indicators of CNS Stimulant Influence Found in Checks of Vital Signs
CNS Stimulants usually increase pulse rate.

CNS Stimulants usually increase blood pressure.

CNS Stimulants usually elevate body temperature.

CNS Stimulants usually cause a rigid muscle tone.

Though not directly related to the vital signs, the DRE may find the subject's muscle tone to be rigid with possible body tremors.

A grinding of the teeth, referred to as "bruxism" may also be noticed.

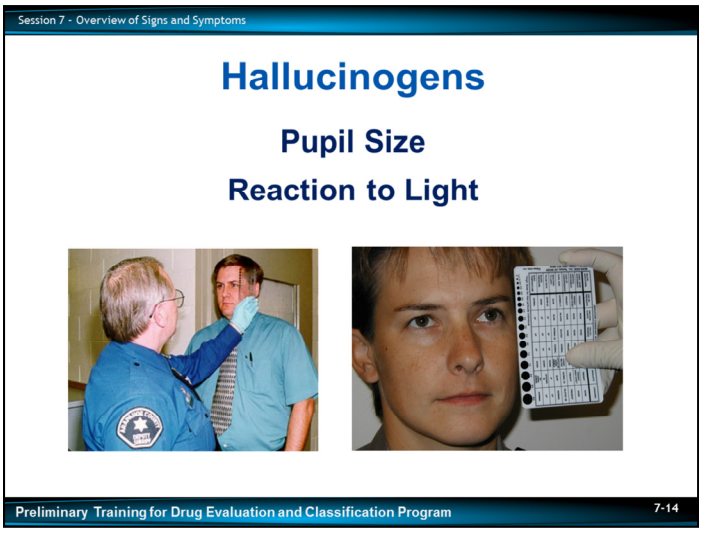
C. <u>Hallucinogens</u>

Hallucinogens include some naturally occurring substances as well as some synthetic drugs.

Indicators of Hallucinogen Influence Found in Eye Exams
Hallucinogens typically do not effect HGN and therefore will not be present.

VGN will not be present.

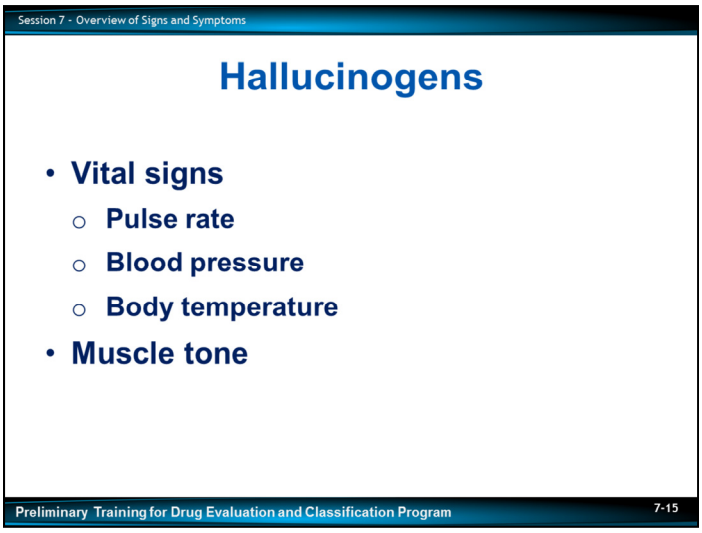
Under the influence of Hallucinogens, the eyes should still be able to converge; therefore, LOC will not be present.



Hallucinogens usually cause the pupils to dilate.

Normally, Hallucinogens do not effect pupillary reaction to light.

However, certain psychedelic Amphetamines may cause a slowing in the pupillary reaction.



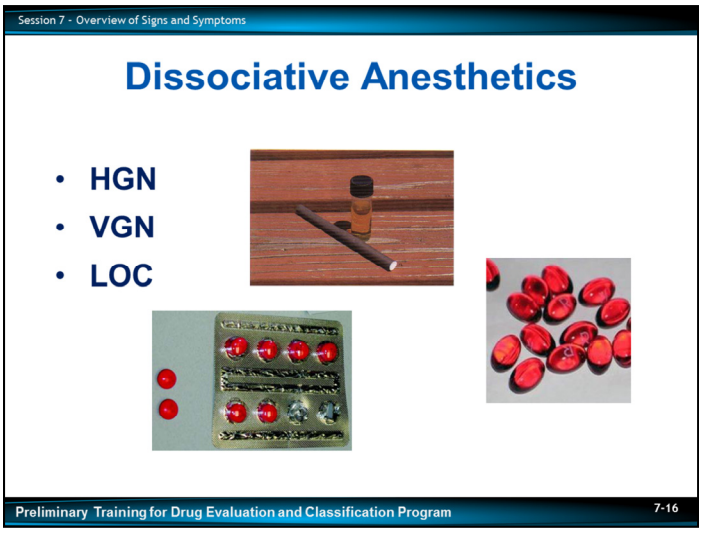
Indicators of Hallucinogen Influence Found in Checks of Vital Signs
Hallucinogens usually increase pulse rate.

Hallucinogens usually increase blood pressure.

Hallucinogens usually elevate body temperature.

Hallucinogens usually cause a rigid muscle tone.

If we only had these major signs to go by, it would be difficult to distinguish between someone under the influence of CNS Stimulants from someone under the influence of Hallucinogens.



D. <u>Dissociative Anesthetics</u>

The category called Dissociative Anesthetics consists of the drug PCP, its various analogs, and Dextromethorphan.

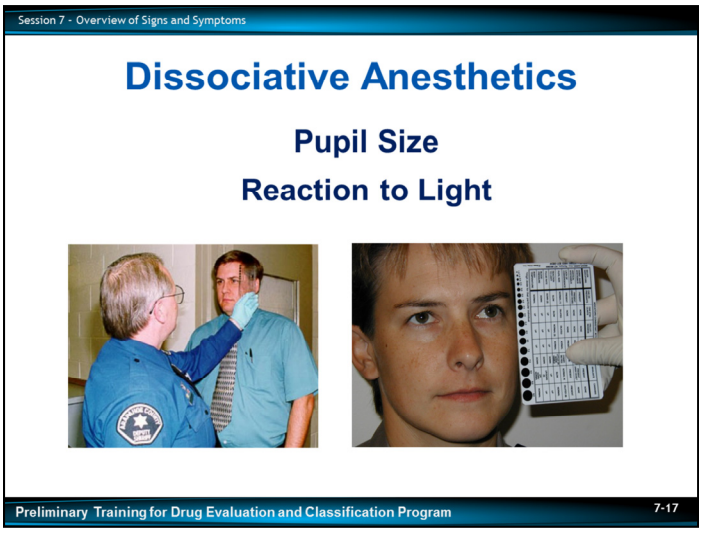
- An "analog" of PCP is a drug that is a "chemical first cousin" of PCP; that is, it is a drug that has a slightly different molecular structure from PCP, but produces the same effects as PCP.
- One of the most popular analogs of PCP is the drug called Ketamine
- Ketamine is a legally manufactured (but controlled) drug used as an anesthetic in some surgical applications
- Some other analogs of PCP include Ketalar, Ketaset, and Ketajet
- Dextromethorphan is a drug found in numerous over-the-counter substances

Indicators of the Dissociative Anesthetics Found in Eye Exams

HGN usually will be present and often with a very early onset.

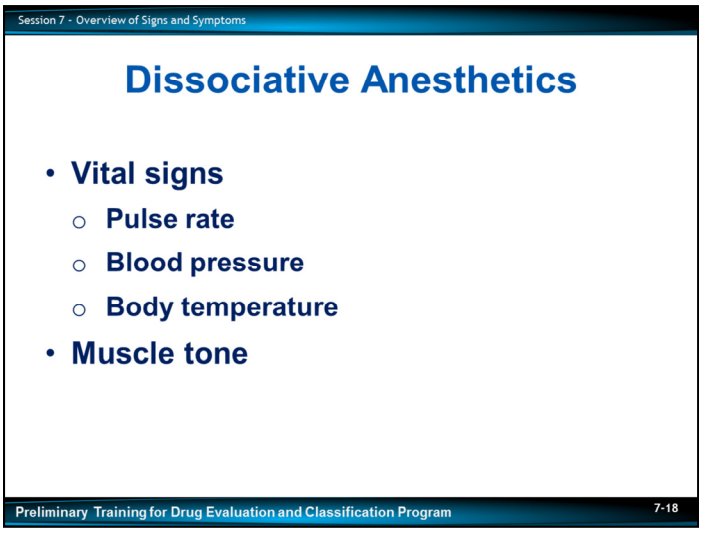
VGN usually will be present.

LOC usually will be present.



Dissociative Anesthetics do not normally affect pupil size; therefore, a person under the influence of a Dissociative Anesthetic, such as PCP, usually will have pupils in the DRE average ranges.

Dissociative Anesthetics normally will not affect pupillary reaction to light.



Indicators of Dissociative Anesthetic Influence Found in Checks of Vital Signs
Dissociative Anesthetics usually increase pulse rate.

Dissociative Anesthetics usually elevate blood pressure.

PCP and its analogs usually elevate body temperature. Dextromethorphan may or may not rise temperature.

Dissociative Anesthetics usually cause rigid muscle tone.

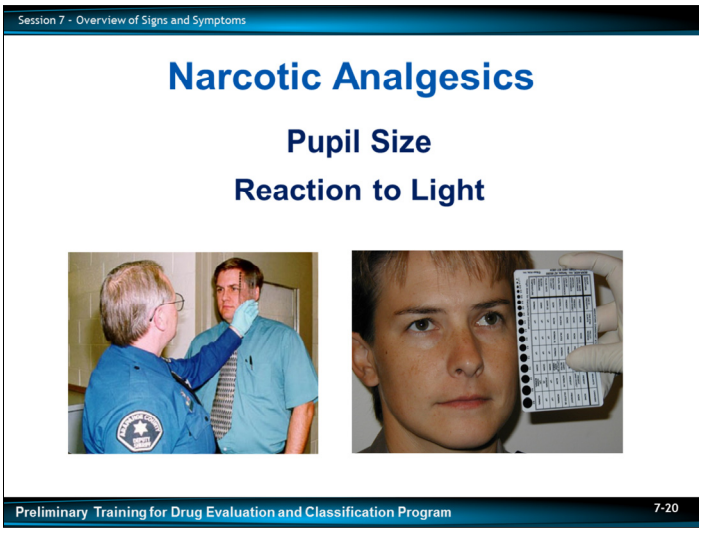
E. <u>Narcotic Analgesics</u>

Narcotic Analgesics include some natural derivatives of Opium as well as some synthetic drugs.

Indicators of Narcotic Analgesic Influence Found in Eye Exams
There is typically no effect of HGN on VGN with Narcotic Analgesics , therefore HGN will not be present.

