



# PRE-SCHOOL

Preliminary Training for the Drug Evaluation and Classification Program

## INSTRUCTOR GUIDE





# Preliminary Training for Drug Evaluation and Classification

## Instructor Guide

### Table of Contents

02/2023 Curriculum

#### Acknowledgements

#### Preface

#### Forward

#### Administrator Guide

Session 1: Introduction

Session 2: Overview of Drug Evaluation and Classification Procedures

Session 3: Psychophysical Tests

Session 4: The Eye Examinations

Session 5: Alcohol Workshop

Session 6: Examinations of Vital Signs

Session 7: Overview of Signs and Symptoms

Session 8: Alcohol as a Drug

Session 9: Preparing for the DRE School

Session 10: Conclusion of the Preliminary Training

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## PREFACE

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

As in any educational training program, an instruction manual is considered a “living document” that is subject to updates and changes based on advances in technology and science. A thorough review is made of information by the IACP Technical Advisory Panel (TAP) with contributions from many sources in health care science, toxicology, optometry, jurisprudence, and law enforcement. Based on this information, any appropriate revisions and modifications in background theory, facts, examination, and decision-making methods are made to improve the quality of the instruction as well as the standardization of guidelines for the implementation of the DRE training curriculum. The reorganized manuals are then prepared and disseminated, both domestically and internationally, to the DEC Program State Coordinators. Changes will take effect after approval by TAP, unless otherwise specified or when so designated.

The material in this curriculum is to help DREs interpret what is most likely to be seen when performing a drug influence evaluation. When it comes to the signs and symptoms of drug impairment, what is expected to be seen does not guarantee every indicator will be present during each drug influence evaluation. There may be variations due to individual reaction, dose taken, and drug interactions.

**Prior to initiating training, all States and equivalents must ensure they comply with DRE section six in the International Standards of Impaired Driving Programs.**

## TABLE OF CONTENTS

ACKNOWLEDGEMENTS .....	3
PREFACE .....	4
TABLE OF CONTENTS .....	5
SESSION ATTACHMENTS.....	5
A. PURPOSE OF THIS DOCUMENT .....	6
B. Overview of the Course.....	6
Intended Audience.....	6
Purpose of the Training .....	6
Benefits of the Training .....	6
Course Content .....	7
Training Activities .....	7
Length of the Training.....	8
C. Overview of the Curriculum Package .....	9
Instructor Guide.....	9
Visual Aids.....	10
D. General Requirements .....	10
Facility Requirements .....	10
Instructor Qualifications .....	10
Class Size Considerations .....	11
E. Guidelines for Controlled Drinking Practice Sessions .....	11
Criteria to be Considered When Selecting Volunteer Drinkers .....	11
Managing the Volunteer Drinkers .....	12
Guidelines for Achieving Target BACs During a 3-Hour Interval .....	13

## SESSION ATTACHMENTS

- Glossary of Terms (Session 1)
- Drug Influence Evaluation Checklist (Session 2)
- Understanding the Terms “Normal” vs. “Average” (Session 4)
- HGN Template (Session 4)
- Statement of Informed Consent (Session 5)
- SFST Proficiency Checklist (Session 5)
- DRE Facesheet (Session 5)
- Semi-Blank Matrix (Session 6)
- DRE Curriculum Vitae Worksheet (Session 9)
- Participant Critique Form (Session 10)

## PURPOSE OF THIS DOCUMENT

This Administrator Guide provides an introduction and an overview of the two-day course entitled "Preliminary Training for Drug Evaluation and Classification Program." This course is the first in a series of three training phases that, collectively, prepare police officers and other qualified persons to serve as DREs. In some law enforcement agencies, these officers are known as Drug Recognition Technicians. The IACP has adopted "DRE" as the generic title for the persons who carry out this program.

A qualified person who satisfactorily completes this Preliminary Training program is eligible for advancement to the second phase of DRE training, i.e., the 7-Day classroom program in drug evaluation and classification. The 7-Day course commonly is called the "DRE School" to distinguish it from this two-day preliminary course (known as the "Pre School"). Upon successful completion of the 7-day DRE School, the DRE candidate graduates to the final – or "Certification Phase" – of his or her training. Under in-person observation and supervision of duly authorized DRE instructors, the DRE trainee conducts evaluations of persons suspected of drug impairment. The instructors evaluate the trainee's skill in conducting drug influence evaluations and evaluate his or her judgment in forming opinions as to the category or combination of categories of drugs causing the impairment evident in the subjects. The trainee's opinions are compared with the results of toxicological examinations when they are available.

### Overview of the Course

#### Intended Audience

This course is designed for qualified persons who have been selected to serve as DREs. No one is permitted to enroll in the Pre-School unless he or she intends to proceed through the subsequent stages of training and ultimately achieve certification as a DRE. The emphasis here should be kept on the concept of actual service as DREs. The skills a DRE applies can be kept sharp only if they are frequently used.

There is no point in offering this training to someone who will not routinely and regularly evaluate drug impaired subjects since that person would quickly lose whatever competence he or she gained through the training.

#### Purpose of the Training

The goal of this two-day Pre School is to prepare the participants to successfully complete the 7-Day DRE School.

#### Benefits of the Training

Upon successfully completing this Pre School, the participants will be able to:

- Define the term "drug" and name the seven categories
- Identify the twelve major components of the drug influence evaluation process
- Administer and interpret the psychophysical tests used in the process

- Conduct the eye examinations used in the process
- Check the vital signs relevant to the process
- List the major signs and symptoms associated with each drug category
- Describe the history and physiology of alcohol as a drug

These are a subset of the competencies expected of DRE trainees by the completion of the 7-Day DRE School; the Pre-School gives them an introduction toward achieving those skills.

### Course Content

A traffic safety-oriented definition of what constitutes a "drug" (i.e., any substance that, when taken into the human body can impair the ability of the person to operate a vehicle safely)

- Enumeration of seven distinct categories of drugs; the drug influence evaluation process allows the DRE to identify which category or combination of categories is causing the impairment evident in a subject
- Demonstrations of and practice with four divided attention psychophysical tests used to assess impairment during a drug evaluation
- Demonstration of and practice with the three eye examinations that provide clues of the possible presence of various drug categories
- Demonstrations of and practice with checks of certain vital signs that point to the possible presence of various drug categories
- A review of the observable signs that distinguish the categories from each other

### Training Activities

Although a certain minimal amount of formal lectures are required, the course includes hands-on practice. Participants practice the divided attention tests, the eye examinations, and in performing checks of the vital signs. A controlled drinking exercise (involving volunteers who are not members of the class) provides an opportunity to practice assessing impairment on the divided attention tests.

At the conclusion of this training participants are provided a written examination to demonstrate their understanding of the training. DRE standard 1.5 details the requirements for completing the Preliminary School.

Length of the Training

The training encompasses the following:

### Preliminary School Sample Schedule

#### Day One

Session	Title	Duration
8:00 – 8:50	Introduction	50 Minutes
8:50 – 9:00	Break	10 Minutes
9:00 – 10:00	Overview of Drug Evaluation and Classification Procedures	1 Hour
10:00 – 10:15	Break	15 Minutes
10:15 – 11:45	Psychophysical Tests	1 Hour, 30 Minutes
11:45 – 12:45	Lunch	1 Hour
12:45 – 2:15	The Eye Examinations	1 Hour, 30 Minutes
2:15 – 2:30	Break	15 Minutes
2:30 – 4:30	Alcohol Workshop	2 Hours
4:30 – 5:00	Review of Day One	30 Minutes

#### Day Two

Session	Title	Duration
8:00 – 9:30	Examinations of Vital Signs	1 Hour, 30 Minutes
9:30 – 9:45	Break	15 Minutes
9:45 – 11:15	Examinations of Vital Signs (cont)	1 Hour, 30 Minutes
11:15 – 11:30	Break	15 minutes
11:30 – 12:45	Overview of Signs and Symptoms	1 Hour, 15 Minutes
12:45 – 1:45	Lunch	1 Hour
1:45 – 3:15	Alcohol as a Drug	1 Hour, 30 Minutes
3:15 – 3:30	Break	15 Minutes
3:30 – 4:00	Preparing for the DRE School	30 Minutes
4:00 – 5:00	Conclusion of the Preliminary Training	1 Hour

## Overview of the Curriculum Package

### Instructor Guide

The Instructor Guide is a complete and detailed outline of what is to be taught in the Pre-School (i.e., the subject matter) and also of how it is to be taught (i.e., the instructional methods). The Guide is organized into sessions. Each session corresponds to one of the course's ten sessions. Each session consists of a cover page, an outline page, the lesson plans themselves, and copies of any visuals referenced.

The cover page presents the session's title and the total time required to conduct the session. The outline page presents the training objectives for the session, i.e., exactly what the participant will be able to do as a result of successfully completing the session. The outline page also lists the major content segments of the session, as well as the principal instructional activities that take place during the session.

**The "Instructional Notes" on each page are listed in bold, italicized print and serve as reminders of important information the instructor should elicit during the training and relate to the participants.** These notes define how the instructor is to present the material and involve the participants in the presentation and ensure they understand and assimilate the material.

Typical "Instructional Notes" include:

- The approximate amount of time to be devoted to each major content segment
- Indications of what visual aids are to be used and when they are to be used
- Questions to be posed to participants to involve them actively in the presentation
- Indications of points requiring special emphasis
- Guidelines for conducting particular demonstrations to clarify how drug evaluations are to be performed
- Specifications of group exercises and other methods of involving participants more actively in the lesson

The Instructor Guide serves, first, to prepare the instructor to teach the course. Instructors should review all sessions to become familiar with the content and learning activities and develop a clear understanding of how the course fits together. The instructor is expected to become thoroughly familiar with each segment he or she is assigned to teach, to assemble all training aids and materials needed to deliver the lesson, and, to augment the instructional notes, as necessary and appropriate, to ensure the instructor's style and experience are applied to teaching the lesson.

Subsequently, the Instructor Guide serves as an in-class reference document for the instructor to help him or her maintain the sequence and pace of training.

It is worth emphasizing the lesson plans are not speeches. Although the outlines of content and instructional notes are fairly detailed, those outlines are not to be read verbatim to the participants. This training is intended to be a dynamic and highly interactive learning experience. It must not be permitted to degenerate into a series of mere lectures.

## Visual Aids

Four kinds of audio-visual aids may be employed in the Pre-School:

- Wall-charts
- Dry erase board and/or easel/easel pad presentations
- Visuals, i.e., PowerPoint slides
- Video

The wall-charts are permanently displayed items. They consist of brief captions, intended to depict major themes and segments of the course. The wall-charts should be positioned high on the far left and right sides of the classroom's front wall where they will be visible without occupying the center of attention.

The dry erase board and/or easel/easel pad presentations are outlined in the lesson plans and are self-explanatory.

The visuals are simple graphic and/or narrative PowerPoint displays that emphasize key points and support the instructor's presentations.

The video is a portrayal of major components of the drug influence evaluation. This same video is used in the 7-Day DRE School.

## General Requirements

### Facility Requirements

The Pre-School requires a classroom with ample table/desk space for each participant, an audio-visual projector and screen, and a dry-erase board and/or easel/easel pad. The classroom must have sufficient open space to permit instructors to give full and unimpeded demonstrations of the divided attention tests, the eye examinations, and the checks of vital signs. The arrangement of the classroom must permit the participants to have full view of these demonstrations.

Adequate space must be available to permit the participants to practice the various tests and practical exercises the instructors demonstrate. The practice space may be a room separate from the classroom; a gymnasium often serves quite well for the practice segments.

The Alcohol Workshop also requires a separate room where the volunteers can do their drinking. Breath testing instruments and operators must be available to monitor the volunteers' BACs.

### Instructor Qualifications

The principal instructors for this course must be State-certified, IACP-credentialed DRE instructors under DRE section two in the IACP International Standards for Impaired Driving

Programs. Instructors with special credentials for certain blocks of instruction may be enlisted to supplement the DRE instructors (e.g., a nurse could assist in teaching the vital signs session).

### Class Size Considerations

The recommended maximum class size for this course is 24 participants. Larger classes make it difficult to devote sufficient attention to each participant to ensure that he or she develops evaluation skills to a level sufficient to progress to the Certification Phase.

### Guidelines for Controlled Drinking Practice Sessions

Both the Pre-School and DRE 7-Day course require an alcohol workshop and the use of volunteer drinkers. The participation of volunteers who will consume carefully-measured quantities of alcohol and submit to examinations administered by the participants. Without these volunteers, participants have no opportunity to practice administering the tests under reasonably realistic circumstances or to practice interpreting test results.

Drinking volunteers, then, are an essential resource for this training. Careful steps must be taken to ensure the volunteers contribute to a worthwhile learning experience and suffer no harm to themselves nor cause any harm to others.

It is imperative all volunteers' safety and well-being be a primary concern throughout the exercise, transportation, and release to the appropriate persons. At no time shall they be subject to any threatening, harmful, or inappropriate situation. Instructors and monitors shall maintain a professional demeanor at all times.

### Criteria to be Considered When Selecting Volunteer Drinkers

The following criteria define who can be considered as drinking volunteers:

- They cannot be members of the class
- They must be of at least legal drinking age
- They cannot have any history of alcoholism
- They cannot be known to suffer from any medical condition that may be exacerbated by alcohol (such as hypertension or diabetes)
- They cannot be taking any medication (prescription or otherwise) that might interact with alcohol
- They must be in good physical health and have no impairments of vision or limbs that might affect their performance of the SFSTs
- Whenever possible, try to use volunteers who are under 65 years of age and less than 50 pounds overweight (conditions for which the WAT and OLS have been validated)

## Managing the Volunteer Drinkers

Every volunteer drinker participating in the alcohol workshop must read and sign the "Statement of Informed Consent" before receiving any alcohol. The Course Administrator or a designated DRE Instructor will obtain the individual signatures from each of the volunteer drinkers prior to commencing the alcohol workshop.

Transportation should be provided for the volunteers to the training session and must be provided from the training session. Under no circumstances may volunteers be permitted to drive from the training session, regardless of their blood alcohol concentration (BAC) at the time of departure. Volunteers should be released only into the custody of responsible, sober persons.

The practice sessions require a minimum of one drinking volunteer for every five participants. A more desirable ratio is one volunteer for every three participants. Thus, for a class of 25 participants, at least 5 volunteers, and preferably 8 or 9, must participate in each session.

The effectiveness of the volunteers, as training resources, very much depends on their BACs. If a volunteer's BAC is too low (i.e., below 0.06), he or she generally will provide a poor simulation of a typical DWI subject. If the BAC is too high (i.e., above 0.15), the volunteer's state of inebriation usually will be evident without standardized sobriety testing and the learning experience will not contribute as effectively as possible to sharpening the participants' detection skills.

Ideally, approximately half of the volunteers at any session should achieve peak BACs between 0.12 and 0.14 and the other half between 0.06 and 0.08. But this is very difficult to control. It is always preferable to err, if necessary, on the low side: it is better to fail to get volunteers as "high" as desired, rather than to get them too "high".

Volunteers should be instructed to refrain from eating two hours prior to their arrival at the training facility. Food in their stomachs may dramatically affect the absorption of alcohol into their bloodstreams and significantly impede your ability to control the peak BACs they achieve.

Volunteers should be brought to the training facility at least three hours before the practice session is scheduled to begin. Each volunteer should be breath tested immediately upon arrival to verify his or her BAC is zero.

The table on the next page indicates the ounces of 80-proof distilled alcoholic beverage volunteers should consume, in relation to their weight and the "target" peak BAC, during a three-hour interval to reach a target BAC of 0.12-0.14 percent.

## Guidelines for Achieving Target BACs During a 3-Hour Interval

Ounces of 80-Proof Alcoholic Beverage to Reach a B.A.C. of 0.12.