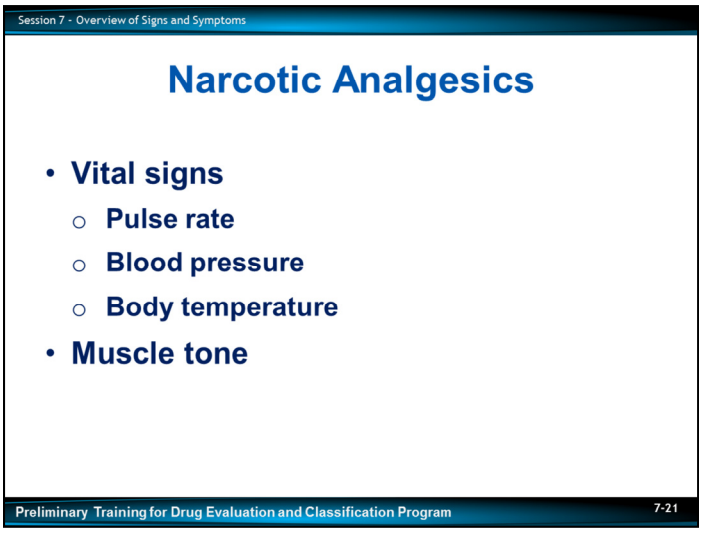
VGN will not be present.

Under the influence of Narcotics, the eyes should still be able to converge; therefore, LOC usually is not present.



Narcotic Analgesics usually cause a very noticeable constriction of the pupils.

Though there is always some reaction to light, the constricted pupils caused by Narcotic Analgesics can make it nearly impossible to observe a change in pupil size. However, when observed it will generally be little or none visible.



Indicators of Narcotic Analgesic Influence Found in Checks of Vital Signs
Narcotic Analgesics usually lower pulse rate.

Narcotic Analgesics usually lower blood pressure.

Narcotics usually lower body temperature.

With a Narcotic Analgesic, muscle tone will be flaccid.

F. <u>Inhalants</u>

The category of Inhalants includes a wide variety of gases and fumes that have mind-altering effects.

- Not all Inhalants affect their users in exactly the same way
- There is probably less consistency in the signs and symptoms of Inhalants than there is with any other category
- When we talk of the signs and symptoms of Inhalants, we often must qualify our statements
  - For example, we may say a particular effect will be observed "for most Inhalants"

Indicators of Inhalant Influence Found in Eye Exams
With most Inhalants, HGN usually will be present.

With most Inhalants, VGN may be present, especially with large doses.

Under the influence of Inhalants, LOC usually will be present.

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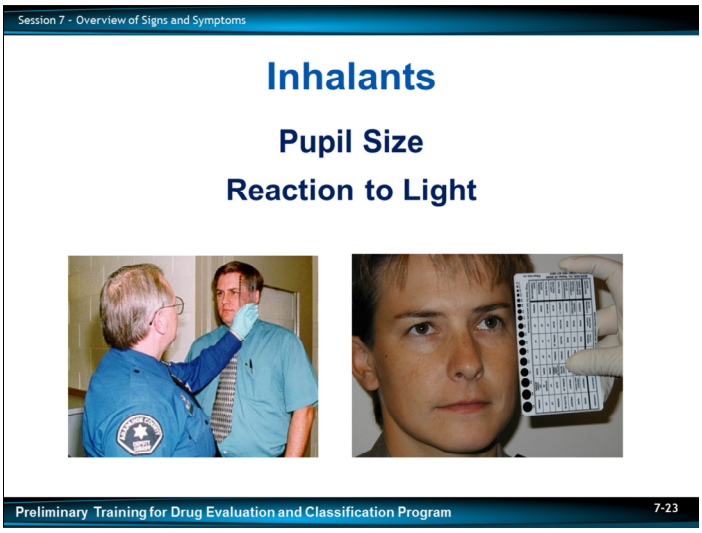


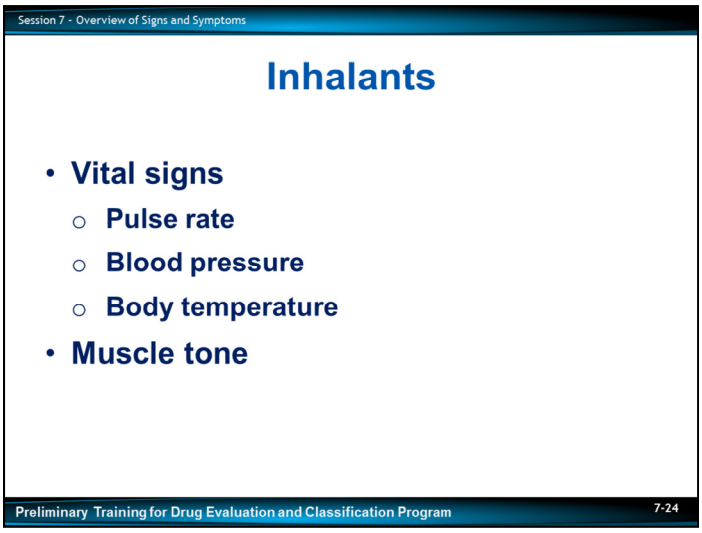
The effect of Inhalants on pupil size depends on the particular substance inhaled.

Most Inhalants do not effect pupil size and usually leave the pupils in the DRE average ranges.

Some Inhalants may cause pupil dilation.

Depending on the substance used, Inhalants may cause a slowed reaction to light or the pupils may react normally.

However, the most frequently observed effect will be a slow reaction to light.

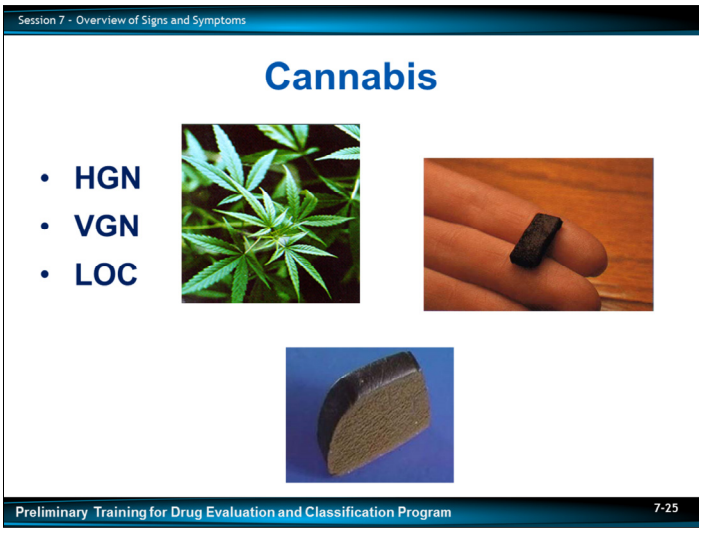


Indicators of Inhalant Influence Found in Checks of Vital Signs
Inhalants usually elevate pulse rate.

Most inhalants usually elevate blood pressure, but some lower blood pressure.

The effects of Inhalants on temperature depend on the particular substance inhaled.

Depending on the Inhalant, muscle tone may or may not be effected resulting in a normal or flaccid muscle tone.



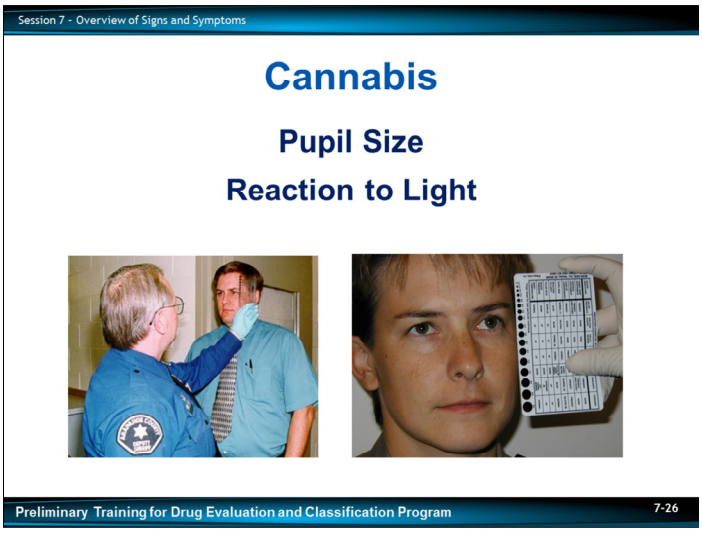
G. <u>Cannabis</u>

Indicators of Cannabis Influence Found in Eye Exams

Typically Cannabis has no effect on HGN or VGN therefore, HGN will not be present.

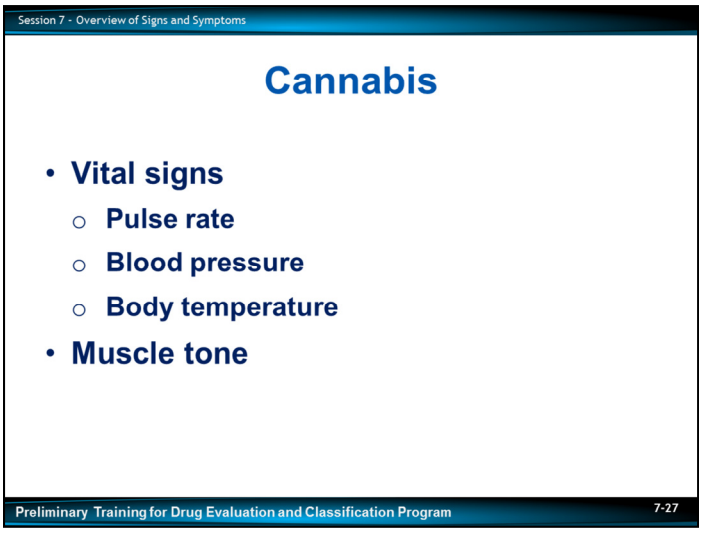
VGN will not be present.

Under the influence of Cannabis, LOC will be present.



Under the influence of Cannabis, the pupils may be dilated or possibly within the DRE average ranges.

The pupillary reaction to light with Cannabis is typically not effected and will appear normal when under the influence of Cannabis.

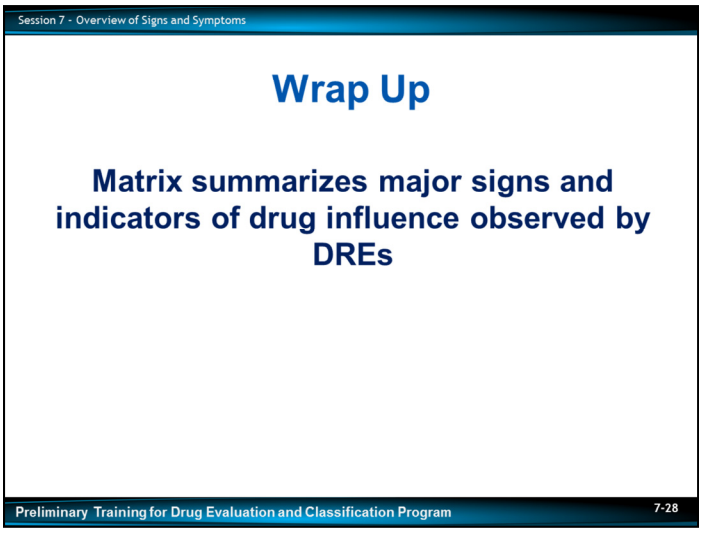


Indicators of Cannabis Influence Found in Checks of Vital Signs
Cannabis usually elevates pulse rate.

Blood pressure with Cannabis impairment can vary depending upon use, tolerance and time of use. Cannabis usually elevates blood pressure.

Cannabis usually leaves temperature near the average body temperature ranges.

Cannabis usually causes normal muscle tone.


Session 7 - Overview of Signs and Symptoms
Wrap Up
Matrix summarizes major signs and indicators of drug influence observed by DREs
Preliminary Training for Drug Evaluation and Classification Program
7-28

H. Wrap-Up

INDICATOR	CNS Dep	CNS Stim	Hallucinogens	Dissoc. Anesthetics	Narcotic Analgesics	Inhalants	Cannabis
HGN							
Vertical Gaze Nystagmus							
Lack of Convergence							
Pupil Size							
Reaction to Light							
Pulse Rate							
Blood Pressure							
Body Temperature							
Muscle Tone							

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Preliminary Training for Drug Evaluation and Classification Program
Session 8 – Alcohol as a Drug
NHTSA
TSI
February 2018


Session 8 - Alcohol as a Drug
1 Hour, 30 Minutes
Session 8
Alcohol as a Drug
TSI
NHTSA
Preliminary Training for Drug Evaluation and Classification Program
8-2

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

- Describe a brief history of alcohol
- Identify common types of alcohols
- Describe the physiological processes of absorption, distribution, and elimination of alcohol in the human body
- Describe dose response relationships that impact alcohol's impairing effects

CONTENT SEGMENTS

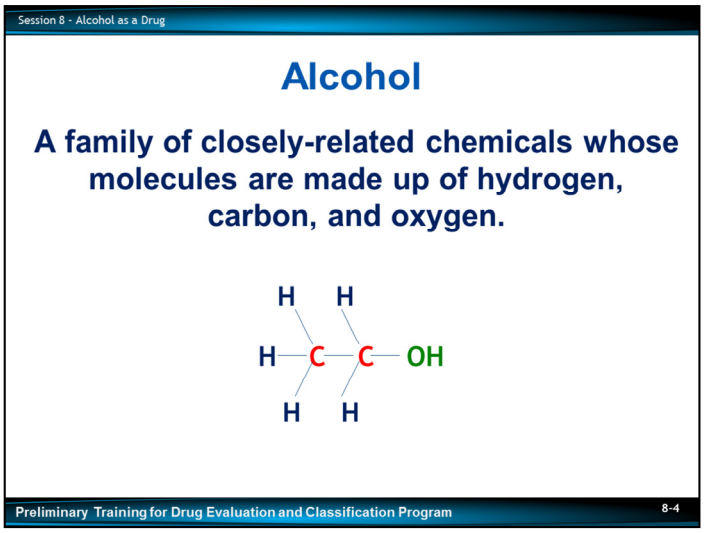
A. Brief Overview of Alcohol
B. Physiological Processes
C. Symptomatology of Alcohol
D. Dose-Response Relationships

LEARNING ACTIVITIES

Instructor-Led Presentations
Oral Quiz

- Alcohol is a drug
    - In fact, alcohol is the most commonly-abused drug

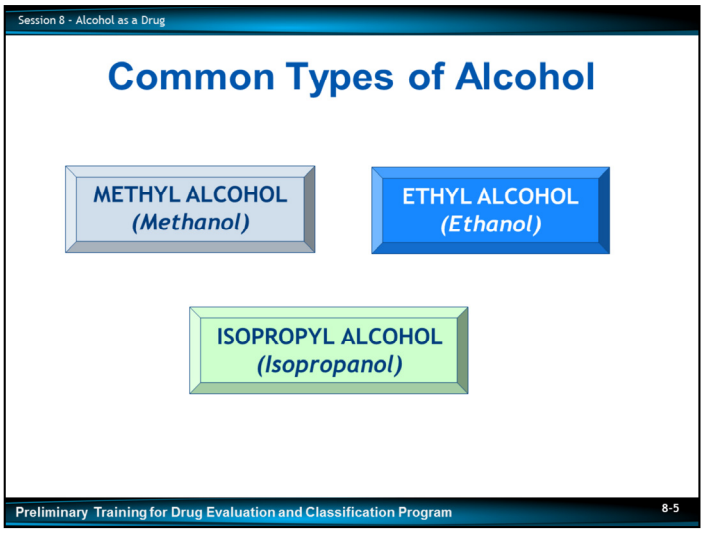
- As Drug Recognition Experts (DREs), the participants will often encounter persons who are under the combined influence of alcohol and some other drug



A. <u>Brief Overview of Alcohol</u>

The word "alcohol" refers to a number of distinct, but similar, chemicals.

- Each of the chemicals called an "alcohol" is composed of the three elements: hydrogen, carbon, and oxygen
- Each of the "alcohols" is a drug within the scope of our definition
- But only one can be tolerated by the human body in substantial quantities



Common Alcohols

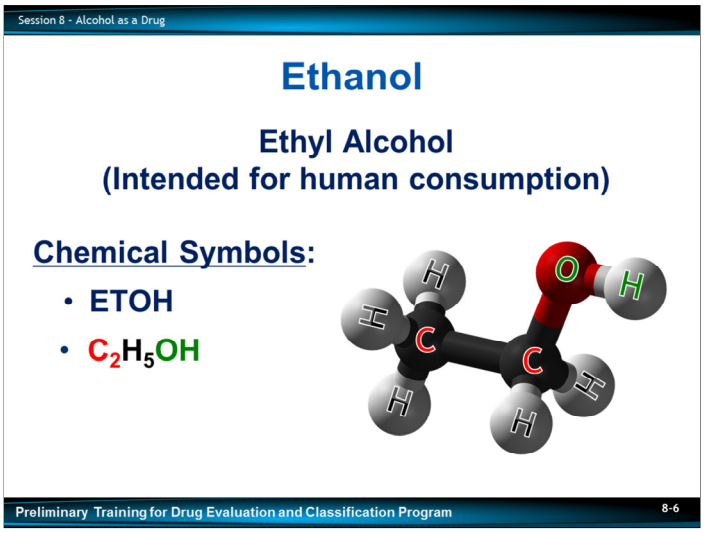
Three of the more commonly known "alcohols" are Methyl, Ethyl, and Isopropyl.

- Methyl Alcohol, also known as Methanol, or "wood alcohol"
- Ethyl Alcohol, also known as Ethanol, or "beverage alcohol"
- Isopropyl Alcohol, also known as Isopropanol, or "rubbing alcohol"

Ethanol Alcohol

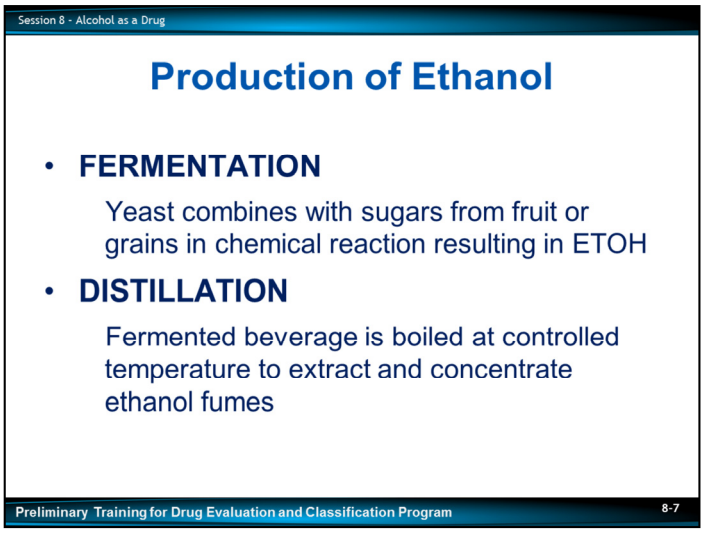
Ethanol is the kind of alcohol on which we will focus, because it is the only type intended for human consumption.

- Ethanol is the active ingredient in beer, wine, whiskey, and other alcoholic beverages intended for drinking
- Like all "alcohols," ethanol is composed of hydrogen, carbon, and oxygen
- Chemists use a number of different symbols to represent ethanol



- For our purposes, we will use the symbol "ETOH"
- The "ET" represents "ethyl" and the "OH" represents an oxygen atom and hydrogen atom, bonded together in what the chemists refer to as the "hydroxy radical"
  - All alcohols have a hydroxy radical in their molecules

Ethanol has been around for a long time. People drank it long before they learned to write.



Ethanol is a naturally-occurring drug. That is, it is produced through a process called fermentation. In fermentation, spores of yeast, carried by the wind, come in contact with fruit or grain that has fallen to the ground.

Sugars in the fruit or grain chemically react with yeast and produce ethanol.

Humans almost certainly first encountered ethanol that had been produced accidentally in this fashion. Of course, today we don't sit around waiting for the wind to bring yeast to fallen fruit.

Most fermentation takes place on purpose, under controlled conditions.

Through the process of fermentation, we can produce a beverage that has, at most, about 14% ethanol.

When the ethanol concentration reaches 14%, the yeast dies, so fermentation stops.

If we want to have higher concentration ethanol beverages, we have to use another step in the production.

Distillation is the process used to produce a higher concentration of ethanol. In distillation, a fermented beverage is heated to the point where the ethanol begins to boil.

- Ethanol starts to boil at a lower temperature than water
- The ethanol vapor is collected and allowed to cool until it turns back into a liquid
- By repeating the process of heating the liquid and collecting and cooling the vapors, higher and higher concentrations of ethanol can be produced
- Ethanol beverages produced by distillation are called distilled spirits

Over the centuries in which people have produced ethanol, some general or common-sized servings of different beverages have evolved.

- Beer is usually served in 12-ounce cans or bottles
  - Since beer averages an ethanol concentration of five percent, a can or bottle contains slightly more than one-half ounce of pure ethanol

- Five ounces of wine with an alcohol concentration of 12% contains slightly more than one half ounce of pure alcohol

- Whiskey and other distilled spirits are dispensed in a “shot” glass, which usually contain one and one-half ounces of liquid

- Since whiskey usually has an ethanol concentration of 40%, a “shot” of whiskey has slightly more than one-half ounce of pure ethanol

For all practical purposes, standard sized servings of beer, wine, and whiskey all pack the same “punch.”

B. <u>Physiological Processes</u>

Alcohol is the most abused drug in the United States.

Ethanol is a Central Nervous System (CNS) Depressant.