<b>Weight (Pounds)</b>	<b>MEN</b>	<b>WOMEN</b>
<b>110</b>	5	4
<b>120</b>	6	5
<b>130</b>	6	5
<b>140</b>	7	5
<b>150</b>	7	6
<b>160</b>	8	6
<b>170</b>	8	6
<b>180</b>	9	7
<b>190</b>	9	7
<b>200</b>	10	8
<b>210</b>	10	8
<b>220</b>	10	8
<b>230</b>	11	9
<b>240</b>	11	9
<b>250</b>	12	10

It is recommended volunteers consume half of the total allocated amount of alcoholic beverage during the first hour following their arrival at the testing facility. They should refrain from drinking or smoking prior to any breath test.

NOTE: A volunteer may cease drinking at any time.

NOTE: No weapons should be present in the vicinity of any drinking volunteer.

Volunteers must be kept under constant supervision from the time of their arrival at the training facility. It is suggested there be one monitor for every four volunteer drinkers and, whenever possible, monitors of the same gender as the drinkers should be used. The aides must monitor the volunteers, serve their drinks, make sure they comply with the schedule, and, in general, keep them under close observation.

NOTE: For a more complete description of Alcohol Workshop procedures, refer to the latest edition of the Participant Manual or Instructor Guide for the DRE Instructor Development Course, and specifically Unit Nine, "Planning and Managing an Alcohol Workshop".

1.

1.



***EXPLAIN*** that the course consists of live lecture, presentation slides, group activities, and supplemental materials. The participant guide is theirs to keep.

The following icons are used throughout the guide.



***Indicates an activity such as a discussion, game, or work session.***



***Indicates a website resource (web address).***



***Indicates a playable video.***



***Indicates an instructor note***

***All instructor notes appear in bold, italic font. Instructor notes do not appear in the participant guide.***

Session 1-Introduction

## Session Learning Objectives

- State 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

Preliminary Training for DEC Program 1-2

**Slide 2.**



***Briefly review the objectives, content and activities of this session.***

### A. Welcoming Remarks and Objectives

Session 1-Introduction

## Housekeeping

- Paperwork
- Mandatory attendance
- Breaks
- Facility
- Interruptions



Preliminary Training for DEC Program 1-3

**Slide 3.**



***Ensure instructors’ names and participants’ names are clearly written on tent cards.***

***Welcoming Remarks: Welcome to the first phase of Drug Recognition Expert (DRE) training.***

***Faculty Introductions: Lead off instructors introduce the instructor faculty. State names, agency affiliations, and experience. Ask each instructor to stand as they are introduced.***



**Paperwork:** Completion of registration forms, travel vouchers, etc.

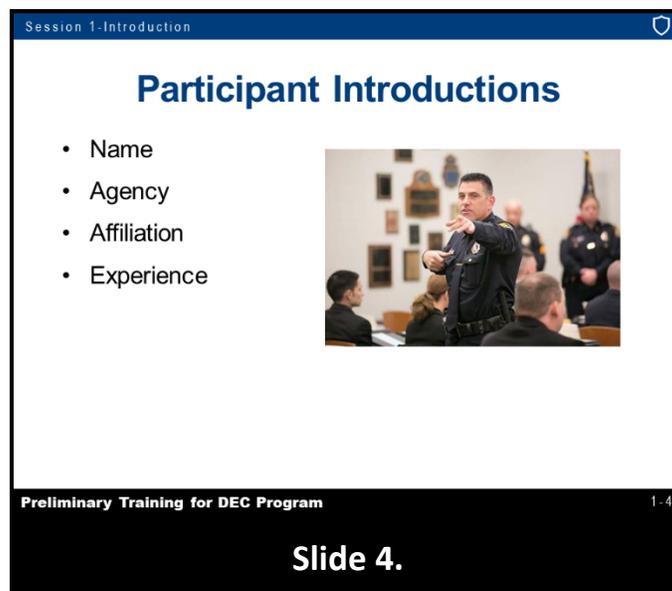
**Attendance:** If a participant misses any portion of this school, he or she must make up the deficiency via after-hours tutoring before beginning certification training.

**Breaks:** Time allotted for breaks and reconvening.

**Facility:** Locations of restrooms, lunchrooms, etc.

**Interruptions:** No texting or email monitoring. Turn off all electronic devices.

Attendance is mandatory at all sessions of this school.



**Whenever possible, consider using creative and innovative icebreaking techniques.**

**At a minimum, instruct each participant to stand and give their name, agency affiliation, and experience.**

Session 1-Introduction

## Introduction

Goal: To prepare the participants to succeed in the 7-Day Drug Recognition Expert School



Preliminary Training for DEC Program 1-5

**Slide 5.**

The goal of the Preliminary Training is 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.



***Inform the participants of when and where their formal, 7-Day DRE School will take place.***

Session 1-Introduction

## Course Learning Objectives

- Define “Drug”
- Name the seven drug categories
- Identify the twelve steps in the DRE drug influence evaluation
- Administer and interpret the psychophysical tests used by DREs during the drug influence evaluation

Preliminary Training for DEC Program 1-6

**Slide 6.**

Session 1-Introduction

## Course Learning Objectives

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

Preliminary Training for DEC Program 1-7

**Slide 7.**

The learning objectives of the Preliminary Training are to:

- 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
- 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



***Solicit participants’ questions about the goal and objectives.***

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.”



***Solicit participants’ questions about the three stages of training.***

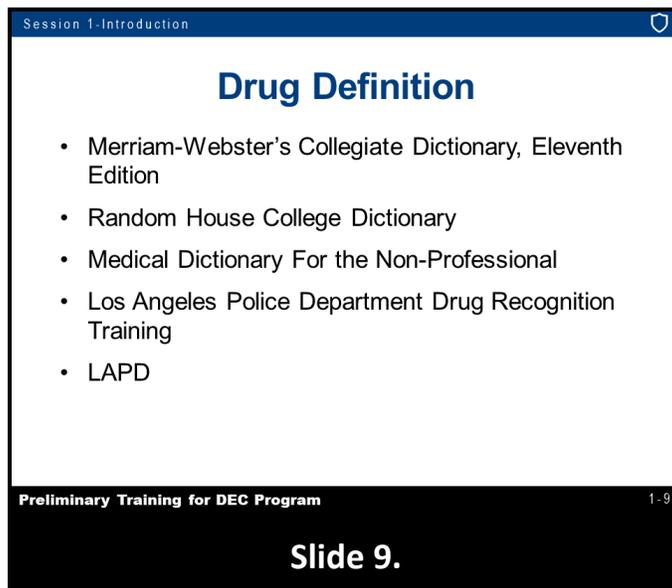
***Preview of the Remainder of the Pre-School: Briefly outline the upcoming sessions of the school. Refer to the wall-charts.***

***Certification Progress Logs: Instruct participants to open their guides and remove the Certification Progress Log. Have participants fill out the first line of the log, then collect it.***



***Play MADD video “No More Victims” (approximately 10 minutes).***

## B. Definition and Categories of Drugs



***Pose this question and solicit responses from several participants.***

***What do we mean by the word “drug”?***

There are alternative definitions for the word “drug”, drawn from several sources.

“A substance used as a medicine or in the preparation of medicine.”



**Source:**

Merriam-Webster. (n.d.). Drug. In Merriam-Webster.com dictionary. Retrieved June 23, 2022, from <https://www.merriam-webster.com/dictionary/drug>

**Ask participants: “Would you agree all drugs are medicines or ingredients of medicines?”**

**Ask participants to name some substances they consider to be “drugs” that have no medicinal value.**

“A narcotic substance or preparation.”



**Source:**

Drug. (n.d.). In Merriam-Webster’s dictionary (11<sup>th</sup> ed.).

**Ask participants if they agree all drugs are narcotics.**

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



**Source:**

Drug. (1982). In Random House College Dictionary

**Point out this definition seems to exclude any drug that is harmful or does not enhance welfare.**

“A habit-forming medicinal substance, especially a narcotic.”



**Source:**

Drug. (1982). In Random House College Dictionary

**Ask participants if they agree all drugs are habit forming.**

**Ask if, from an enforcement perspective, they can think of any habit-forming substances they would not ordinarily be considered to be a drug.**

“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).”



**Source:**

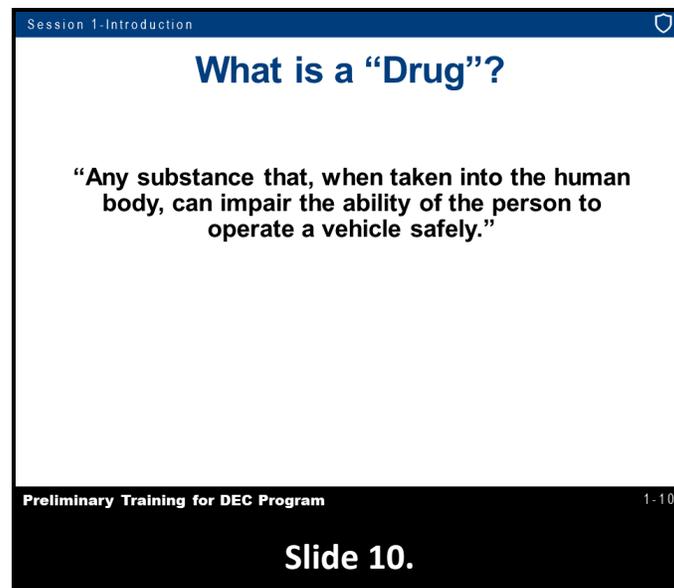
Drug. (1984). In Medical Dictionary For the Non-Professional, Barrows Educational Series, Inc., Woodbury, NY.

“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.”



**Source:**

Drug. (1986) In Los Angeles Police Department Drug Recognition Training



A simple, enforcement-oriented definition of drugs is “Any substance that, when taken into the human body, can impair the ability of the person to operate a vehicle safely.” This working definition is derived from the 1985 California Vehicle Code.



***Point out participants will need to know the definition of a drug verbatim.***

***Point out this definition excludes many substances that ordinarily would be considered “drugs” by physicians, chemists, etc.***

***Ask participants: What are some things physicians would consider to be “drugs” that would not be covered under this definition? Examples: nicotine; Caffeine.***

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



***Ask participants: What are some common chemical substances doctors don't usually consider drugs, but definitely impair driving ability? Examples: model airplane glue; paint.***

***Emphasize, as traffic law enforcement officers, participants' concern has to remain focused on substances that impair driving.***

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.



***Emphasize each State may have specific criteria related to the definition of a drug. Participants should become familiar with their State's specific statutes in this area.***

Session 1-Introduction

What are the seven categories of drugs?

Preliminary Training for DEC Program 1-11

**Slide 11.**



***Emphasize the Drug Evaluation and Classification (DEC) Program drug categories differ from those of the American Medical Association (AMA) and the Drug Enforcement Administration (DEA) because they categorize drugs on the basis of their chemical structures, while we categorize drugs on the basis of the kinds of impairment they produce.***

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.



**Ask participants: “What are the seven categories of drugs?” Remember some participants may not have been trained on the seven categories of drugs. Poll the participants to determine their knowledge of the drug categories. Instructors may need to assist the participants in identifying the categories.**

**Write the names of the categories on the dry erase board or easel/ease pad as they are mentioned by the participants.**

A presentation slide titled "Central Nervous System Depressants". The slide lists four items: Alcohol, Barbiturates, Valium, and Chloral Hydrate. To the right of the list are two images: one showing a white powder and a glass of water, and another showing boxes of Rohypnol and several pills. The slide footer includes "Session 1-Introduction", "Preliminary Training for DEC Program", and "1-12".

Session 1-Introduction

## Central Nervous System Depressants

- Alcohol
- Barbiturates
- Valium
- Chloral Hydrate

Preliminary Training for DEC Program 1-12

**Slide 12.**

The category of CNS Depressants includes some of the most commonly abused drugs.

Alcohol – the most familiar drug of all – is used by an estimated 138.5 million Americans, which is slightly less than half of Americans. Approximately 17.7 million people describe themselves as heavy drinkers.



**Source:**

Substance Abuse and Mental Health Services Administration. (2021). *Key Substance Use and Mental Health Indicators in the United States: Results from the 2020 National Survey on Drug Use and Health*. (HHS Publication No. PEP21-07-01-003, NSDUH Series H-56). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from <https://www.samhsa.gov/data/>

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.



**Source: Downers: A New Look at Depressant Drugs**

**Point out Chloral Hydrate sometimes is called “Mickey Finn” or “Knockout drops.”**

Depressants slow down the operation of the central nervous system (i.e., the brain, brain stem, and spinal cord). They cause the user to react more slowly and to process information more slowly. Depressants relieve anxiety and tension and 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.

A presentation slide titled "Central Nervous System Stimulants" from a "Session 1-Introduction" presentation. The slide lists three items: Cocaine, Amphetamines, and Methamphetamine. To the right of the list are two images: the top one shows a pile of white powder being scooped by a metal spoon, and the bottom one shows a pile of yellowish-orange powder in a clear container. The slide footer includes "Preliminary Training for DEC Program" and "1-13". Below the slide frame, the text "Slide 13." is displayed in white on a black background.

Session 1-Introduction

## Central Nervous System Stimulants

- Cocaine
- Amphetamines
- Methamphetamine

Preliminary Training for DEC Program 1-13

**Slide 13.**

CNS Stimulants are a widely abused category of drugs. In a 2020 survey, an estimated 12.8 million people were current users of stimulants including 2.5 million people who were current Methamphetamine users during the past year.

In 2020, there were 5.2 million Cocaine users aged 12 or older in the U.S.



**Source:**

Substance Abuse and Mental Health Services Administration. (2021). *Key Substance Use and Mental Health Indicators in the United States: Results from the 2020 National Survey on Drug Use and Health*. (HHS Publication No. PEP21-07-01-003, NSDUH Series H-56). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from <https://www.samhsa.gov/data/>

***Instructors may wish to include statistics regarding the use of Methamphetamines in their respective State.***

CNS Stimulants speed up the operation of the central nervous system and of the various bodily functions controlled by the central nervous system. They cause the user to become hyperactive and extremely talkative. With CNS Stimulants, 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, and the user may become excessively sweaty. CNS Stimulants induce emotional excitement, restlessness, and irritability. They may suffer a stroke, heart attack, or organ damage.



***Remind participants of well-known athletes and others who have died because of Cocaine abuse.***

Session 1-Introduction

## Hallucinogens

- LSD
- Peyote
- Ecstasy

Preliminary Training for DEC Program 1-14

**Slide 14.**

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 2020 an estimated 2.4 million people aged 12 and over were current users of Hallucinogens.



**Source:**

Substance Abuse and Mental Health Services Administration. (2021). *Key Substance Use and Mental Health Indicators in the United States: Results from the 2020 National Survey on Drug Use and Health*. (HHS Publication No. PEP21-07-01-003, NSDUH Series H-56). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from <https://www.samhsa.gov/data/>

***Point out LSD and Peyote are only two examples 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. They also induce a temporary condition very much like psychosis or insanity and can create a “mixing” of sensory modes, for example, the user “hears colors,” “sees music,” “tastes sounds,” etc., referred to as “synesthesia.”



***Point out, with all of these false and distorted perceptions, the person under the influence of Hallucinogens would be a very unsafe driver.***

Session 1-Introduction

## Dissociative Anesthetics

- Phencyclidine (PCP)
- Ketamine
- Dextromethorphan (DXM)



Preliminary Training for DEC Program 1-15

**Slide 15.**

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.