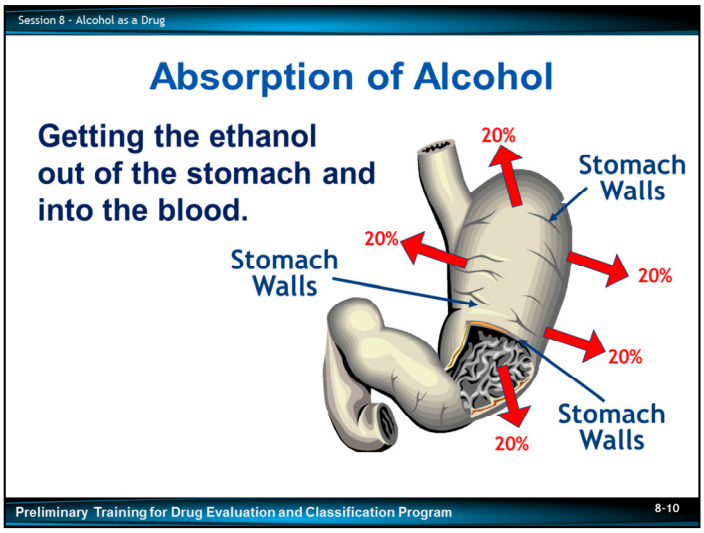
- It doesn't impair until it gets into the brain
- It can't get into the brain until it first gets into the blood
- It can't get into the blood until it first gets into the body

This concept is true with all drugs that impair.

There are a number of ways in which alcohol can get into the body.

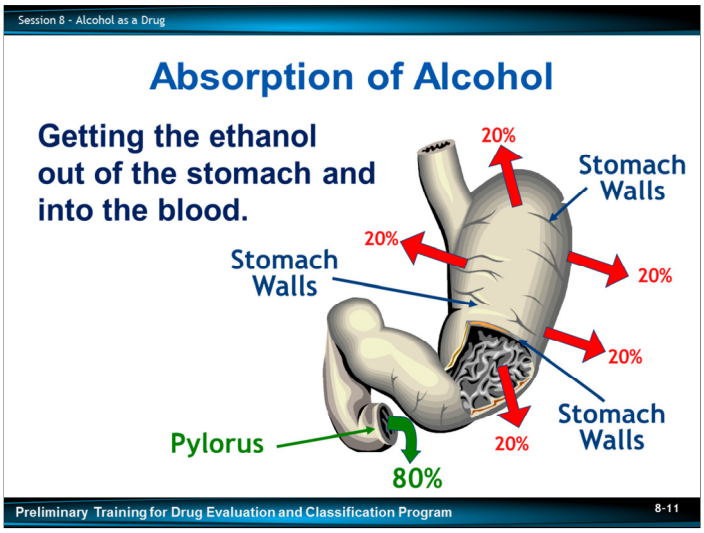
- It can be injected into a vein via hypodermic needle
- It can be inhaled, i.e., alcohol fumes can be brought into the lungs and some molecules will pass into the blood
- It could also be inserted as an enema and ingested by quickly passing from the large intestine into the blood

But the vast majority of times alcohol gets into the body, it gets there via drinking.



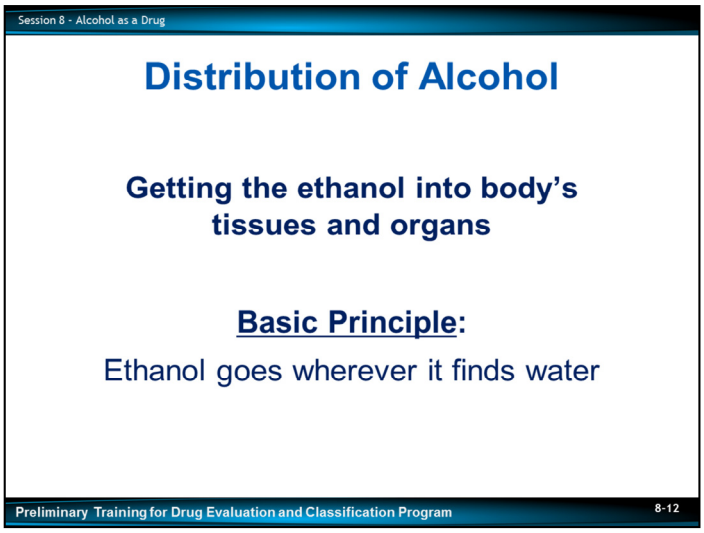
Once the alcohol is in the stomach, it will take two routes to get into the blood.

- One interesting thing about alcohol is it is able to pass directly through the stomach walls
- Under normal conditions, about 20% of the alcohol a person drinks gets into the blood by diffusing through the walls of the stomach
- But most of the alcohol usually passes through the base of the stomach into the small intestine, from which it passes quickly into the blood
- Another interesting thing about alcohol is it does not have to be digested before it can move from the stomach to the small intestine
- When a person eats food, the food must remain for a time in the stomach
- Acids and enzymes in the stomach must begin to break down the food to prepare it to pass to the lower portion of the gastrointestinal track
- While the initial digestive process is underway, a muscle at the base of the stomach will constrict and shut off the passage to the small intestine



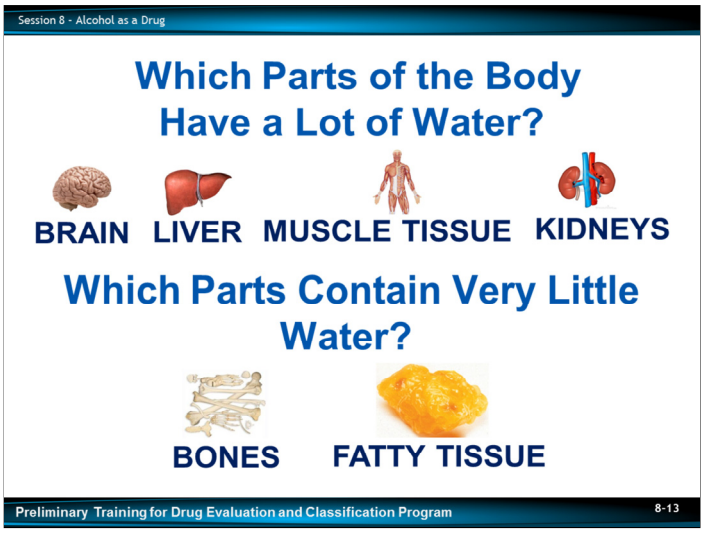
- Note the muscle called the pylorus, or pyloric valve
- Since alcohol doesn't have to be digested, the pylorus does not constrict when alcohol enters the stomach
- If we drink on an empty stomach, the pylorus stays wide open
- The alcohol will pass immediately through the base of the stomach, into the small intestine and quickly move into the bloodstream
- Food will cause the pylorus to constrict
- While the pylorus is closed, nothing will move from the stomach to the small intestine
- Any alcohol in the stomach will be “trapped” there, along with the food and the alcohol will not get into the blood as quickly
    - Drugs taken orally will behave similarly
- Blood alcohol concentration (BAC) will not get as high as it would if the drinking had been done on an empty stomach
- While the alcohol is trapped in the stomach, the acids and enzymes will start to react with it and break it down
- By the time the pylorus opens, some of the alcohol will have been chemically changed so there will be less available to get into the blood

Once the alcohol gets into the blood, the blood will carry it to the various tissues and organs of the body.



- Alcohol is attracted to water
  - The blood will deposit the alcohol in all the parts of the body where water is found
- Parts of the body that have a lot of water will receive a lot of alcohol
- Parts of the body that have only a little water will receive little alcohol

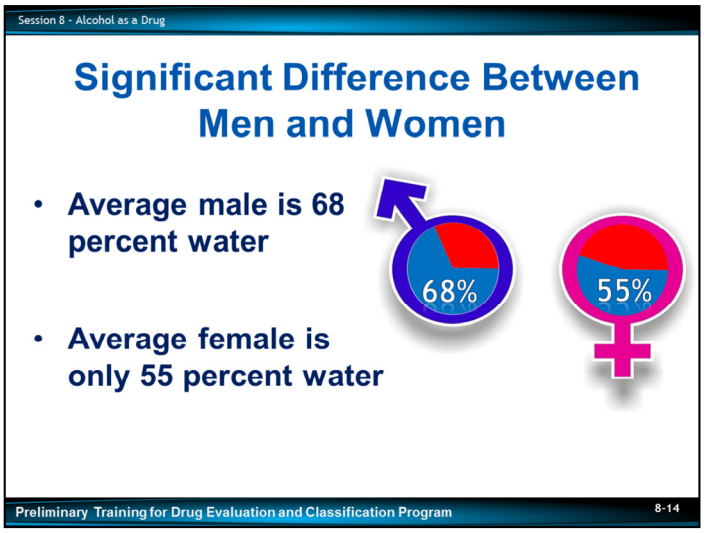
Basic Principle: Ethanol goes wherever it finds water.



- Brain
- Liver
- Muscle tissue
- Kidneys
- Bones
- Fatty tissue

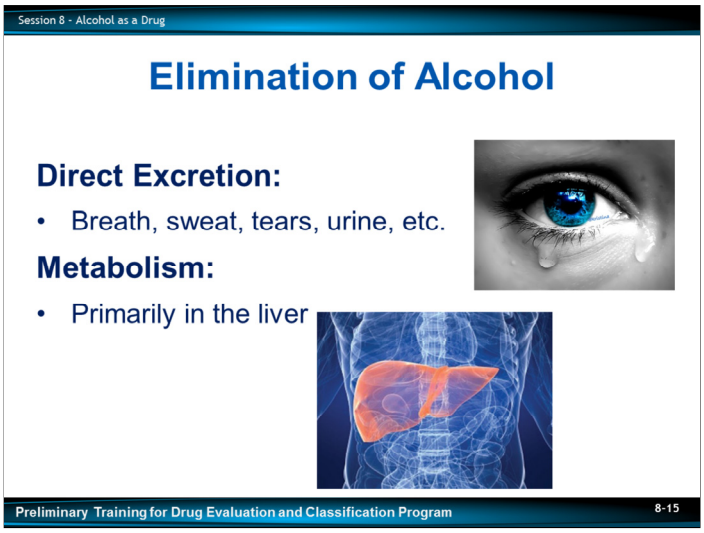
The fatty tissue will receive very little of the alcohol.

The muscle tissue will receive a relatively high proportion of the alcohol a person drinks.

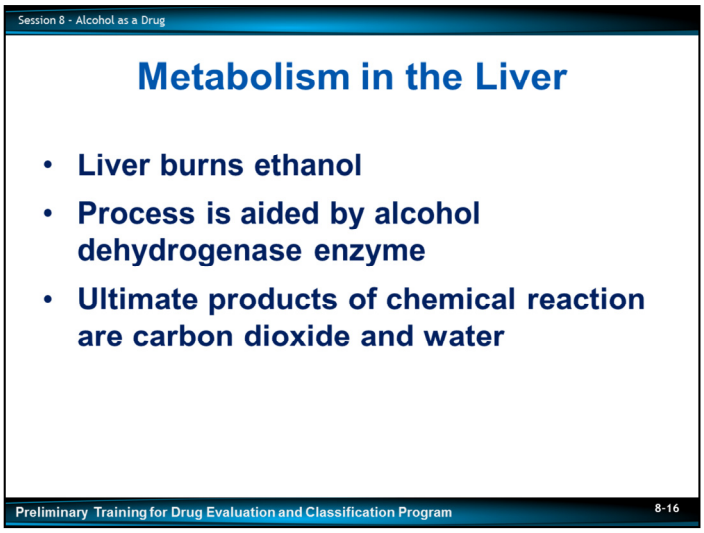


Here is an interesting and significant difference between men and women: pound-for-pound, the average male has much more water in his body than the average female.