***Point out this category used to be PCP but was changed in 2005.***

***Point out the definition of Dissociative Anesthetics is contained in the Glossary of Terms in the DRE Pre-School Participant Guide.***

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



***Point out people under the influence of a Dissociative Anesthetic may exhibit a combination of the signs associated with Hallucinogens, CNS Stimulants, and Depressants.***



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. It slows down thought, slows reaction time, and 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. With PCP, the heart rate increases, blood pressure increases, adrenalin production increases, body temperature rises, and 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. Also, the user’s perception of time and space may be distorted, the user may become paranoid, feel isolated, and depressed, the user may develop a strong fear of and pre-occupation with death, and the user may become violent.

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

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

Session 1-Introduction

## Narcotic Analgesics

- Heroin
- Morphine
- Codeine



Preliminary Training for DEC Program 1-17

### Slide 17.

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.



***Point out Heroin, Morphine, and Codeine are natural derivatives of Opium.***

***Point out Methadone is an example of a synthetic narcotic.***

The word “analgesic” means pain reliever. All of the drugs in this category reduce the person’s reaction to pain. According to the 2020 NSDUH report, there are approximately 902,000 users of Heroin within the past year. 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.



***Point out this condition is often called being “on the nod.”***

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.

Session 1-Introduction

## Inhalants

- Paint
- Various glues
- Nitrous Oxide



Preliminary Training for DEC Program 1-18

**Slide 18.**

Inhalants are fumes of certain substances that produce mind altering results. In 2020, approximately 2.5 million people were users of Inhalants in the past year.



**Source:**

Substance Abuse and Mental Health Services Administration. (2021). *Key Substance Use and Mental Health Indicators in the United States: Results from the 2020 National Survey on Drug Use and Health*. (HHS Publication No. PEP21-07-01-003, NSDUH Series H-56). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from <https://www.samhsa.gov/data/>

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.); and, 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.

Session 1-Introduction

## Cannabis

- Marijuana
- Hashish
- Marinol
- K-2 / Spice



Preliminary Training for DEC Program 1-19

### Slide 19.



***Write “Cannabis Sativa” on the dry erase board or easel/easel pad.***

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.”



***Write “ $\Delta$ -9 THC” on the dry erase board or easel/easel pad.***

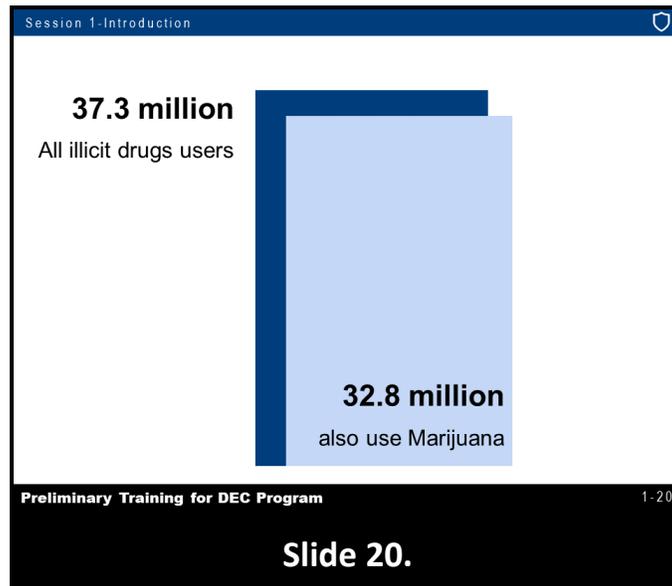
Apart from alcohol, Marijuana is one of the most commonly abused drugs.

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



***Point out divided attention Standardized Field Sobriety Tests (SFSTs) usually disclose the best evidence of Cannabis impairment.***

Cannabis also produces a distortion of the user’s perception of time, an increased heart rate, and bloodshot eyes.



The terms below are defined by the National Survey on Drug Use and Health.

**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

To summarize the self-reported drug use information from the 2020 NSDUH report, in 2020, an estimated 37.3 million Americans aged 12 or older were current (past month) illicit drug users. Marijuana was used by approximately 32.8 million or 88 percent of all current illicit drug users.



**Source:**

Substance Abuse and Mental Health Services Administration. (2021). *Key Substance Use and Mental Health Indicators in the United States: Results from the 2020 National Survey on Drug Use and Health*. (HHS Publication No. PEP21-07-01-003, NSDUH Series H-56). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from <https://www.samhsa.gov/data/>

***Remind participants the numbers are very conservative due to self-reporting.***

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.

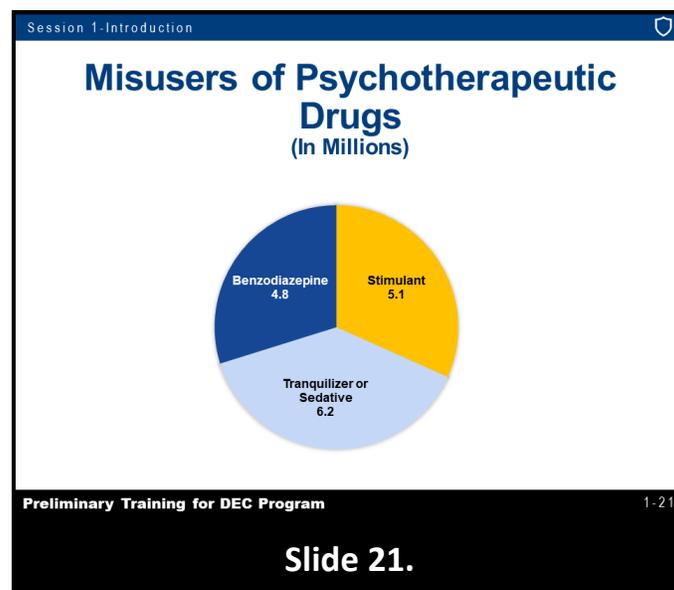
Among those aged 50 to 59, the rate of past month illicit drug use continues to increase and is at approximately 3.7 million (2016). This trend may partially reflect the aging into this age group of the “Baby Boomer” generation, whose lifetime rate of illicit drug use is higher than those of older cohorts.

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.



**Source:**

Substance Abuse and Mental Health Services Administration. (2017). Key substance use and mental health indicators in the United States: Results from the 2016 National Survey on Drug Use and Health. (HHS Publication No. SMA 18-5068, NSDUH Series H-53). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from Retrieved from <https://www.samhsa.gov/data/>

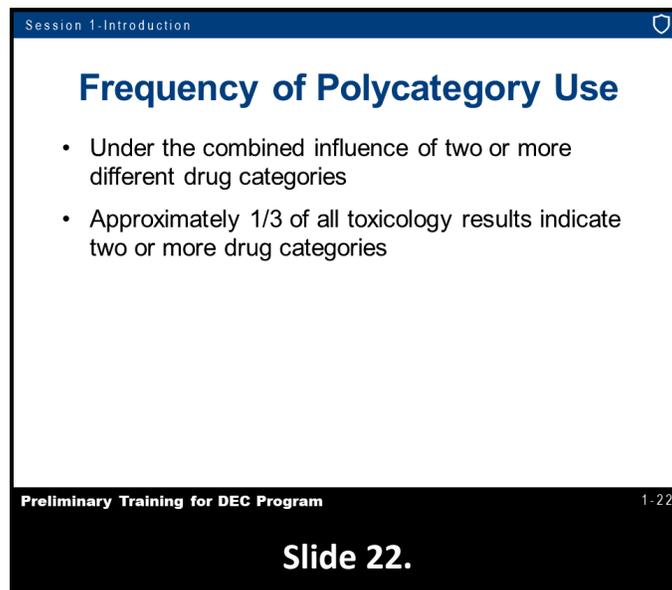


In 2020, approximately 16.1 million people aged 12 years or older used psychotherapeutic drugs non-medically in the past year.



**Source:**

Substance Abuse and Mental Health Services Administration. (2021). *Key Substance Use and Mental Health Indicators in the United States: Results from the 2020 National Survey on Drug Use and Health*. (HHS Publication No. PEP21-07-01-003, NSDUH Series H-56). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from <https://www.samhsa.gov/data/>



The term “polydrug use” refers to being under the combined influence of two or more different drugs. “Polycategory use” refers to being under the combined influence of drugs from two or more drug categories.

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.



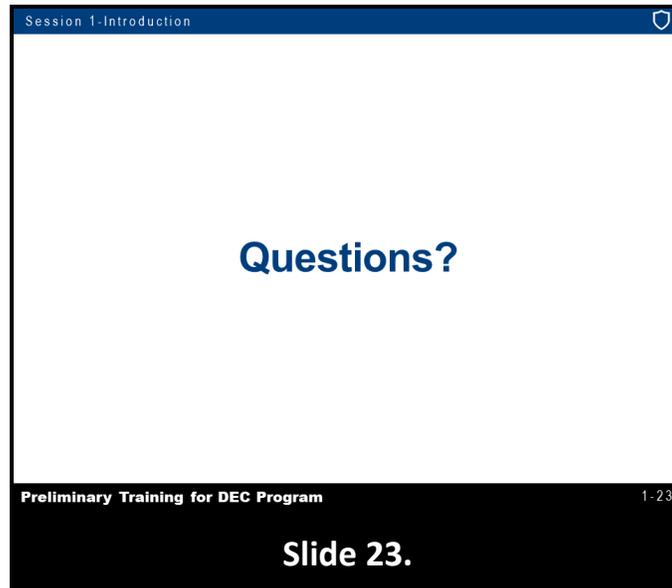
***Point out the drugs do not actually have to be used at exactly the same time.***

Most controlled prescription drug abusers are polydrug abusers. One study reported that approximately 75% of persons who abuse alcohol also abuse illicit drugs.



**Source:**

CASA, National Center on Addiction and Substance Abuse (2005). *Under the Counter: The Diversion and Abuse of Controlled prescription drugs in the U.S.*



***Solicit participants' questions about the Introduction to 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 CONCENTRATION (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 inhibit 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.

**HYPERTHERMIA:** Increased body temperature.

**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 administering 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 administer 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 IMPAIRMENT:** Being under the combined influence of drugs from two or more drug categories.

**POLYDRUG IMPAIRMENT:** Being under the combined influence of two or more different drugs, which may be in the same or different categories.

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

**PSYCHOPHYSICAL TESTS:** Methods of investigating the mental (psycho-) and physical characteristics of a person suspected of alcohol or drug impairment. Most psychophysical tests employ the concept of divided attention to assess a suspect's impairment.

**PSYCHOTOGENIC:** Literally, "creating psychosis" or "giving birth to insanity". A drug is considered to be psychotogenic if persons who are under the influence of the drug become insane and remain so after the drug wears off.

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

**PTOSIS:** Droopy eyelids.

**PULSE:** The 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 the range between minimum and maximum is equal to or greater than 1mm 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 administering 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 NHTSA/IACP-approved SFSTs, namely Horizontal Gaze Nystagmus (HGN), Walk and Turn (WAT), and One Leg Stand (OLS). Based on a series of controlled laboratory and field studies, scientifically validated clues of impairment have been identified for each of these three tests. They are the only NHTSA/IACP-approved Standardized Field Sobriety Tests for which validated clues have been identified for DWI Investigations.

**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.

**THERAPEUTIC DOSE:** The amount of a drug needed to treat a disease or condition.

**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.



Session 2- Overview of the DEC Procedures

## Learning Objectives

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

Preliminary Training for DEC Program 2-2

**Slide 2.**



*Briefly review the objectives, content and activities of this session.*

### A. Components of the Process

Session 2- Overview of the DEC Procedures

## The Drug Influence Evaluation

A Systematic and  
Standardized Process

A photograph showing two police officers in uniform sitting at a table, looking at a document together. One officer is pointing at the document while the other looks on.

Preliminary Training for DEC Program 2-3

**Slide 3.**

The Drug Evaluation and Classification (DEC) Program process is a systematic and standardized method to establish subject is impaired and verifies his or her alcohol level is not consistent with the degree of impairment that is evident.



***Emphasize the impairment is not consistent with the alcohol level.***

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

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. It is necessary to determine whether the impairment may stem from illness or injury requiring medical attention or is drug-related and determine what category (or categories) of drugs are the likely cause of the impairment.



***Definition of systematic: Done or acting according to a fixed plan or system; methodical.***

***Definition of standardized: Conforming to a model in comparative applications.***

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.

**Whenever possible, DREs should conduct the entire drug influence evaluation in accordance with DEC Program training.** If there is deviation from the 12-step process, it should be noted in the narrative report.

Session 2- Overview of the DEC Procedures

## The Systematic Process

- Appearance
- Behavior
- Psychophysical Testing

Preliminary Training for DEC Program 2-4

**Slide 4.**



***Write on dry erase board or easel/easel pad: "A SYSTEMATIC AND STANDARDIZED PROCESS."***

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



***Write "appearance" on dry erase board or easel/easel pad.***

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



***Write "behavior" on dry erase board or easel/easel pad.***

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



***Write "psychophysical testing" on dry erase board or easel/easel pad.***

***Ask participants: "What does 'psychophysical' mean?"***

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.



***Point out "psychophysical" relates to the subject's mind (psyche) and body (physique).***

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.

Session 2- Overview of the DEC Procedures

## Components of the Process

- Autonomic responses of body
- Standardization of evaluation



Preliminary Training for DEC Program 2-5

**Slide 5.**



***Write “autonomic responses of the body” on the dry erase board or easel/easel pad.***

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, and no extraneous or unreliable “indicators” are included. Standardization helps to promote professionalism among DREs and helps to secure acceptance in court.



***Ask participants: “Why is it so important to perform the DRE evaluation in the same way, every time?” Probe to draw out all major reasons for standardization.***

Session 2- Overview of the DEC Procedures

## 12 Step Process

Preliminary Training for DEC Program 2-6

**Slide 6.**

Session 2- Overview of the DEC Procedures

## Step 1: Breath Alcohol Test

Preliminary Training for DEC Program 2-7

**Slide 7.**

Breath Alcohol Test is needed 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.



***Remind participants many subjects who are under the influence of drugs other than alcohol also have alcohol in their bodies.***

## Step 2: Interview of the Arresting Officer



### Slide 8.

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 administered. 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.

## Step 3: Preliminary Examination

DRUG INFLUENCE EVALUATION									
Evaluator		DRE #		Rolling Log #		Evaluator's Agency		Case #	
Recorder/Witness		Crash: <input type="checkbox"/> None <input type="checkbox"/> Fatal <input type="checkbox"/> Injury <input type="checkbox"/> Property				Arresting Officer's Agency			
Arrestee's Name (Last, First, Middle)		Date of Birth		Sex	Race	Arresting Officer (Name, ID#)			
Date Examined / Time / Location / /		Breath Test Results:		Test Refused <input type="checkbox"/> Instrument #:		Chemical Test Oral Fluid <input type="checkbox"/>		Urine <input type="checkbox"/> Blood <input type="checkbox"/> Test or tests refused <input type="checkbox"/>	
Miranda Warning Given Given by: /		<input type="checkbox"/> Yes <input type="checkbox"/> No		What have you eaten today? When?		What have you been drinking? How much? Time of last drink?			
Time now/ Actual / /		When did you last sleep? How long?		Are you sick or injured? <input type="checkbox"/> Yes <input type="checkbox"/> No		Are you diabetic or epileptic? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Do you take insulin? <input type="checkbox"/> Yes <input type="checkbox"/> No		Do you have any physical defects? <input type="checkbox"/> Yes <input type="checkbox"/> No		Are you under the care of a doctor or dentist? <input type="checkbox"/> Yes <input type="checkbox"/> No					
Are you taking any medication or drugs? <input type="checkbox"/> Yes <input type="checkbox"/> No		Attitude		Coordination					
Speech:		Breath odor:		Face:					
Corrective Lenses: <input type="checkbox"/> None Glasses: <input type="checkbox"/> Contacts, if so <input type="checkbox"/> Hard <input type="checkbox"/> Soft		Eyes: <input type="checkbox"/> Normal <input type="checkbox"/> Bloodshot <input type="checkbox"/> Watery		Blindness: <input type="checkbox"/> None <input type="checkbox"/> Left <input type="checkbox"/> Right		Tracking: <input type="checkbox"/> Equal <input type="checkbox"/> Unequal			
Pupil Size: <input type="checkbox"/> Equal <input type="checkbox"/> Unequal (explain)		Rising Nystagmus <input type="checkbox"/> Yes <input type="checkbox"/> No		Vertical Nystagmus <input type="checkbox"/> Yes <input type="checkbox"/> No		Able to follow stimulus <input type="checkbox"/> Yes <input type="checkbox"/> No		Eyelids: <input type="checkbox"/> Normal <input type="checkbox"/> Droopy	

### Slide 9.

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



***Point out the preliminary examination begins the “hands on” with the subject. Use of protective gloves is imperative.***

Another 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.