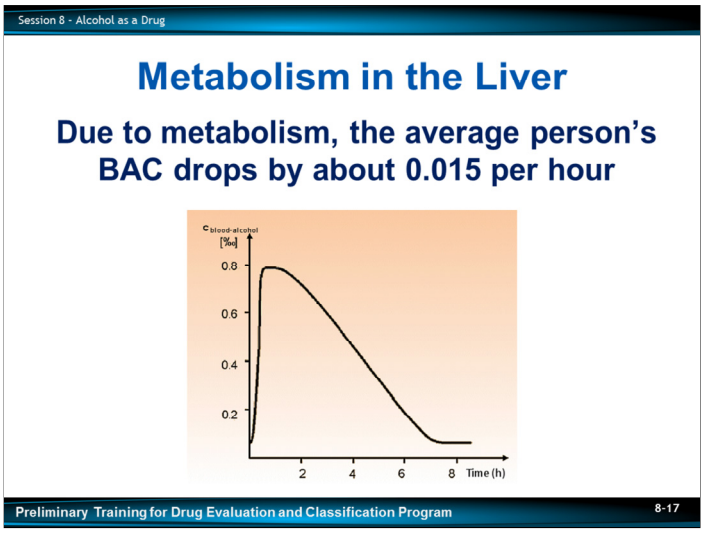
- The female body has more fatty tissue than does the male body
- Pound-for-pound, the average female has more fat and less muscle than does the average male
- Since fatty tissue has very little water, the average female, pound-for-pound, has less water than the average male
- This means the average woman has fewer places in her body in which to deposit the alcohol she drinks



- As soon as alcohol gets into the body, the body begins working to get rid of it
- Some alcohol is simply expelled directly from the body, i.e., on the breath, in the sweat, in urine, etc.
- Relatively little of the alcohol we drink is directly expelled from the body
  - Clarification: Only about 2–10% of the alcohol we consume is directly excreted in the breath, urine, etc.
- The body eliminates most of the alcohol by chemically breaking it down
- The liver is primarily responsible for breaking down, or metabolizing, the alcohol
  - Clarification: Some metabolism of alcohol also takes place in other parts of the body, including the brain
  - The liver does the vast majority of the job



- Metabolism of alcohol actually consists of a slow, controlled burning of the alcohol
- In the burning process, the alcohol combines with oxygen
- The liver has an enzyme called alcohol dehydrogenase, which helps to speed up the reaction of oxygen with the alcohol
  - Clarification: The enzyme does not react with the alcohol itself, but simply makes it easier for the oxygen to react with the alcohol
  - The technical term for something that helps a chemical reaction while not itself taking part in the reaction is a catalyst
  - Alcohol dehydrogenase is a catalyst for the metabolism of alcohol
- The reaction of alcohol with oxygen ultimately produces carbon dioxide and water, which can be directly expelled from the body



The speed with which the liver burns alcohol varies from person to person and will change from time to time for any particular person.

- BUT ON THE AVERAGE: Due to metabolism, a person's BAC will drop by about 0.015 per hour
  - For the average male, a BAC of 0.015 is equal to the alcohol content of about two-thirds of a "standard drink," i.e., about two-thirds of a can of beer, or about two-thirds of a glass of wine, or two-thirds of a shot of whiskey

- For the average woman, a BAC of 0.015 is equal to the alcohol content of only one-half of a "standard drink." So the average male can "burn up" about two-thirds of a drink in an hour
  - But the average female can only burn up about one-half of a drink in an hour

- In other words: suppose a person gulps down a can of beer, or a glass of wine, or a shot of whiskey; if the person is an average man, it will take him about an hour and one-half to burn up that alcohol; if the person is a woman, it will take her about two hours

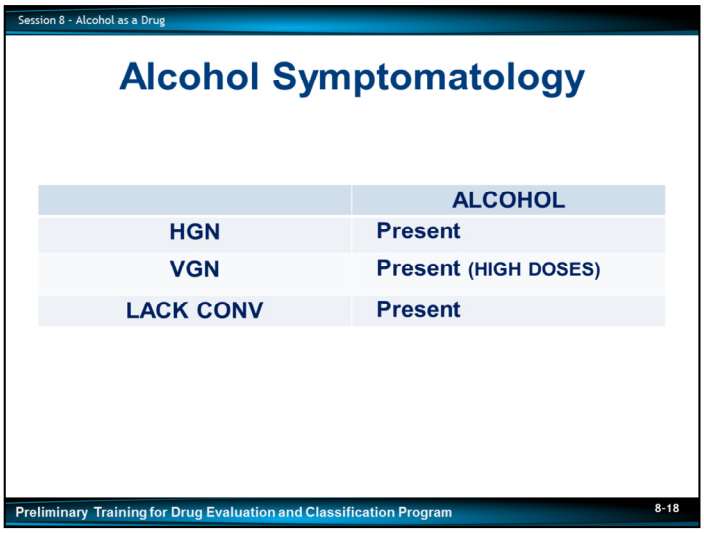
- We can't speed it up

- Drinking coffee won't help

- A cold shower won't help

- Exercise won't help

- Our livers take their own sweet time burning the alcohol

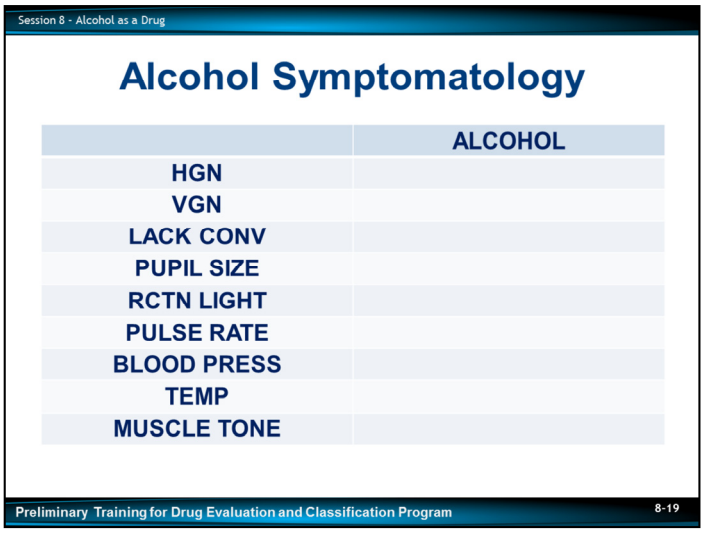


C. <u>Symptomatology of Alcohol</u>

- ETOH may elevate the pulse rate in lower BAC levels

Indicators of Alcohol Influence Found in Eye Exams

- Horizontal Gaze Nystagmus (HGN) will be present
- Vertical Gaze Nystagmus (VGN) may be present, especially with high doses (for that individual) of alcohol.
- Under the influence of alcohol, Lack of Convergence (LOC) frequently will be present.



- Alcohol does not affect pupil size; therefore, alcohol usually leaves the pupils in the DRE average ranges

- Alcohol will cause pupillary reaction to light to be sluggish

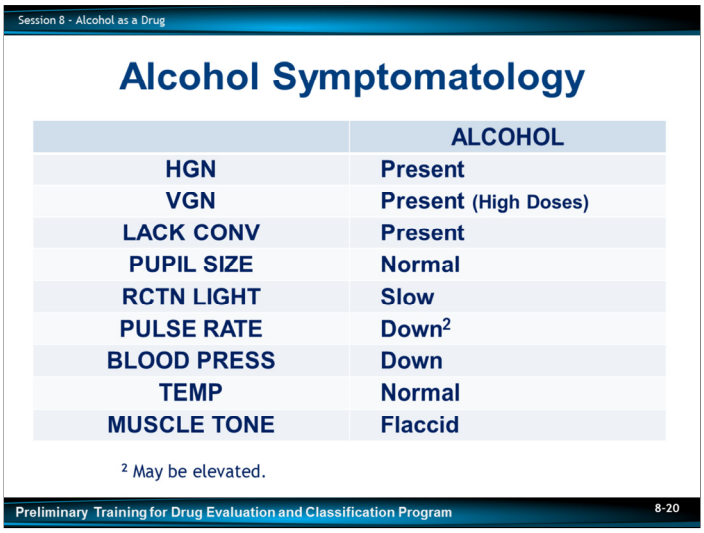
Indicators of Alcohol Influence Found in Checks of Vital Signs

- Pulse rate will usually be down. However, ETOH is one of the exceptions and some subjects have been found to have elevated pulse rates at lower BACs

- Blood pressure response to alcohol will normally be down

- Alcohol usually leaves body temperature near the average range

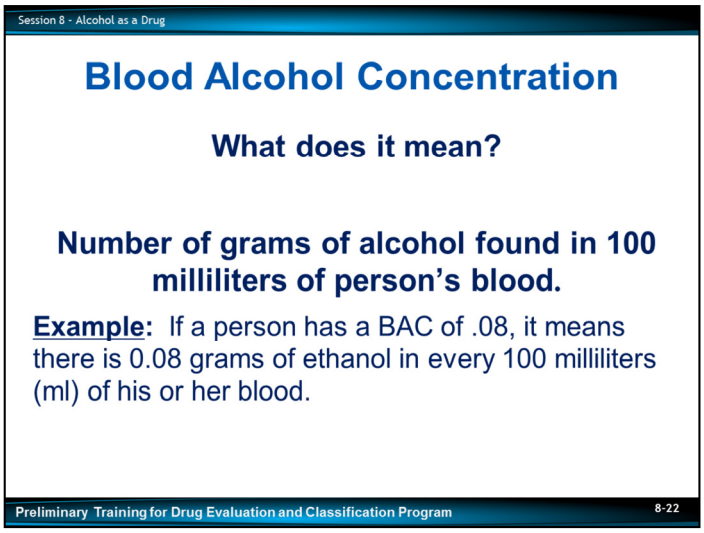
- Alcohol usually causes flaccid muscle tone


Session 8 - Alcohol as a Drug
Alcohol Symptomatology
ALCOHOL
HGN
Present
VGN
Present (High Doses)
LACK CONV
Present
PUPIL SIZE
Normal
RCTN LIGHT
Slow
PULSE RATE
Down2
BLOOD PRESS
Down
TEMP
Normal
MUSCLE TONE
Flaccid
2 May be elevated.
Preliminary Training for Drug Evaluation and Classification Program
8-20

Overdose Signs and Symptoms

There are conditions associated with alcohol consumption which need medical consideration. In addition to possible injuries associated with poor coordination, balance, and dizziness as a side effect of consuming alcohol, we also need to be aware and on the lookout for **alcohol poisoning**.