***Point out “appearance,” “behavior,” and “automatic bodily responses” on dry erase board.***

***Emphasize the term “preliminary” does not imply “unimportant.” Very valuable evidence often comes to light during the preliminary examination.***

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.



***Emphasize courts generally accept these questions as not being in conflict with the subject’s Constitutional rights. However, the participants must comply with their own department’s policies as to whether they should advise subjects of their Constitutional rights before asking these questions.***

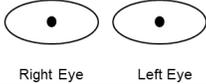
The initial examination of the eyes may reveal signs of injury or illness. A difference in pupil size of greater than 0.5 mm may indicate an injury or existing medical condition.

Session 2: Overview of the DEC Procedures

## Step 4: Examinations of the Eyes

Corrective Lenses: <input type="checkbox"/> None <input type="checkbox"/>		Eyes: <input type="checkbox"/> Normal <input type="checkbox"/> Bloodshot <input type="checkbox"/> Watery		Blindness: <input type="checkbox"/> None <input type="checkbox"/> Left <input type="checkbox"/> Right		Tracking: <input type="checkbox"/> Equal <input type="checkbox"/> Unequal	
Glasses: <input type="checkbox"/> Contacts, if so <input type="checkbox"/> Hard <input type="checkbox"/> Soft							
Pupil Size: <input type="checkbox"/> Equal <input type="checkbox"/> Unequal (explain)		Resting Nystagmus: <input type="checkbox"/> Yes <input type="checkbox"/> No		Vertical Nystagmus: <input type="checkbox"/> Yes <input type="checkbox"/> No		Able to follow stimulus: <input type="checkbox"/> Yes <input type="checkbox"/> No	
						Eyelids: <input type="checkbox"/> Normal <input type="checkbox"/> Droopy	

HGN	Left Eye	Right Eye	Convergence
Lack of Smooth Pursuit			 Right Eye      Left Eye
Maximum Deviation			
Angle of Onset			

**Slide 10.**

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).



**Ask participants: “What do we look for in a subject’s eyes to determine if he or she may be under the influence of alcohol?”**

**Probe, as necessary, to draw out the response “nystagmus.”**

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 HGN. HGN is not the only observable effect on the eyes that will be produced by various drugs.



**Point out the examinations of the eyes will be covered in much greater depth in later sessions.**

Session 2: Overview of the DEC Procedures

## Step 5: Divided Attention Tests

**Modified Romberg Balance Approx.**

**Time Estimation**  
estimated as 30 seconds

**Walk and Turn Test**

Cannot keep balance		
Starts too soon		
	1 <sup>st</sup> Nine	2 <sup>nd</sup> Nine
Stops walking		
Misses heel-toe		
Steps off line		
Uses arm(s)		
Actual steps taken		
Describe turn	Cannot do test (explain)	

**One Leg Stand**

L	R

Sways while balancing  
Uses arm(s) to balance  
Hopping  
Puts foot down

**(Draw lines to spots touched)**

Preliminary Training for DEC Program 2 - 11

### Slide 11.



**Ask participants: “What does ‘divided attention’ mean?”**

**Probe, as necessary, to draw out responses indicating the concept of “concentrating on more than one thing or task at a time.”**

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.



**Point out participants will have opportunities to practice administering these tests subsequently in the course.**

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



## Step 6: Examination of Vital Signs

### Pulse and Time

1. \_\_\_\_\_ / \_\_\_\_\_
2. \_\_\_\_\_ / \_\_\_\_\_
3. \_\_\_\_\_ / \_\_\_\_\_



Blood Pressure  
/

Temperature  
°F

### Slide 12.

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.



***Point out examinations of vital signs will be covered in depth later and participants will have ample opportunity to practice measuring vital signs.***

***Point out participants will learn to use medical instruments, including a stethoscope, a sphygmomanometer, penlight, and an oral thermometer.***

Session 2: Overview of the DEC Procedures

## Step 7: Darkroom Examinations

PUPIL SIZE	Room light (2.5 - 5.0)	Darkness (5.0 - 8.5)	Direct (2.0 - 4.5)	Nasal area:
Left Eye				Oral cavity:
Right Eye				
Rebound Dilation: Yes      No				Reaction to Light:



Preliminary Training for DEC Program 2-13

### Slide 13.

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 become larger or dilate. Some other drugs cause the pupils to become 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.



***Exhibit a penlight.***

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



***Exhibit a pupillometer.***

***Point out the pupillometer has a series of circles or semi-circles of various sizes. By lining up the circles or semi-circles alongside the subject's pupil, the pupil's size can be estimated.***

***Select a participant to step forward and demonstrate the process for estimating the participant's pupil size.***

***Shine the penlight directly into the participant's eye and again demonstrate the procedure for estimating the pupil sizes.***

***Demonstrate the two eyes "work together"; i.e., shine the penlight into one eye and demonstrate the pupil of the other eye also constricts.***

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.



***Demonstrate the examination of the participant's nasal area and oral cavity.***

***Excuse the participant and thank him or her for participating.***

***Point out participants will have several opportunities to practice conducting dark room examinations later in the course.***

Session 2- Overview of the DEC Procedures

## Step 8: Examination of Muscle Tone

**MUSCLE TONE:**  
Normal  Flaccid      Rigid

Comments:



Preliminary Training for DEC Program 2-14

**Slide 14.**

Certain categories of drugs may cause the user's muscles to become noticeably tense or rigid. Others may cause the muscle tone to be flaccid or soft.

Evidence of muscle tone may be apparent when the subject attempts to perform divided attention tests. It may also be observed when taking the subject's pulse, blood pressure, or while examining for injection sites.



***Point out examination for muscle tone will be covered in depth later in the course.***

Session 2: Overview of the DEC Procedures

## Step 9: Examination for Injection Sites

RIGHT ARM

LEFT ARM

ATTACH PHOTOS OF FRESH PUNCTURE MARKS

Preliminary Training for DEC Program 2 - 15

### Slide 15.

Certain drugs are commonly injected by users via hypodermic needles.



**Ask participants: “What drug is most often associated with injection via hypodermic needle?”**

Heroin is probably most commonly associated with injection, but several other types of drugs also are injected by many users. Locating injection sites on a subject provides evidence of possible drug use.

Session 2: Overview of the DEC Procedures

## Step 10: Suspect’s Statements and Other Observations

What drugs or medications have you been using?		How much?	Time of use?	Where were the drugs used? (Location)
Date / Time of arrest:	Time DRE was notified:	Evaluation start time:	Evaluation completion time:	<input type="checkbox"/> Subject refused entire evaluation <input type="checkbox"/> Subject stopped participating during evaluation
Officer’s Signature:		Reviewed/approved by / date:		DRE #
Opinion of Evaluator:				
<input type="checkbox"/> Not Impaired	<input type="checkbox"/> Alcohol	<input type="checkbox"/> CNS Stimulant	<input type="checkbox"/> Dissociative Anesthetic	<input type="checkbox"/> Inhalant
<input type="checkbox"/> Medical	<input type="checkbox"/> CNS Depressant	<input type="checkbox"/> Hallucinogen	<input type="checkbox"/> Narcotic Analgesic	<input type="checkbox"/> Cannabis

Preliminary Training for DEC Program 2 - 16

### Slide 16.

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.



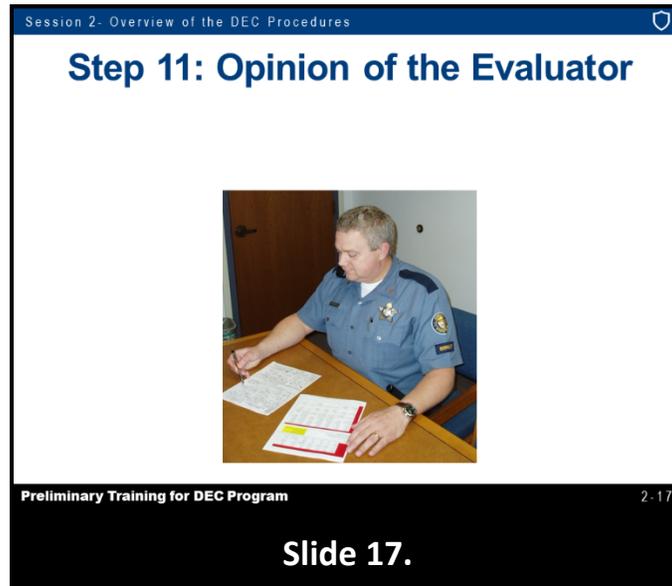
***Point out, though the interview of the subject is the formal process of soliciting information about the subject's drug usage, any voluntary statements previously made during the evaluation should be noted and recorded.***

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.



***Emphasize any such interview can proceed only in conformance with formal admonition and strict observance of the subject's Constitutional rights.***

The DRE must carefully record the subject's statements and any other observations that may constitute relevant evidence of drug-induced impairment.



Based on all of the evidence and observations collected from the preceding steps, the DRE should be able to 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.



***Point out if the DRE concludes the subject is impaired, you will state that in your written narrative report.***

***Point out the DRE should refer to drug categories and not to specific drugs.***

Session 2: Overview of the DEC Procedures

## Step 12: Toxicological Examination



Preliminary Training for DEC Program 2-18

**Slide 18.**

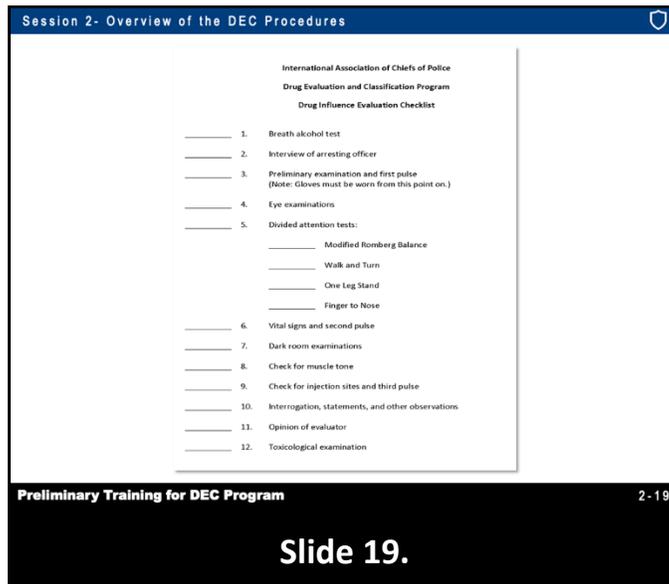
The toxicological examination is a chemical test or tests designed to obtain scientific, admissible evidence to support the DRE's opinion. This step is the analysis of the collected specimen. Specimen collection may have occurred earlier in the process.

Proper procedures should be followed in requesting, obtaining, and handling the toxicological sample. In some cases, the arresting officer may have already obtained the specimen prior to the DRE's arrival.

Just because the subject refuses to provide a specimen for analysis does not affect the evaluation or your ability to form an opinion. Circumstances may warrant a DRE to perform a step out of sequence, such as collecting the toxicology specimen. When this occurs, the DRE should note the circumstance and reason in their narrative report. This will be discussed further in the DRE 7-Day School.



***Solicit participants' comments and questions concerning this preview of the DRE procedures.***



**Slide 19.**



***Instruct participants to turn to the Drug Influence Evaluation Checklist in their participant guide.***

## B. Video Demonstration



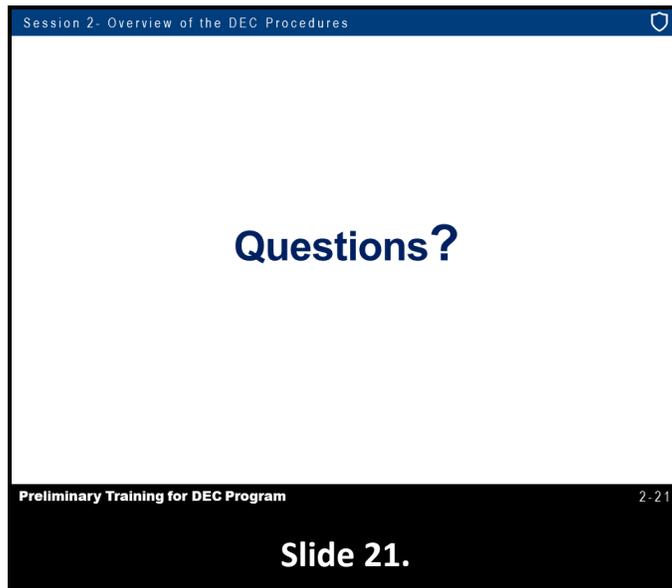
**Slide 20.**



***Show the video of the “DRE 12 Step Process”***

***This is the video segment shown in Session 4 of the 7-Day DRE School.***

***Click the image to play the video. (If link does not work then open the video folder and select the DRE 12-step Assessment video.) Click play to begin.***



***Solicit participants' questions about the Overview of the Drug Evaluation and Classification Procedures.***

**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
- \_\_\_\_\_ 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

1.

1.

Session 3- Psychophysical Tests

## Learning Objectives

- Administer the four divided attention tests used in the drug influence evaluation process
- Document subject's performance of those tests

Preliminary Training for DEC Program 3-2

**Slide 2.**



***Briefly review the objectives, content and activities of this session.***

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.



***Point out throughout the evaluation process the evaluator must be cognizant of officer safety issues.***

***Officer safety procedures should be observed and adhered to during the administration of the DRE drug influence evaluation.***

## A. Modified Romberg Balance (MRB)

Session 3- Psychophysical Tests

### Modified Romberg Balance Test

Modified Romberg Balance  
Approx. Approx.

Time Estimation  
estimated as 30 seconds

Preliminary Training for DEC Program 3-3

**Slide 3.**



***Write “Modified Romberg Balance” on the dry erase board or easel/easel pad.***

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



***Point out the MRB test used by DREs is a modified version of the original test developed in the 19th Century.***

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



***Demonstrate the stance required of the subject.***

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.

Session 3- Psychophysical Tests

## 30 Seconds

- Internal timing estimate
- Some drugs tend to speed up or slow down the subject's time estimation



Preliminary Training for DEC Program 3-4

**Slide 4.**



***Emphasize the DRE must not instruct the subject as to how they are to estimate the passage of 30 seconds.***

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.

Session 3- Psychophysical Tests

## Modified Romberg Balance Test



- Divided attention
- Time estimation

Preliminary Training for DEC Program 3-5

**Slide 5.**

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.



***Emphasize this to the participants.***

***Two instructors should demonstrate the administrative procedures for MRB. One instructor will play the role of the DRE, the other the "subject."***

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.

Session 3- Psychophysical Tests

## Modified Romberg Balance Test



Preliminary Training for DEC Program 3-6

**Slide 6.**

### *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 begin the test until told to do so.
4. Ask if the subject understands the instructions. **Make sure to obtain a verbal response from the subject.**
5. When I ask, tilt your head back and close your eyes.