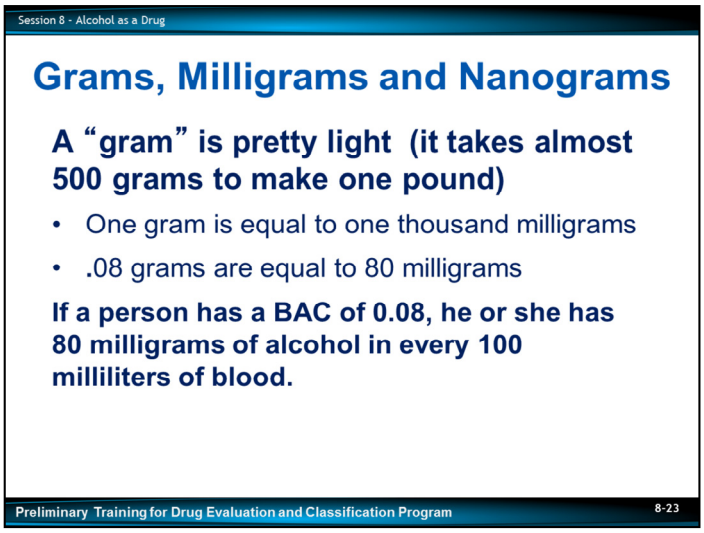
Again, **alcohol poisoning**, as defined by the Mayo Clinic is a serious – and sometimes deadly – consequence of drinking large amounts of alcohol in a short period of time. Drinking too much too quickly can affect your breathing, heart rate, body temperature, gag reflex, and potentially lead to coma and death. Alcohol poisoning can occur with both binge drinkers and heavy drinkers.



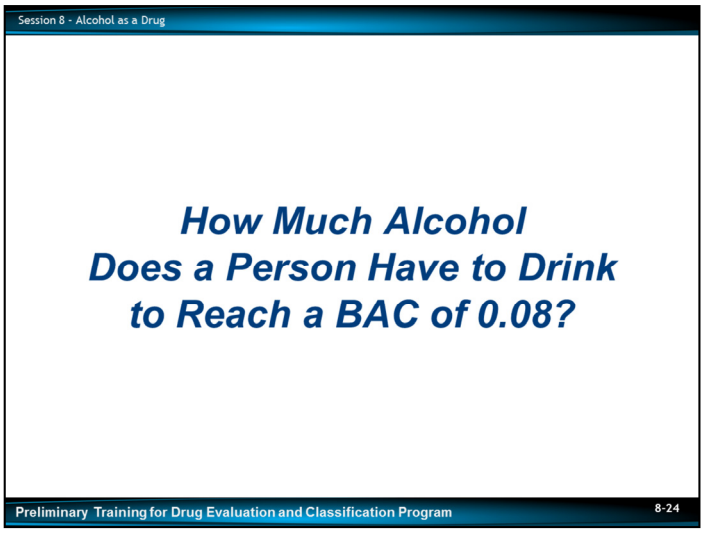
D. Dose-Response Relationships

What does "Blood Alcohol Concentration (BAC)" mean?

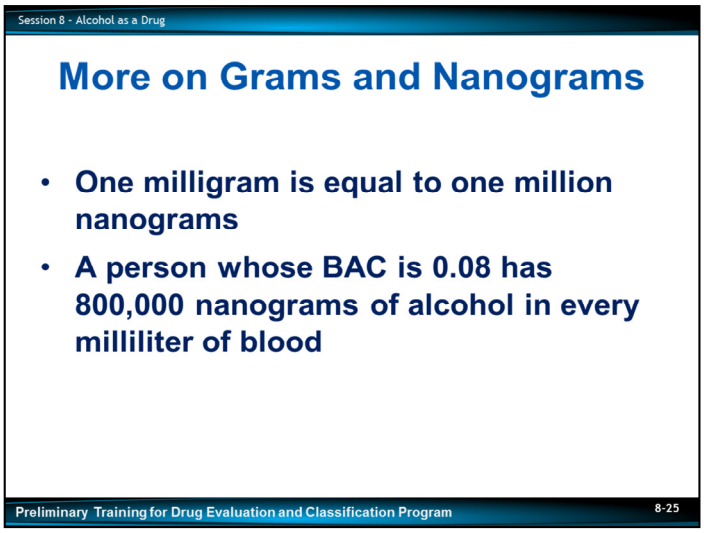
BAC is the number of grams of alcohol found in 100 milliliters of the person's blood. Example: If a person has a BAC of .08, it means there is 0.08 grams of ethanol in every 100 milliliters (ml) of his or her blood.



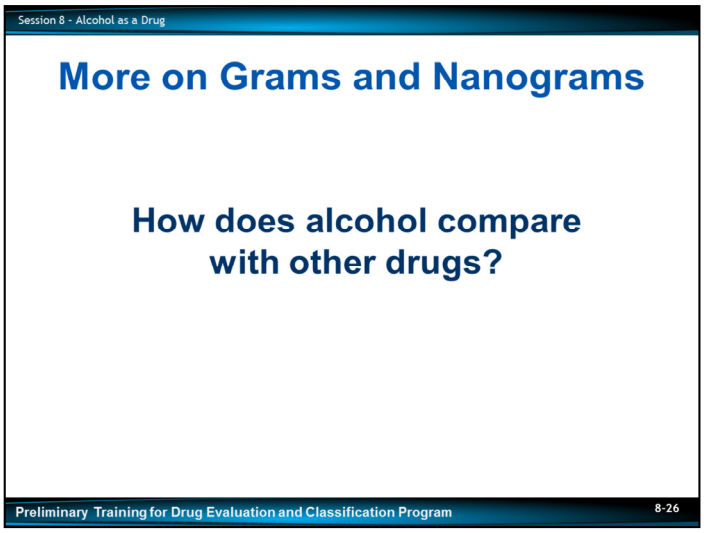
- BAC means the number of grams of pure ethanol found in every 100 milliliters of a person's blood
- A gram is a measure of weight; it takes almost 500 grams to make a pound
- The so-called "illegal limit" of BAC is 0.08 in all States
- In 2005, all 50 States had adopted 0.08 BAC
- If a person has a BAC of 0.08, it means there is 0.08 grams (g) of ethanol in every 100 milliliters (ml) of his/her blood

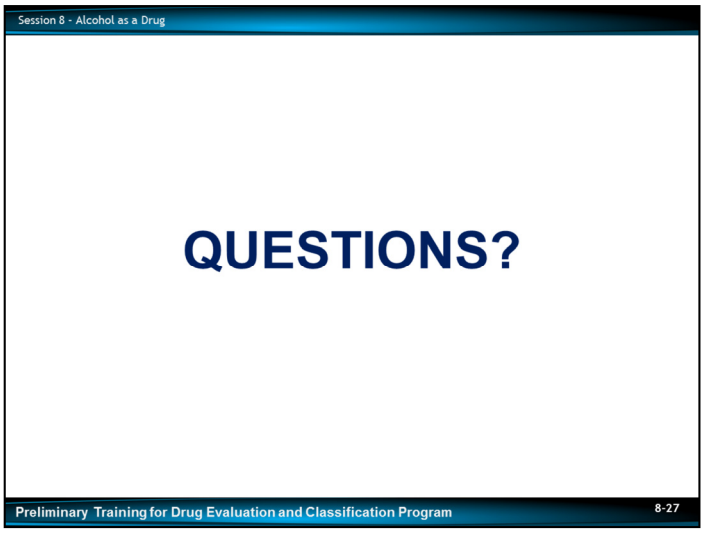


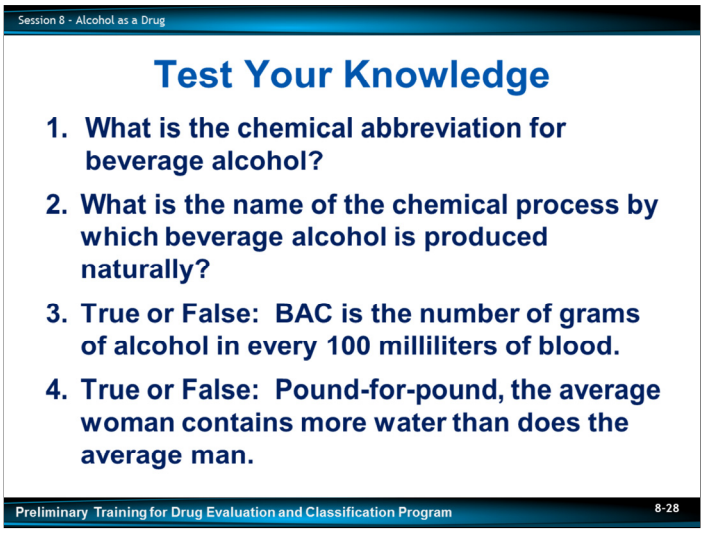
- Take an average male weighing 175 pounds and in reasonably good physical shape
- Assume he does his drinking on an empty stomach
- He would have to gulp down about 4 to 5 cans of beer, or 4 to 5 glasses of wine, or five shots of whiskey in a fairly short period of time to reach 0.08 BAC
- In terms of pure ethanol, that would amount to just about two and one-half fluid ounces or about two shot glasses
- If two shot glasses were filled with pure ethanol, we would have just enough of the drug to bring an average man to a BAC of approximately 0.10
- In one respect, it certainly doesn't take much ethanol to impair; just two full shot glasses will more than do the trick for a full-sized man
- BUT COMPARED TO OTHER DRUGS, it takes an enormous quantity of ethanol to cause impairment
- In order to compare ethanol to other drugs, we have to review some more units of weight



- We're already familiar with the gram
  - It weighs only about one five-hundredth of a pound
- The milligram is much lighter still and it takes about one thousand milligrams to make a gram
- If one gram is equal to one thousand milligrams, then one tenth of a gram is equal to one hundred milligrams
- Clarification: 100 is one-tenth of 1,000
- So a person with a BAC of 0.08 has 80 milligrams of ethanol in every 100 milliliters of his or her blood
- That is exactly the same as saying there is 800,000 nanograms of ethanol in every <u>one</u> milliliter of blood


Session 8 - Alcohol as a Drug
More on Grams and Nanograms
How does alcohol compare with other drugs?
Preliminary Training for Drug Evaluation and Classification Program
8-26


Session 8 - Alcohol as a Drug
QUESTIONS?
Preliminary Training for Drug Evaluation and Classification Program
8-27



Test Your Knowledge

1. What is the chemical abbreviation for beverage alcohol? _____

2. What is the name of the chemical process by which beverage alcohol is produced naturally?

_____

_____

3. True or False: BAC is the number of grams of alcohol in every 100 milliliters of blood.

_____

_____

4 . True or False: Pound-for-pound, the average woman contains more water than does the average man.