***DEMONSTRATE*** how the head should be tilted, but ***DO NOT CLOSE YOUR EYES*** while demonstrating.

6. When I tell you to begin, stay in that position until you think 30 seconds have gone by.
7. As soon as you think 30 seconds have gone by, open your eyes, tilt your head forward and say 'Stop'.
8. Do you understand? **Make sure to obtain a verbal response from the subject.**
9. **Look at your timing device and pick a convenient time to start the test.** Instruct the subject to tilt their head back.
10. Instruct the subject to close their eyes.
11. Instruct the subject to begin. DREs should measure the elapsed time until either the subject says 'Stop', or the test is terminated.



***EMPHASIZE*** the timing begins when the subject is told to start/begin.

Session 3- Psychophysical Tests

## Modified Romberg Balance Test



Preliminary Training for DEC Program 3-7

**Slide 7.**

### *Administrative Procedures: 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.
3. Tell the subject to close their eyes.
4. Tell the subject to begin or start the test.
5. Keep track of time while the subject performs the test.
6. Check subject for presence of tremors (eyelid and/or body) and sway.
7. When the subject opens their eyes, ask them “how much time was that?”.



***DRE's are encouraged to ask the subject, "How did you determine 30 seconds had passed"?***

8. 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.***

***Although not required, additional follow-up questions to assist with clarification of test performance may be asked. (i.e., how did you arrive at that, how did you estimate the time, etc.).***

***Instructor-Led Demonstrations – One instructor should administer a complete MRB test to another instructor.***

***Instructor-to-instructor demonstrations.***

***Solicit participants’ questions.***



***Instructor-to-participant demonstration.***

***Select a participant to participate in the demonstration.***

***Administer a complete MRB test to the participant.***

***Thank the participant for his or her participation and solicit questions.***

Session 3- Psychophysical Tests

## Modified Romberg Balance Test Demonstrations

Modified Romberg Balance  
Approx.                  Approx.

Time Estimation  
\_\_\_\_\_ estimated as 30 seconds

Preliminary Training for DEC Program 3-8

**Slide 8.**



### ***Participant-Led Demonstrations***

***Select two participants to conduct demonstrations. Have the first participant administer the test to the second.***



***Offer constructive criticism, as appropriate, about the participant-administrator's demonstration.***

***Have the second participant administer the test to the first and offer appropriate constructive criticism.***

***Thank the participants for their participation and solicit questions.***

### ***Recording Results of the MRB Test***

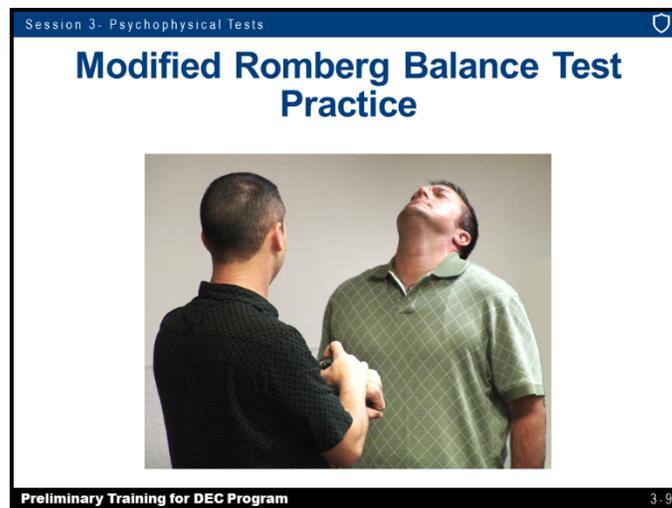
The major items that need to be recorded for the MRB test are the amount the subject sways and the actual amount of time the subject keeps the eyes closed.

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.



### ***Source:***

Hartman, R. L., Richman, J. E., Hayes, C. E., & Huestis, M. A. (2016). Drug Recognition Expert (DRE) examination characteristics of cannabis impairment. *Accident Analysis and Prevention*, 92, 219-229. Retrieved from <https://doi.org/10.1016/j.aap.2016.04.012>



## Slide 9.



***Solicit participants' questions.***

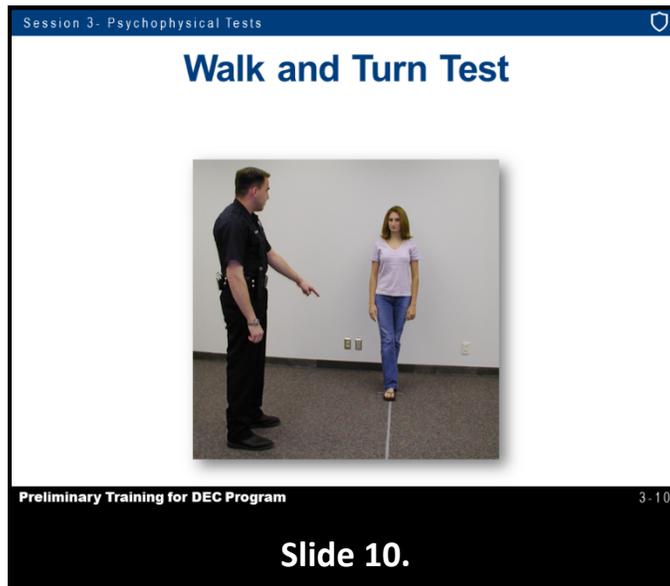
***Hands-On Practice***



***Assign participants to work in pairs.***

***Instruct teammates to practice administering the MRB test to each other.***

### B. Walk and Turn (WAT)



***Image of officer demonstrating Walk and Turn perpendicular to the subject's line and starting demo with the subject to the left.***

***Write "Walk and Turn" on the dry erase board or easel/easel pad.***

***It is suggested a visible line be placed on the floor for use during the demonstration.***

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

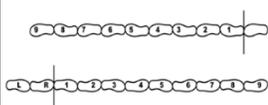
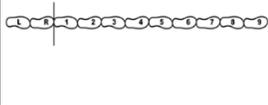
The test is administered the same way we have used it for Standardized Field Sobriety Testing (SFST) purposes: Monitor the practice and offer coaching and constructive criticism, as appropriate and Review of WAT administrative procedures.

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.

Session 3- Psychophysical Tests

## Walk and Turn Test

Walk and Turn Test		Cannot keep balance		
		Starts too soon		
		Stops walking	1 <sup>st</sup> Nine	2 <sup>nd</sup> Nine
		Misses heel-toe		
		Steps off line		
		Uses arm(s)		
Actual steps taken				
Describe turn		Cannot do test (explain)		

Preliminary Training for DEC Program 3-11

**Slide 11.**



***Demonstrate how the steps are taken, counting out loud and demonstrating the turn.***

Officers should be mindful of safety precautions when providing instructions for the WAT. By demonstrating the test perpendicular to the subject's "line" and initiating the demonstration with the subject to the left of the officer, the officer will properly demonstrate the turn WITHOUT turning his/her back to the subject. Officers should always be aware of their surroundings and environment when conducting DWI roadside investigations.



***Emphasize the DRE should not turn his/her back to the subject for safety reasons.***

***You must demonstrate several heel-to-toe steps and you must demonstrate the turn.***

- 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 does not 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.



***Advise participants there may be instances when the subject may have to be reminded the first step from the heel-to-toe position is step one.***

Session 3- Psychophysical Tests

## Walk and Turn Test

- Instructor – Participant demonstration
- Participant – Participant demonstration

Preliminary Training for DEC Program 3-12

**Slide 12.**



*The WAT procedures were revised to conform to SFST; these revisions were approved by the International Association of Chiefs of Police (IACP) Technical Advisory Panel (TAP), November 2008.*

**Demonstration of WAT.**

**Select a participant to serve as the “subject.”**

**Instructor-to-participant demonstration**

**Administer a complete WAT test.**

**Thank the participant for his or her participation and solicit questions about test administrative procedures.**

**Participant-to-Participant Demonstration**

**Select two participants to conduct a demonstration.**

**Have one participant administer a complete WAT test to the other.**

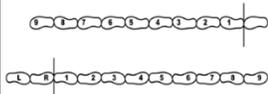
**Offer appropriate comments and constructive criticism about the test administration.**

**Thank the participants for their participation and solicit questions.**



Session 3- Psychophysical Tests

## Walk and Turn Test Recording Results

<p><b>Walk and Turn Test</b></p> 	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Cannot keep balance</td> <td style="width: 20%;"></td> <td style="width: 20%;"></td> </tr> <tr> <td>Starts too soon</td> <td></td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">1<sup>st</sup> Nine</td> <td style="text-align: center;">2<sup>nd</sup> Nine</td> </tr> <tr> <td>Stops walking</td> <td></td> <td></td> </tr> <tr> <td>Misses heel-toe</td> <td></td> <td></td> </tr> <tr> <td>Steps off line</td> <td></td> <td></td> </tr> <tr> <td>Uses arm(s)</td> <td></td> <td></td> </tr> <tr> <td>Actual steps taken</td> <td></td> <td></td> </tr> <tr> <td>Describe turn</td> <td colspan="2">Cannot do test (explain)</td> </tr> </table>	Cannot keep balance			Starts too soon				1 <sup>st</sup> Nine	2 <sup>nd</sup> Nine	Stops walking			Misses heel-toe			Steps off line			Uses arm(s)			Actual steps taken			Describe turn	Cannot do test (explain)	
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Actual steps taken																												
Describe turn	Cannot do test (explain)																											

Preliminary Training for DEC Program 3-13

### Slide 13.

*Recording Results of the WAT Test*



**Ask participants: “What are the two clues we might observe during the instruction stage of the WAT test?”**

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

Instruction stage clues:



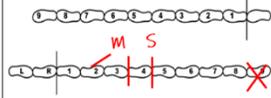
**Draw a slash mark at an angle in the direction of where the subject stepped out of the instruction position.**

If the subject 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.

Record if the subject starts too soon (i.e., subject starts walking before told to do so).

Session 3- Psychophysical Tests

### Walk and Turn Test Documenting

Walk and Turn Test		Cannot keep balance		
		Starts too soon		
		Stops walking	1 <sup>st</sup> Nine	2 <sup>nd</sup> Nine
		Misses heel-toe	1	
		Steps off line	1	
		Uses arm(s)		
		Actual steps taken	8	
Describe turn		Cannot do test (explain)		

Preliminary Training for DEC Program 3-14

**Slide 14.**

Walking stage clues:



**Ask participants: "What are the six clues we might observe during the walking stage?"**

- Stops while walking



**Emphasize a stop should be clear and deliberate and it could be attributed to a number of things, i.e., trying to regain balance, problems with divided attention, or problems remembering instructions. For this clue, officers may need to articulate the reason for the stop.**

- Does not touch heel-to-toe (one-half inch or more)
- Steps off the line
- Uses arm(s) to balance (six or more inches)
- Improper turn



**Inform participants there may be times when the subject takes a wrong number of steps or begins the heel-to-toe walk with the wrong foot resulting in a turn on the right foot instead of the left. If this occurs, the subject would normally be assessed a clue for an incorrect number of steps and not assessed a clue for an improper turn if the turn was made using a series of small steps as instructed and the subject did not lose his/her balance while attempting the turn. This recording is consistent with the original research and training conducted the Southern California Research Institute (SCRI) and with the administration and recording of the WAT test in the San Diego Field Study.**

- Record the actual number of steps taken. If the subject takes additional steps, draw in the additional steps to reflect the actual number of steps taken. If the subject takes less than nine steps, place an (x) in the missing steps. 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.



**Instruct participants to place a letter “S” at end of vertical line to indicate “stops walking”.**

Session 3- Psychophysical Tests

### Walk and Turn Test Documenting

Walk and Turn Test

Cannot keep balance		
Starts too soon		
	1 <sup>st</sup> Nine	2 <sup>nd</sup> Nine
Stops walking	1	
Misses heel-toe	1	
Steps off line	1	
Uses arm(s)		
Actual steps taken	8	
Describe turn	Cannot do test (explain)	

Preliminary Training for DEC Program 3-15

## Slide 15.

How many times during first nine steps? How many times during second nine steps?



**Remind participants if subject stops walking even once, that will count as one clue; but in order to prepare a clear, descriptive report, it is best to document how many times subject stopped while walking and the cause for the stop.**

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



**Instruct participants to place a letter “M” at end of vertical line to indicate missed heel-to-toe.**

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”.

DREs are not limited to only documenting the above evidence during the test. DREs are encouraged to record sufficient evidence to deliver effective testimony in court.



**Point out: The original SCRI studies suggested individuals over 65 years of age or people with back, leg, or inner ear problems had difficulty performing this test. Less than 1.5% of the test subjects in the original studies were over 65 years of age. Also, the SCRI studies suggest individuals wearing heels more than 2 inches high should be given the opportunity to remove their shoes. Officers should consider all factors when conducting SFSTs.**

Session 3- Psychophysical Tests

## Walk and Turn Test Recording Results

<p><b>Walk and Turn Test</b></p> <p>Describe turn</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Cannot keep balance</td> <td colspan="2">_____</td> </tr> <tr> <td>Starts too soon</td> <td colspan="2">_____</td> </tr> <tr> <td></td> <td style="text-align: center;">1<sup>st</sup> Nine</td> <td style="text-align: center;">2<sup>nd</sup> Nine</td> </tr> <tr> <td>Stops walking</td> <td style="width: 50px; height: 20px;"></td> <td style="width: 50px; height: 20px;"></td> </tr> <tr> <td>Misses heel-toe</td> <td style="width: 50px; height: 20px;"></td> <td style="width: 50px; height: 20px;"></td> </tr> <tr> <td>Steps off line</td> <td style="width: 50px; height: 20px;"></td> <td style="width: 50px; height: 20px;"></td> </tr> <tr> <td>Uses arm(s)</td> <td style="width: 50px; height: 20px;"></td> <td style="width: 50px; height: 20px;"></td> </tr> <tr> <td>Actual steps taken</td> <td style="width: 50px; height: 20px;"></td> <td style="width: 50px; height: 20px;"></td> </tr> <tr> <td>Cannot do test (explain)</td> <td colspan="2">_____</td> </tr> </table>	Cannot keep balance	_____		Starts too soon	_____			1 <sup>st</sup> Nine	2 <sup>nd</sup> Nine	Stops walking			Misses heel-toe			Steps off line			Uses arm(s)			Actual steps taken			Cannot do test (explain)	_____	
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Uses arm(s)																												
Actual steps taken																												
Cannot do test (explain)	_____																											

**Slide 16.**



### ***Hands-On Practice***

***Assign participants to work in pairs. Instruct teammates to take turns administering the WAT test to each other.***



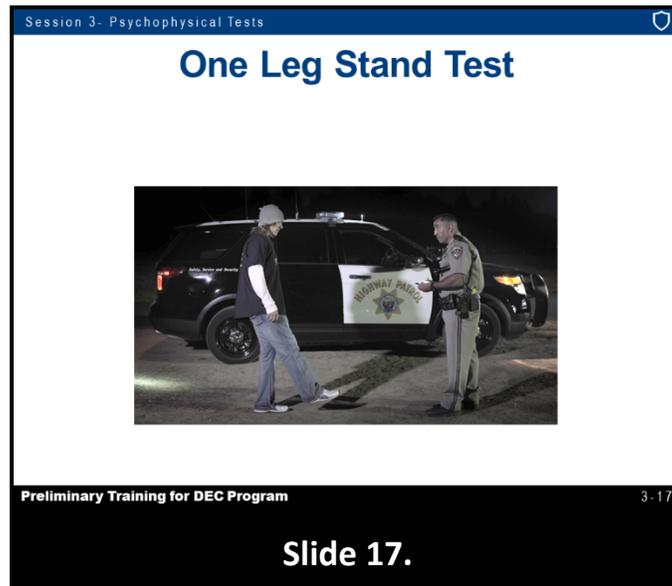
***It is not necessary for the teammate playing the role of the subject actually carry out the walking stage of the test.***



***The idea is to take turns practicing the proper way to give instructions for the test.***

***Monitor the practice and offer coaching and constructive criticism, as appropriate.***

## C. One Leg Stand (OLS)



***Write “One Leg Stand” on the dry erase board or easel/easel pad.***

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.