_____

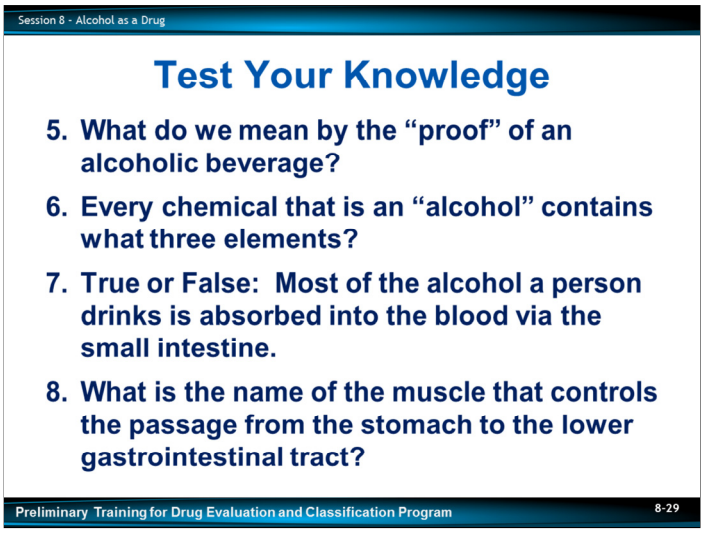
_____

_____

_____

_____

_____



5. What do we mean by the "proof" of an alcoholic beverage? _____

_____

_____

6. Every chemical that is an "alcohol" contains what three elements? _____

_____

_____

7. True or False: Most of the alcohol a person drinks is absorbed into the blood via the small intestine.

_____

_____

8. What is the name of the muscle that controls the passage from the stomach to the lower gastrointestinal tract?

_____

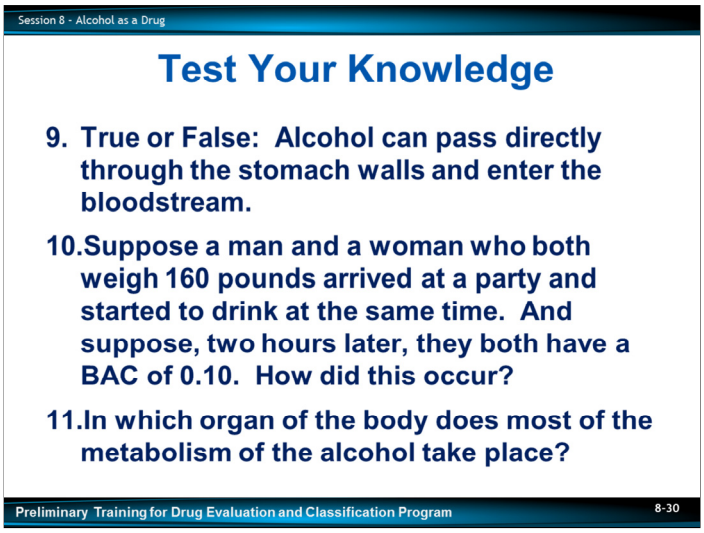
_____

_____

_____

_____

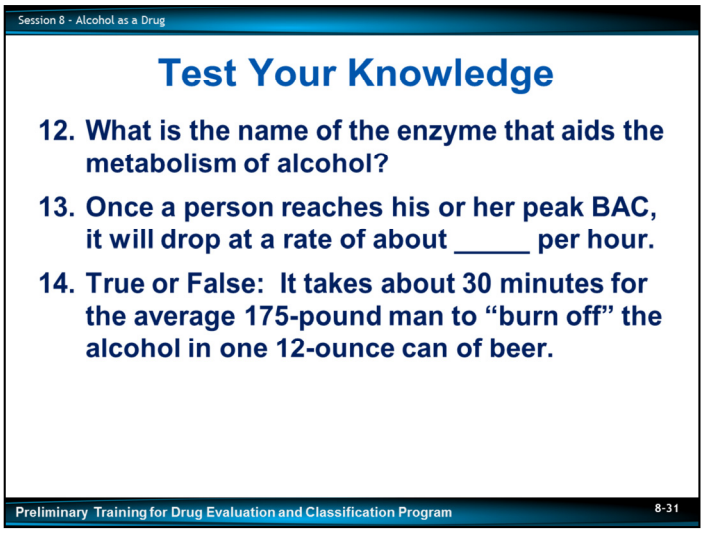
_____



9. True or False: Alcohol can pass directly through the stomach walls and enter the bloodstream.

10. Suppose a man and a woman who both weigh 160 pounds arrived at a party and started to drink at the same time. And suppose, two hours later, they both have a BAC of 0.10. How did this occur?

11. In which organ of the body does most of the metabolism of the alcohol take place?



12. What is the name of the enzyme that aids the metabolism of alcohol? _____

13. Once a person reaches his or her peak BAC, it will drop at a rate of about _____ per hour.

14. True or False: It takes about thirty minutes for the average 175 pound man to "burn off" the alcohol in one 12-ounce can of beer.

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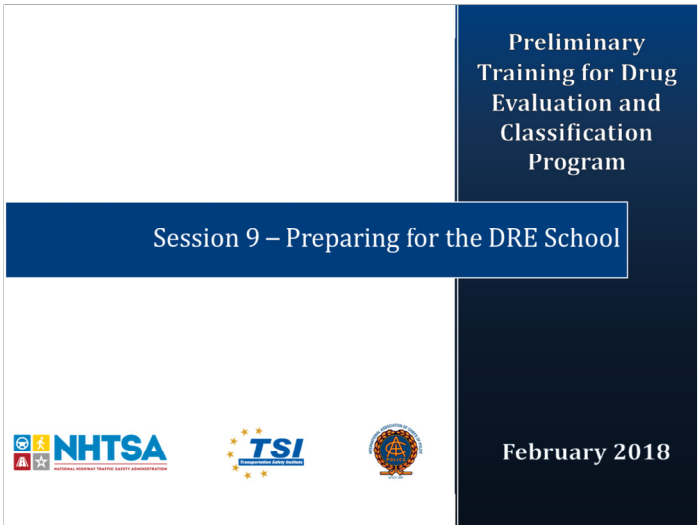
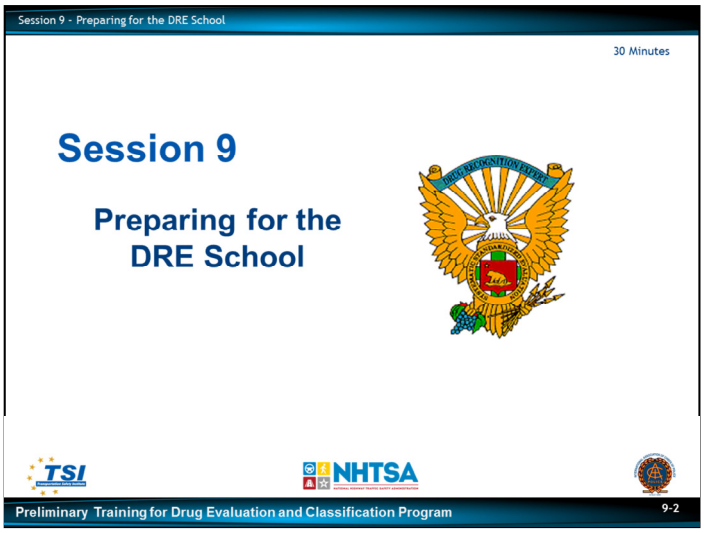
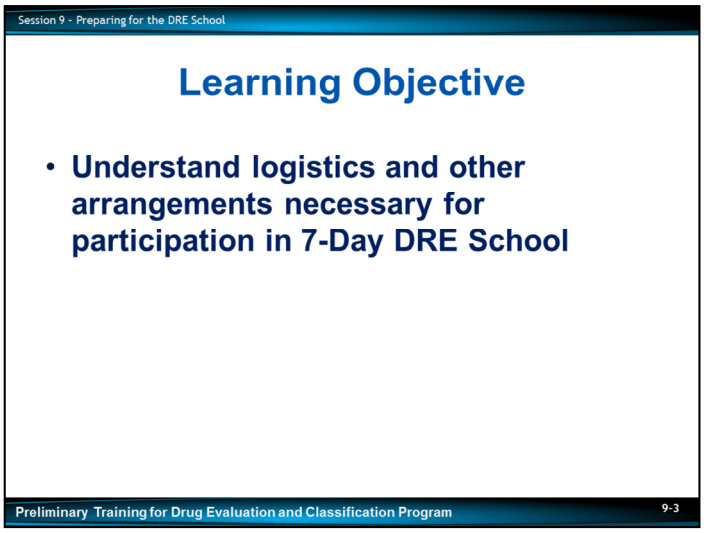

Preliminary Training for Drug Evaluation and Classification Program
Session 9 – Preparing for the DRE School
NHTSA
TSI
February 2018


Session 9 - Preparing for the DRE School
30 Minutes
Session 9
Preparing for the DRE School
TSI
NHTSA
Preliminary Training for Drug Evaluation and Classification Program
9-2

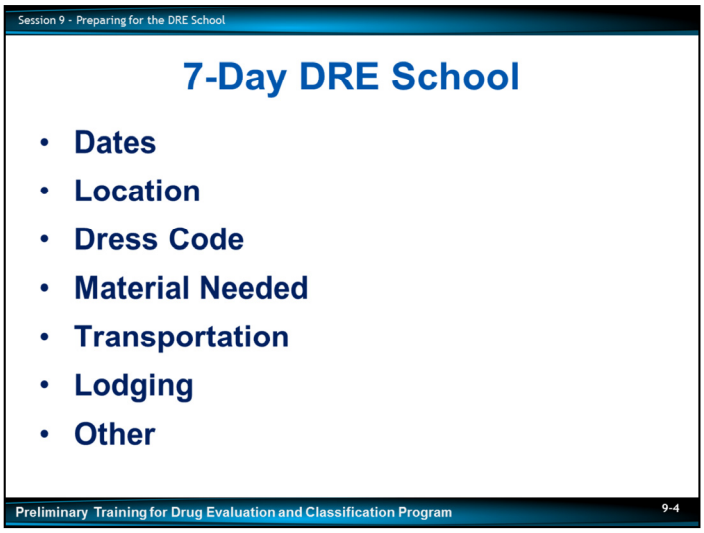


Upon successfully completing this session, the participant will be:

- Informed of the logistics and other arrangements necessary for their participation in the 7-Day DRE School.