***The OLS is administered twice to test both the left and right legs to assist the DRE in making comparisons and identify potential medical conditions that may be present.***

***Write “given twice” on dry erase board or easel/easel pad.***

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



***Two instructors should be used for this demonstration, one as the subject and the other as the examiner.***

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 both legs 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.

Session 3- Psychophysical Tests

## One Leg Stand Test

/30      One Leg Stand      /30

The diagram shows two pairs of feet. The first pair has the left foot (L) on the ground and the right foot (R) raised. The second pair has the right foot (R) on the ground and the left foot (L) raised.

L	R	
		Sways while balancing
		Uses arm(s) to balance
		Hopping
		Puts foot down

Preliminary Training for DEC Program      3-18

### Slide 18.

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.



**Inform the participants if the subject puts the foot down, he/she should remind the subject to pick the foot up again and continue counting from the point at which the foot touched.**

**Solicit participants' questions about the administrative procedures for OLS.**



**Point out the validation of the OLS was based on a 30-second time period. Therefore, the DRE must keep track of the actual time the subject stands on each foot. Test should be discontinued after 30 seconds.**

After the subject has completed the test on the left foot, they must be told to repeat the test on the right foot.



**Point out the DRE should explain the instructions again prior to having the subject perform the test on the right foot.**

Session 3- Psychophysical Tests

## One Leg Stand Test

/30      **One Leg Stand**      /30

L	R	
		Sways while balancing
		Uses arm(s) to balance
		Hopping
		Puts foot down

Preliminary Training for DEC Program 3-19

### Slide 19.

### Recording Results of the OLS



**Ask participants: "What are the four clues of the OLS test?"**

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

- Sways while balancing
- Uses arm(s) to 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 arm(s) to 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.



***Solicit questions about documenting the results of the OLS.***

Session 3- Psychophysical Tests

## One Leg Stand Test

/30      One Leg Stand      /30

The diagram shows two feet, labeled 'L' and 'R', standing on a surface. The feet are positioned side-by-side, with the left foot slightly behind the right foot. The feet are represented by simple line drawings of a foot with a heel and toes.

L	R	
		Sways while balancing
		Uses arm(s) to balance
		Hopping
		Puts foot down

Preliminary Training for DEC Program 3-20

**Slide 20.**



### ***Hands-On Practice***

***Assign participants to work in pairs.***

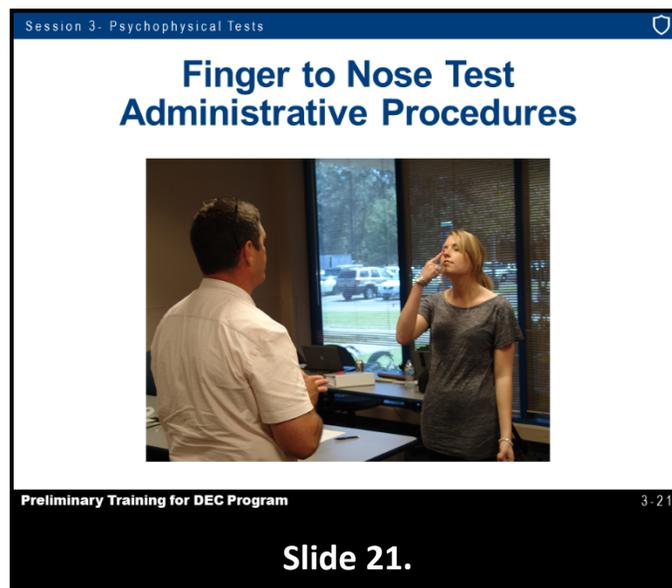
***Instruct teammates to take turns administering the OLS to each other.***



***Inform the participants it is not necessary the participant serving as the subject actually stand on one foot for thirty seconds. The idea is to practice giving the instructions for the test. Monitor the practice and offer appropriate coaching and constructive criticism.***

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. Finger to Nose (FTN)**



***Write “Finger to Nose” on dry erase board or easel/easel pad.***

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*



***Two instructors should serve in this demonstration, one as the examiner and the other as the “subject.”***

- 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



***Demonstrate the proper extension of the index fingers.***

- The examiner must tell subject they will be asked to touch the tip of the index finger to the tip of the nose

Session 3- Psychophysical Tests

## Finger to Nose Test Administrative Procedures

(Draw lines to spots touched)

Preliminary Training for DEC Program 3-22

**Slide 22.**

- 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 subject's head should be tilted back in the same fashion as in the MRB test.***

- The examiner should demonstrate the stance with head tilted back, arms at the sides with index fingers extended



***Remind the participants they should not close their eyes during the instructions for safety reasons.***

***The test is always given in the following sequence of commands: Write the sequence on the dry erase board or easel/easel pad.***

***Left, Right, Left, Right, Right, Left***

***Solicit participants' questions concerning administrative procedures for FTN.***

Session 3 - Psychophysical Tests

## Finger to Nose Test

- Instructor-Led demonstration
- Participant-Led demonstration

Preliminary Training for DEC Program 3-23

**Slide 23.**



### ***Instructor-Led Demonstrations***

***One instructor should give a complete demonstration of FTN, using another instructor as the “subject.”***

***Instructor-to-instructor demonstration and Instructor-to-participant demonstrations.***

***Select a participant to serve as the subject and administer a complete FTN test to that participant.***

***Thank the participant for his/her participation and solicit questions about the demonstrations.***



### ***Participant-Led Demonstrations***

***Select two participants and have them take turns administering FTN tests to each other.***

***Offer appropriate comments and constructive criticism about the participants' administration of the test.***

***Thank the participants for their participation and solicit questions from the class.***

Session 3- Psychophysical Tests

## Finger to Nose Test Recording Results

(Draw lines to spots touched)

Preliminary Training for DEC Program 3-24

**Slide 24.**

The results of FTN test are recorded by drawing a “map” showing where the fingertips touched 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.



***Solicit questions about recording the results of Finger to Nose.***

***The instructor should provide examples (pad, double touch, held, reminded to remove finger, searching for tip of nose, etc.)***

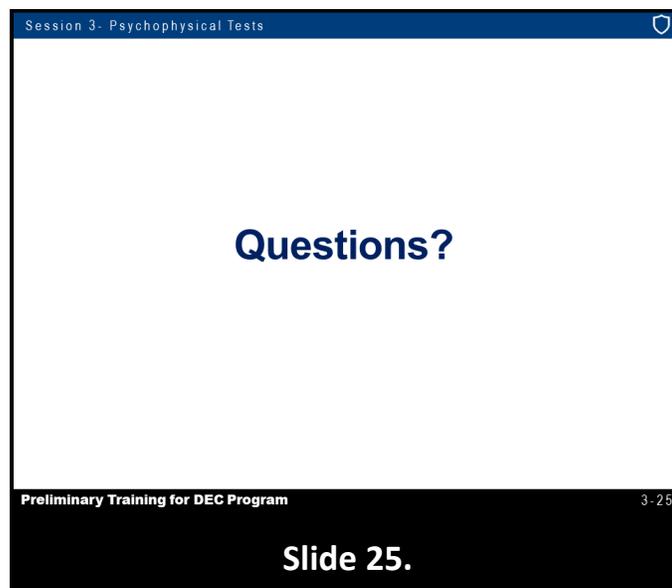


***Hands-on Practice***

***Assign participants to work in pairs. Instruct teammates to take turns administering FTN tests to each other.***

***It is not necessary for the teammate who is the subject to carry out the test completely.***

***Monitor the practice and offer appropriate coaching and constructive criticism.***



***Solicit participants' questions about Psychophysical Tests.***

1.

1.

Session 4- Eye Examinations

## Learning Objectives

- Administer tests of HGN, VGN, and LOC
- Estimate pupil size
- Relate the expected results of the eye examinations

Preliminary Training for DEC Program 4-2

**Slide 2.**



***Briefly review the objectives, content and activities of this session.***

## A. Purposes of the Eye Examinations

Session 4- Eye Examinations

### Eye Examination Purpose



Preliminary Training for DEC Program 4-3

**Slide 3.**

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. Any deficiency in eye movement or pupil response, especially if it is acquired or of recent onset, can impair a person's ability to see properly.

Drug impairment, including from alcohol, can affect eye movements in several ways, depending on the nature of the intoxicant used. Drug use, including alcohol, is understood to cause physiological changes that are of recent onset and acquired: 1) Lack of smooth pursuit can impair the ability to see details (such as when reading a sign) or make accurate observations (as of the direction and speed of another vehicle) when there is relative motion between the observer and the target (one or the other is moving, or both are moving but at different speeds and/or different directions); 2) Acquired nystagmus (either at or before maximum deviation) causes a reduction of visual acuity, primarily because of the suppression of visual processing during the fast phase of the nystagmus; and 3) Lack of convergence can cause double vision (diplopia) when looking at objects up close or when frequently or repeatedly changing viewing distance between far and near (such as when looking back and forth from the road to the car's dashboard).

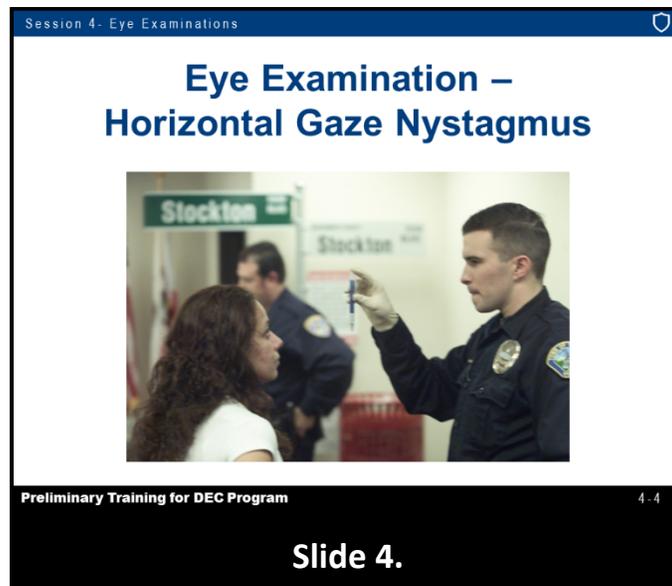
Individuals with long-standing abnormality or deficiency often learn to compensate in some manner. One example includes making a head movement rather than an eye movement when someone has a natural lack of smooth pursuit, not due to intoxication, illness, or trauma.

Likewise, someone who has a constant and long-standing nystagmus may be able to detect and extract visual information between successive eye movements. Therefore, while the appearance to the officer may be abnormal, the person is not necessarily impaired.



**Source:**

Leigh, R. J., & Zee, D. S. (2015). A Survey of Eye Movements: Characteristics and Teleology. In R. J. Leigh, & D. S. Zee, *The Neurology of Eye Movements* (5th ed., p. 12ff). Online: Oxford University Press.  
doi:10.1093/med/9780199969289.001.0001



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.

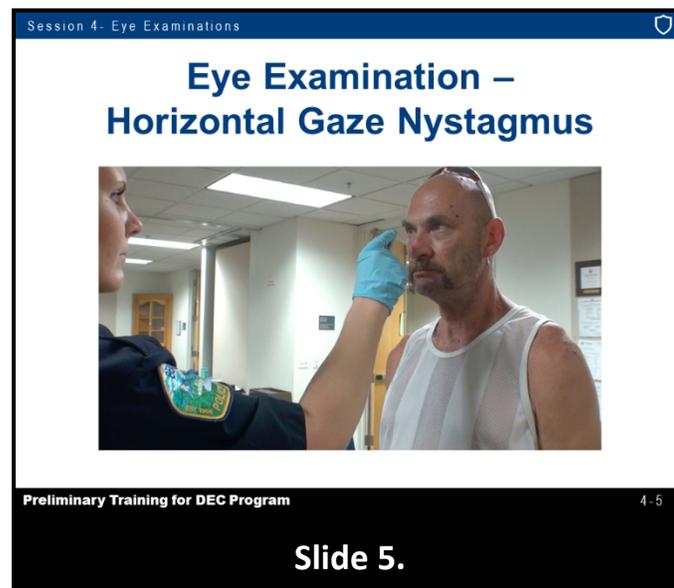


***Remind participants the speed of the stimulus should be approximately the same speed used as checking for the Lack of Smooth Pursuit. There should be a noticeable break between equal tracking and lack of smooth pursuit.***

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

If Resting Nystagmus is present it could also indicate a medical condition or a high dose of a Dissociative Anesthetic drug. 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.



**Source:**

Citek, K. (2014). *Eye Tests on Suspect with a "Blind" Eye*. Pacific University College of Optometry.

***For most HGN testing, the normal eye can see the stimulus and the movement of either eye should be consistent with what is expected. When the normal eye can no longer see the stimulus, most commonly when assessing Distinct and Sustained Nystagmus at Maximum Deviation on the blind eye side, normal tracking may be disrupted and eye movements not consistent with nystagmus may be observed.***

## B. Procedures and Clues

Session 4- Eye Examinations

### Three Clues of Horizontal Gaze Nystagmus

- Lack of Smooth Pursuit
- Distinct and Sustained Nystagmus at Maximum Deviation
- Angle of Onset



Preliminary Training for DEC Program 4-6

**Slide 6.**

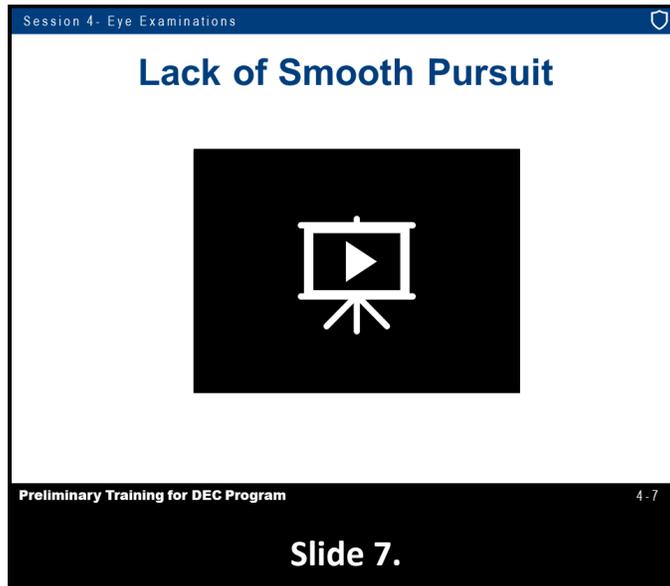
Prior to the administration of the HGN test, the subject's eyeglasses should be removed and the eyes are checked separately for Equal Pupil Size, Resting Nystagmus, and Equal Tracking. **(Look for and be aware of contacts, especially colored contacts, because some colored contacts may affect the ability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

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



**Remind participants the HGN test is done exactly the same as in the Standardized Field Sobriety Testing (SFST) training and the Drug Recognition Expert (DRE) start with the “subject’s” left eye first.**



The first check is for “Lack of Smooth Pursuit.” While not an actual Gaze Nystagmus, Lack of Smooth Pursuit is a validated clue in the HGN test.



**Select a participant and demonstrate the first check of HGN on that participant.**

- 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



**Point out this procedure ensures the eyes will be open wide and easy to observe.**

- 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. Move the object from center to the side as far as the eye can move. This should take approximately two seconds. Then move all the way to the subject’s right at the same speed to check the right eye. Return to the center and repeat this step.



***Point out we begin by checking the subject's left eye, then we immediately check the right eye. We make at least two complete passes in front of both eyes.***

***Demonstrate two complete passes in front of the eyes using a participant-volunteer as your test subject.***

***Emphasize: For standardization, we always begin by checking the left eye.***

- The stimulus should move at a speed requiring approximately two seconds to bring it from the center to the side.
- While the eye is moving, examine it for evidence of a Lack of Smooth Pursuit

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

If Resting Nystagmus is present it could also indicate a medical condition or a high dose of a Dissociative Anesthetic drug. 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.



***Excuse the participant-volunteer and thank him or her for participating.***

Session 4- Eye Examinations

## Participant Practice

Lack of Smooth Pursuit



Preliminary Training for DEC Program 4-8

**Slide 8.**

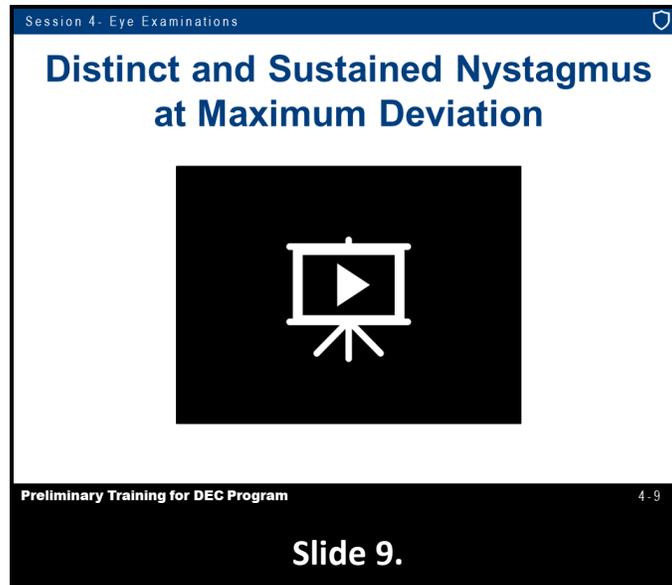


**Participants' initial practice of the check for Lack of Smooth Pursuit.**

**Instruct participants to work in pairs taking turns checking each other's eyes for Lack of Smooth Pursuit.**

**Monitor, coach, and critique the participants' practice.**

**Allow this practice to continue for only about 2 minutes.**



The second check is for 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.



***Demonstrate. Point out four (4) seconds is a relatively long period of time. You cannot simply hold the eye to the side for an instant as the jerking must be sustained and last a minimum of four seconds.***

***Remind participants as soon as we have finished checking the left eye we immediately check the right eye. Repeat the procedure. 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.



***Point out for HGN to be considered present, a distinct and sustained jerking must be present for a minimum of four seconds. Excuse the participant-volunteer and thank him or her for participating.***

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



***Instruct participants to work in pairs, taking turns checking each other's eyes for Distinct and Sustained Nystagmus at Maximum Deviation. Monitor, coach, and critique the participants' practice. Allow this practice to continue for only about 2 minutes.***



Session 4- Eye Examinations

## Three Clues of Horizontal Gaze Nystagmus

Angle of Onset



Preliminary Training for DEC Program 4-10

**Slide 10.**

The final check is for the Angle of Onset of Nystagmus.



**Select a participant and demonstrate the third check of HGN on that participant.**

- 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

**Stimulus should be moved at a speed that takes approximately four seconds or more to travel from center to approximately 45 degrees. Moving the stimulus at a slower speed aids the officer in observing when the eye first begins to jerk.**

- If jerking is observed, hold the stimulus at that position and verify the nystagmus continues. If jerking is not evident with the stimulus held steady, you have not located the point of onset. Therefore, resume moving the stimulus slowly toward the side until you notice the jerking again. When you locate the point of onset of nystagmus, stop moving the stimulus and estimate the angle of onset. If the nystagmus is not observed prior to approximately 45 degrees, stop and hold the stimulus at an approximately 45-degree angle to verify the nystagmus is not present.



**Point out angle estimation simply requires practice.**

- Then, repeat the process for the right eye
- Then, again check onset for the left eye, and again for the right



**Excuse the participant volunteer and thank him/her for participating.**

**Exhibit a template (if available).**

**Point out the template (if available) will be used during practice only.**

Session 4- Eye Examinations

### Angle of Onset

$$\begin{aligned} \text{BAC} &= 50 - \text{Angle of Onset} \\ \text{Angle of Onset} &= 35 \text{ degrees} \\ &= 50 - 35 \\ &= 0.15 \end{aligned}$$

Preliminary Training for DEC Program 4-11

## Slide 11.



**Write the formula “ $BAC = 50 - \text{Angle of Onset}$ ” on the dry erase board of easel/easel pad.**

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

- Explanation:  $BAC = 100 \times \text{blood alcohol}$  (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.



**Emphasize this point: The formula can easily be “off” by 0.05 or more even though the subject has consumed no drug other than alcohol.**



### **Sources:**

Goding, G. S., & Dobie, R. A. (1986). Gaze nystagmus and blood alcohol. *The Laryngoscope*, 96(7), 713-717. doi:10.1288/00005537-198607000-00001

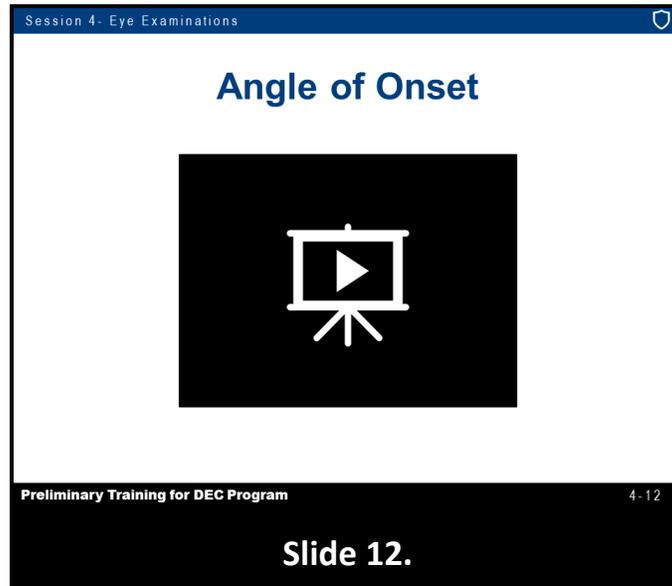
Tharp, V., Burns, M., & Moskowitz, H. (1981). *Development and Field Test of Psychophysical Tests for DWI Arrest*. NHTSA, DOT-HS-8-01970.

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.



**Emphasize many other facts will also be considered that will help to determine whether Depressants, Inhalants, or Dissociative Anesthetics may be present.**

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.



***Participants' initial practice of Angle of Onset estimation. Point out the template will be used during practice.***



***Excuse the participant-volunteer and thank him or her for participating.***



***Instruct participants to work in pairs, taking turns estimating angles of each other's eyes.***

***Instruct participants they are to try to draw their partner's eyes to 4 different angles: 30, 35, 40, and 45 degrees. Participants will check their accuracy using the template.***

***Monitor, coach, and critique the participants' practice.***

***Allow this practice to continue for only about 3 minutes.***

Session 4- Eye Examinations

## Horizontal Gaze Nystagmus

- Standardization
- Medical Complications



Preliminary Training for DEC Program 4-13

**Slide 13.**



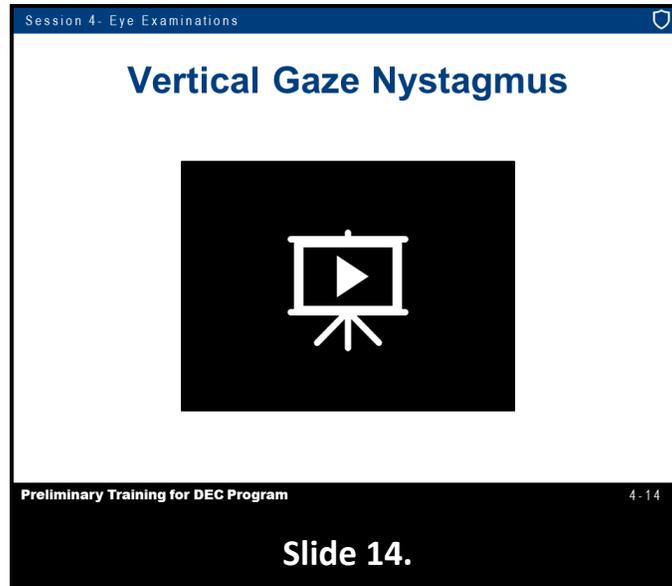
***Remind participants about the importance of Standardization: We want all DREs to work in the same way; the “left eye/right eye” switching procedure is simply the standard approach we have adopted.***

Be alert for Medical Complications such as stroke, brain tumor, or other injury to the brain. These kinds of injuries often will cause the two eyes to behave quite differently from one another.



***For example, the left eye might jerk noticeably while the right eye tracks smoothly. By always immediately comparing the performances of the two eyes, the DRE might more quickly spot the possibility of a medical complication.***

***NHTSA modified its SFST training courses to conform to this “left/right” procedure in 1989.***



**Select a participant and demonstrate the VGN test on the participant.**

- 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



**Point out the examiner should keep the subject's eyes elevated for a minimum of 4 seconds to verify the jerking is present and continues during the full four seconds.**

**Point out we do not attempt to estimate an angle of onset for VGN: we simply record whether a visible up and down jerking is present or not present.**

**Excuse the participant-volunteer and thank him or her for participating.**



**Participants' initial practice of the VGN test.**

**Instruct participants to work in pairs, taking turns administering the VGN test to each other.**

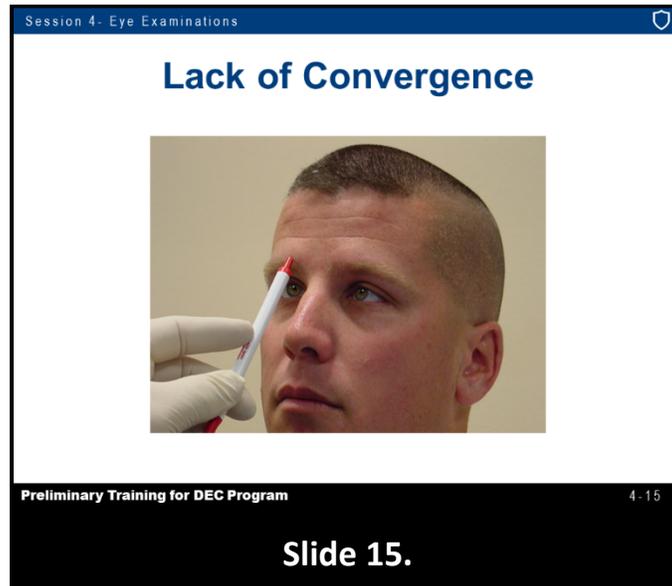
**Monitor, coach, and critique the participants' practice.**

**Allow this practice to continue for only about 2 minutes.**

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



**Point out there is no known drug that will cause VGN without causing at least four clues of HGN. If VGN is present and HGN is not, it could be a medical condition.**



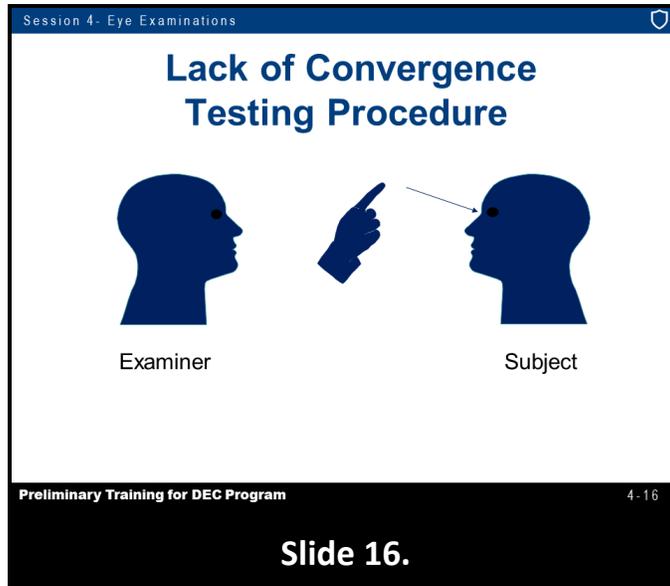
The test for LOC determines whether the subject is able to cross his or her eyes. The check for LOC can provide another clue as to the possible presence of Depressants, Inhalants, or Dissociative Anesthetics. LOC is also an indicator of the possible presence of Cannabis.

Any deficiency in eye movement or pupil response, especially if it is acquired or of recent onset, can impair a person's ability to see properly. Drug impairment, including from alcohol, may result in lack of convergence causing double vision (diplopia) when looking at objects up close or when frequently or repeatedly changing viewing distance between far and near (such as when looking back and forth from the road to the car's dashboard).



**Source:**

Leigh, R. J., & Zee, D. S. (2015). A Survey of Eye Movements: Characteristics and Teleology. In R. J. Leigh, & D. S. Zee, *The Neurology of Eye Movements* (5th ed., p. 12ff). Online: Oxford University Press.  
doi:10.1093/med/9780199969289.001.0001



**Select a participant and demonstrate the test for LOC on that participant.**

- 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



**Point out in the simplest terms – LOC means an inability to cross the eyes.**

- 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



**Emphasize it is important the subject be aware of what will happen so he or she will not flinch or become frightened when you move the stimulus toward his or her face. Point out to the subject he or she will have to keep their head steady and try to cross the eyes in order to keep their eyes focused on the stimulus as it moves in toward the nose. Point out you will not actually touch the subject's nose.**

- Start to move the object slowly in a circle

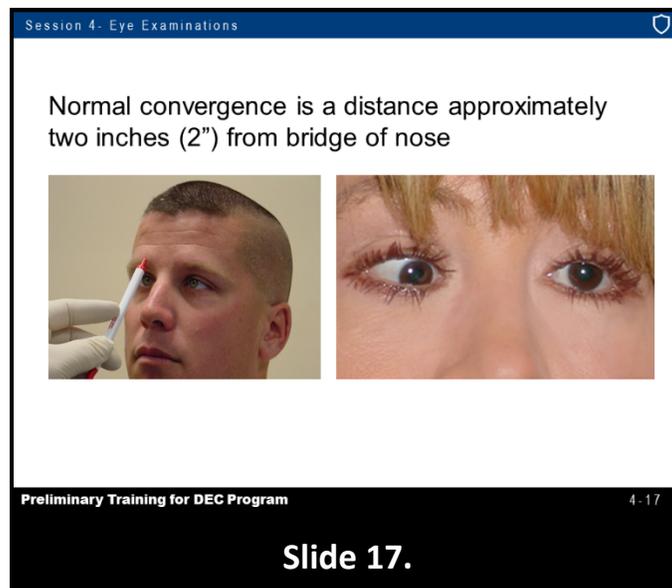


**Point out this initial circular motion helps to verify the subject has focused on the stimulus and is able to track it.**

- 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
- Hold this position for approximately (1) second and 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) to confirm the finding. If the results differ, then a third check is permissible to confirm the observations. No delay between checks is required.



***Point out not to actually touch the nose and not to go any closer than approximately two inches from the bridge of the nose. Remind the participants if the subject wears glasses during reading and for near visual tasks and they are readily available, ensure the eye glasses are worn for the check for LOC.***



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.



***Point out convergence response in most people is a distance of approximately two inches from the bridge of the nose.***

If the eyes do not converge or remain converged on the stimulus for one second, then LOC is present.



***Point out some normal non-impaired people may not be able to converge to the bridge of the nose. Moving the stimulus within two inches of the nose provides a better indicator of LOC attributed to drug impairment.***



***Participants' initial practice of the test for LOC.***



***Point out to keep the stimulus high enough so eye movement can be observed.***

***Excuse the participant-volunteer and thank him or her for participating.***

***Instruct participants to work in pairs, taking turns testing each other's eyes for LOC.***

***Monitor, coach, and critique the participants' practice.***

***Allow this practice to continue for only about 2 minutes.***

A presentation slide titled "Drug Categories That Cause Lack of Convergence". The slide lists four categories: CNS Depressants, Inhalants, Dissociative Anesthetics, and Cannabis. The slide is part of "Session 4- Eye Examinations" and is labeled "Slide 18." at the bottom. The footer also includes "Preliminary Training for DEC Program" and "4-18".