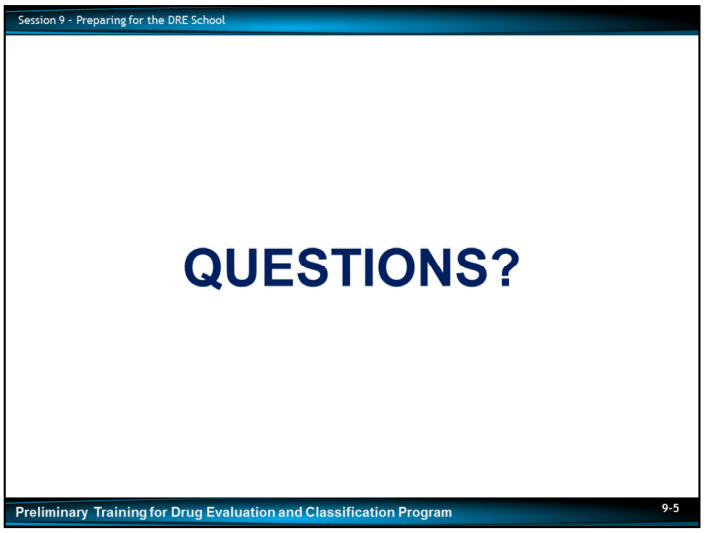
CONTENT SEGMENT

A. 7-Day DRE School



A. <u>7-Day DRE School</u>

- Dates of the 7-Day school
- Location of the school
- Dress code
- Materials that the participants should bring to the school
- Transportation arrangement (if applicable)
- Lodging arrangements (if applicable)
- Recreational facilities and opportunities (if appropriate)


Session 9 - Preparing for the DRE School
QUESTIONS?
Preliminary Training for Drug Evaluation and Classification Program
9-5

DRE Curriculum Vitae Worksheet

Formal Education

High School

College

Specialized College / Vocational Courses

Formal Professional Training

Academy

Specialized Police Training

Other Specialized / Professional Training

Relevant Experience

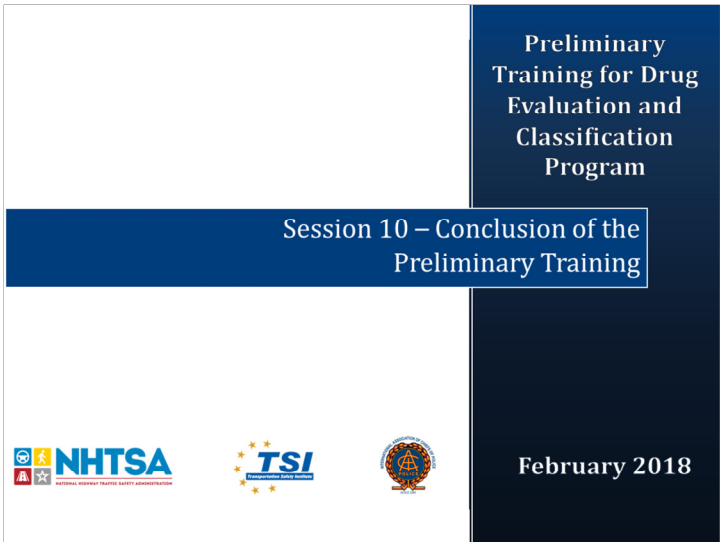
Job Experience (Law Enforcement)

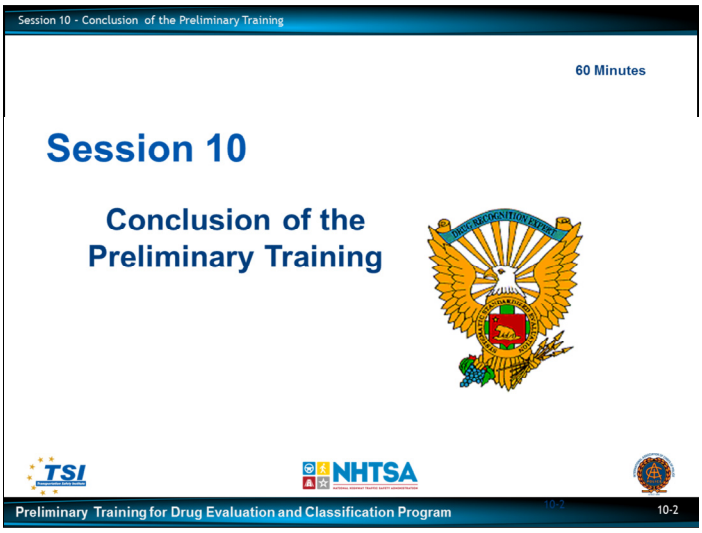
Other Job-Related Experiences

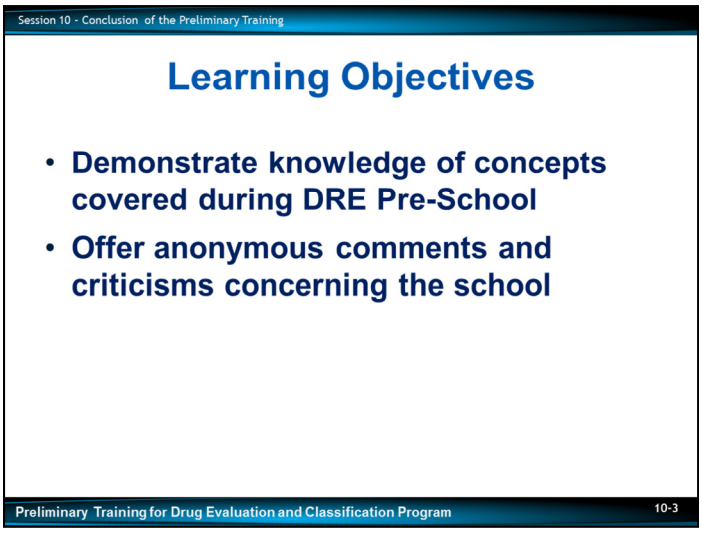
Drug Enforcement/Evaluation Experience

Court Qualifications

Outside Readings - (relative to the DEC Program)


Preliminary Training for Drug Evaluation and Classification Program
Session 10 – Conclusion of the Preliminary Training
NHTSA
TSI
February 2018


Session 10 - Conclusion of the Preliminary Training
60 Minutes
Session 10
Conclusion of the Preliminary Training
TSI
NHTSA
Preliminary Training for Drug Evaluation and Classification Program
10-2
10-2



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

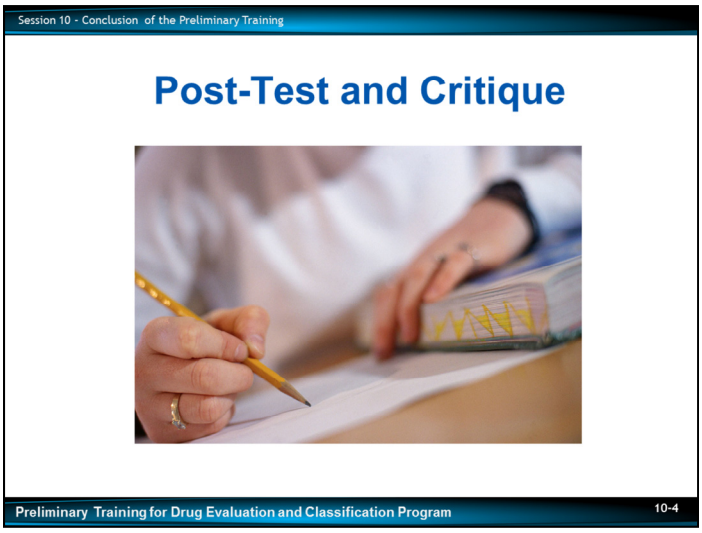
- Demonstrate his or her knowledge of the concepts covered during the DRE Pre-School
- Offer anonymous comments and criticisms concerning the school

CONTENT SEGMENTS

A. Post-Test and Critique
B. Certificates and Dismissal
C. Session Wrap-up

LEARNING ACTIVITIES

Written Examination



A. Post Test and Critique

Post Test

_____

_____

Critique

_____

_____

Review of the Post Test

_____

_____

_____

_____

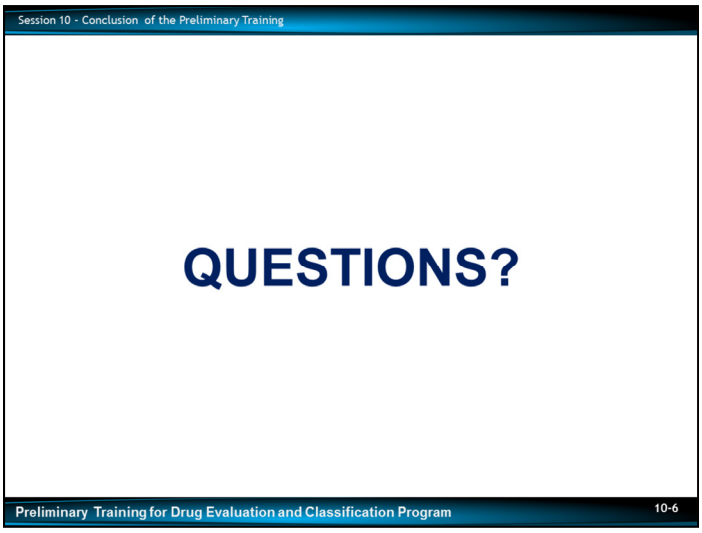
_____

_____

_____

_____

B. Certificates and Dismissal



C. Session Wrap-Up

Preliminary Training for Drug Evaluation and Classification
Course Critique

For items 1-6, please select your level of agreement with the following statements. Include any additional information in the space provided.

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I can define the term "drug" and name the seven drug categories. Comments:_____ _____	O	O	O	O	O
2. I can identify the twelve major components of the drug recognition process. Comments:_____ _____	O	O	O	O	O
3. I can administer and interpret the psychophysical tests used in a drug evaluation. Comments:_____ _____	O	O	O	O	O
4. I can conduct the eye examinations used in the evaluations. Comments:_____ _____	O	O	O	O	O
5. I can check the vital signs used in the evaluation. Comments:_____ _____	O	O	O	O	O
6. I can list the major signs and symptoms associated with each drug category.. Comments:_____ _____	O	O	O	O	O

Please rate how helpful each workshop session was for <u>you personally</u>.

Item	Poor	Fair	Good	Very Good	Excellent
Overview of Drug Evaluation and Classification Procedures	O	O	O	O	O
The Psychophysical Tests	O	O	O	O	O
The Eye Examinations	O	O	O	O	O
Alcohol Workshop	O	O	O	O	O
Examination of Vital Signs	O	O	O	O	O
Overview of Signs and Symptoms	O	O	O	O	O
Alcohol as a Drug	O	O	O	O	O
Preparing for the DRE School	O	O	O	O	O

Please mark the appropriate word to indicate your agreement or disagreement with each of the following statements.

Item	Agree	Disagree	Not Sure
I wish we had more practice with drinking volunteers.	O	O	O
There was too much “war story” telling in this course.	O	O	O
I now have a much better idea as to what the drug recognition process is all about.	O	O	O
The course was at least one-half day too long.	O	O	O
I got a great deal of practical, useful information from this course.	O	O	O
I’m still confused as to what the drug recognition process is.	O	O	O
I think I could do a pretty good job conducting a drug evaluation right now, without additional training.	O	O	O
The course should have been at least one-half day longer.	O	O	O
We spent too much time with the volunteer drinker session.	O	O	O
Some of the practice sessions were dragged out a bit too much.	O	O	O
Instructors were not as well prepared as they should have been.	O	O	O
The course was a good review, but it really didn’t teach me anything new.	O	O	O
I am very glad that I attended this course.			
The instructors seemed to be more interested in practicing their teaching skills than in seeing to it that we learned what we were supposed to learn.			
This course was not quite as good as I expected it to be.			

If you absolutely had to delete one session or topic from this course, what would it be?

_____

_____

If you could add one new topic or session to this course, what would it be?

_____

_____

_____

	Poor	Fair	Good	Very Good	Excellent
Please rate the overall quality of the course.	O	O	O	O	O

Please rate your instructors for this course. Rate the instructor(s) by selecting the appropriate response:

Instructor Name	Poor	Below Average	Average	Above Average	Excellent
Comments: _____ _____	O	O	O	O	O
Comments: _____ _____	O	O	O	O	O
Comments: _____ _____	O	O	O	O	O
Comments: _____ _____	O	O	O	O	O
Comments: _____ _____	O	O	O	O	O

Name (optional): _____