Session 4- Eye Examinations

## Drug Categories That Cause Lack of Convergence

- CNS Depressants
- Inhalants
- Dissociative Anesthetics
- Cannabis

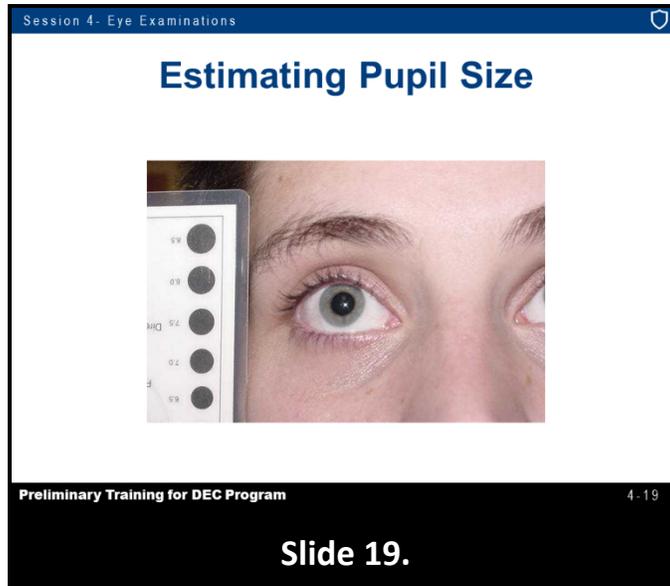
Preliminary Training for DEC Program 4-18

**Slide 18.**

Drug categories which usually cause LOC include CNS Depressants, Inhalants, Dissociative Anesthetics, and Cannabis.



***Point out these four drug categories are referred to as the "DIDC" drugs.***



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.



***Exhibit a pupillometer.***

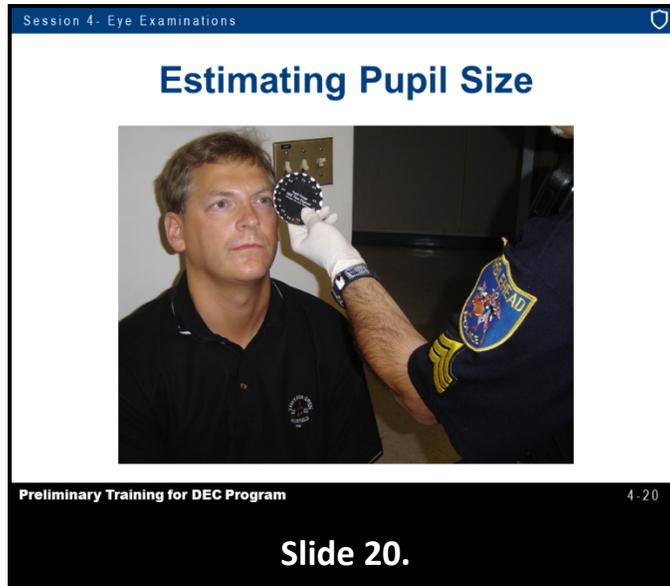
***Point out our eyes continually adjust to accommodate different lighting conditions.***

***Emphasize pupil size is an "estimate."***

***Select a participant and demonstrate pupil size estimation using the participant.***

***Point out to begin by testing the subject's left eye first.***

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.***

***Select a participant from the class and demonstrate how the pupil size is estimated. Upon completion, excuse the participant-volunteer and thank him or her for participating.***



***Instruct participants to work in pairs, taking turns estimating each other's pupils.***

***Monitor, coach, and critique the participants' practice.***

***Allow this practice to continue for only about 2 minutes.***

***Tell participants to record on paper the pupil sizes of their partners.***

***Ask the participants how many found partners with different sized pupils (i.e., one pupil larger or smaller than the right).***

***Point out it is not too uncommon to find people whose pupils differ by as much as one-half millimeter, but larger differences are more unusual.***

Session 4- Eye Examinations

## Estimating Pupil Size

DRE average range of pupil size in room light is  
2.5 to 5.0 mm



Preliminary Training for DEC Program 4-21

**Slide 21.**



***Tabulate the pupil size estimates made by the participants on the easel/easel pad using the following sizes:***

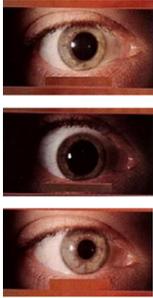
- 8.5 or larger
- 8.0
- 7.5
- 7.0
- 6.5
- 6.0
- 5.5
- 5.0
- 4.5
- 4.0
- 3.5
- 3.0
- 2.5 or smaller



***Point out the "DRE average" range of pupil size in room light is 2.5 to 5.0 mm.***

Session 4- Eye Examinations

## Three Testing Conditions for Pupil Size Estimations



Room Light

Near Total Darkness

Direct Light

Preliminary Training for DEC Program 4-22

**Slide 22.**

We estimate pupil size under three (3) different lighting conditions: Room Light, Near Total Darkness, and 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.

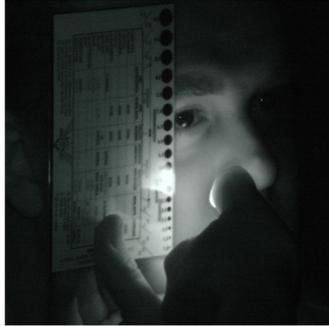


***Point out the use of the word “normal” and how it relates to the DEC Program will be covered more in the 7-Day School.***

***For more information instructors may wish to refer to “Understanding the terms Normal versus Average in the DRE opinion and decision-making process” addendum at the end of this session.***

Session 4- Eye Examinations

## Estimation of Pupil Size



Preliminary Training for DEC Program 4-23

**Slide 23.**

In the Estimation of Pupil Size under Room Light, pupils are examined in Room Light prior to darkening the room.

In the 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.



***Demonstrate this.***

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.

Session 4- Eye Examinations

## Estimation of Pupil Size Darkroom Demonstrations



Preliminary Training for DEC Program 4-24

**Slide 24.**



***Select a participant to aide in demonstrations of darkroom pupil measurements.***

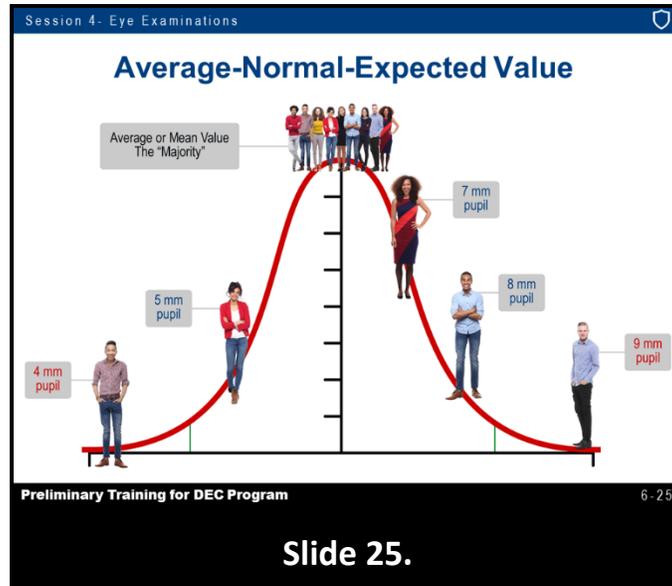
For the estimation under Direct Light, from a darkened environment, quickly illuminate the left eye and hold it there for a minimum of 15 seconds. This can be accomplished by activating the penlight pre-positioned in front of the eye, or by activating the penlight with the light covered and positioned 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.



***Demonstrate this.***

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.



***Point out when all of the study subjects were tested the majority (approximately 88%) of the non-impaired people fell within the “average ranges.”***

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.

Session 4- Eye Examinations

## Updated Values – Where did they come from specifically related to DRE?



**An evaluation of pupil size standards used by police officers for detecting drug impairment**

Jack E. Richman, O.D.,\* Kathleen Colleen McAndrew, M.S.N., ADND,\* Donald Decker,\* and Stephen C. Mullaney, B.S., M.S.\*\*

\*The New England College of Optometry, Boston, Massachusetts; \*\*University of Boston, Boston, Massachusetts; \*Massachusetts Police Officers and Marshals, Massachusetts; and \*\*Massachusetts State Police, Taunton, Massachusetts

**Abstract**

**Objective:** The purpose of this study was to evaluate the pupil size standards used by police officers for detecting drug impairment. The study was conducted in a laboratory setting. The study was conducted in a laboratory setting. The study was conducted in a laboratory setting.

**Methods:** The study was conducted in a laboratory setting. The study was conducted in a laboratory setting. The study was conducted in a laboratory setting.

**Results:** The study was conducted in a laboratory setting. The study was conducted in a laboratory setting. The study was conducted in a laboratory setting.

**Conclusion:** The study was conducted in a laboratory setting. The study was conducted in a laboratory setting. The study was conducted in a laboratory setting.

**Keywords:** pupil size standards, police officers, detecting drug impairment.

Preliminary Training for DEC Program 4-26

**Slide 26.**

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.



**Point out although there are several studies that indicate these pupil sizes are “for the majority of non-impaired people,” there is one study in particular that specifies the average size and ranges.**

**Source:**

Richman, J. E., McAndrew, K. G., Decker, D., & Mullaney, S. C. (2004, March). An evaluation of pupil size standards used by police officers for detecting drug impairment. *Optometry (St. Louis, Mo.)*, 75(3), 175-182. doi:10.1016/s1529-1839(04)70037-8

Session 4- Eye Examinations

10.0 mm	0.00%
9.5 mm	0.00%
9.0 mm	0.00%
8.5 mm	0.00%
8.0 mm	0.00%
7.5 mm	0.45%
7.0 mm	1.12%
6.5 mm	1.79%
6.0 mm	0.89%
5.5 mm	3.35%
5.0 mm	4.24%
4.5 mm	13.17%
4.0 mm	23.66%
3.5 mm	24.11%
3.0 mm	18.08%
2.5 mm	5.36%
2.0 mm	0.89%
1.5 mm	0.00%
1.0 mm	0.00%

## Room Light

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

Preliminary Training for DEC Program 4-27

**Slide 27.**

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.

Session 4- Eye Examinations

10 mm	0.00%
9.5 mm	0.22%
9 mm	4.80%
8.5 mm	6.92%
8 mm	8.93%
7.5 mm	11.00%
7 mm	14.07%
6.5 mm	15.17%
6 mm	13.02%
5.5 mm	10.00%
5 mm	8.93%
4.5 mm	4.47%
4 mm	1.79%
3.5 mm	1.00%
3 mm	0.00%

## Near Total Darkness

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

Preliminary Training for DEC Program 4-28

**Slide 28.**

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.

Session 4- Eye Examinations

10.0 mm	0.00%
9.5 mm	0.00%
9.0 mm	0.00 %
8.5 mm	0.00%
8.0 mm	0.00%
7.5 mm	0.44%
7.0 mm	1.12%
6.5 mm	0.89%
6.0 mm	1.79%
5.5 mm	3.35%
5.0 mm	4.24%
4.5 mm	13.17%
4.0 mm	23.66%
3.5 mm	24.11%
3.0 mm	21.08%
2.5 mm	5.36%
2.0 mm	0.89%
1.5 mm	0.00%
1.0 mm	0.00%

**Direct Light**

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

Preliminary Training for DEC Program 4-29

**Slide 29.**

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.



*Point out specific drug categories and their relationship to pupil size will be covered later.*

Session 4- Eye Examinations

**Reaction to Light**

Assessment of how quickly pupil constricts to its smallest size during check of pupil size under direct light.

Preliminary Training for DEC Program 4-30

**Slide 30.**

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.



***Demonstrate this.***

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



***Demonstrate this.***

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.



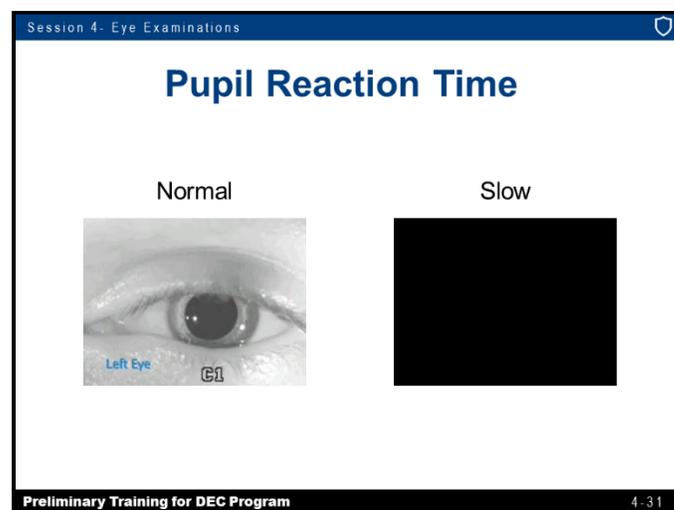
***Participants' initial practice in assessing the pupil's reaction to light.***

***Have participants work in pairs, checking each other's pupil reaction.***



***Monitor, coach, and critique the participants' practice.***

***Allow the practice to continue for only about 2 minutes.***



## Slide 31.

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.



***Demonstrate this using a participant-volunteer.***

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



***Demonstrate this.***

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.

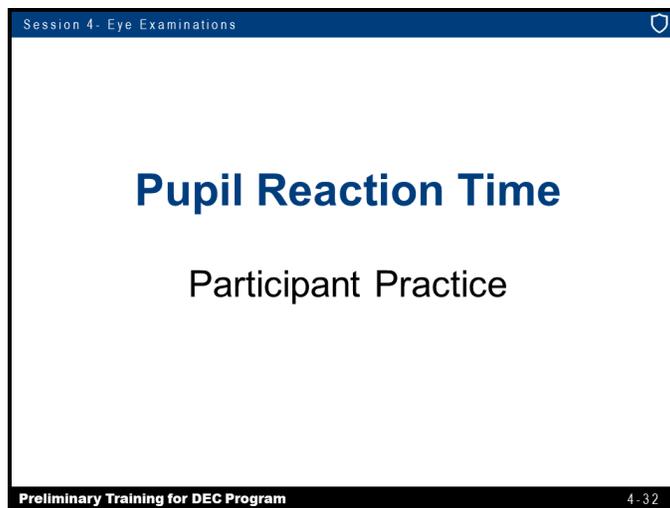


***Point out pupillary reaction to light should occur within one second.***

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.



***Excuse the participant-volunteer and thank him or her for participating.***



## Slide 32.



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

***Instruct participants to work in pairs, taking turns shining the light into each other's eye and observing the pupil's reaction.***



***Remind participants to position the penlight so the beam approximately "fits" the eye socket when the beam is brought directly into the eye.***



***Monitor, coach, and critique the participants' practice.***

***Allow the practice to continue for only about 2 minutes.***

***Solicit participants' comments and questions concerning the eye examinations.***

### C. Demonstrations

A screenshot of a presentation slide titled "Slide 33." The slide content includes: "Session 4- Eye Examinations" in the top left corner; "Equal Tracking", "Equal Pupil Size", and "Horizontal Gaze Nystagmus" listed in the center; "Participant Practice" below the list; "Preliminary Training for DEC Program" in the bottom left corner; and "4-33" in the bottom right corner. The slide title "Slide 33." is displayed in a black bar at the bottom of the image.

Session 4- Eye Examinations

**Equal Tracking**

**Equal Pupil Size**

**Horizontal Gaze Nystagmus**

Participant Practice

Preliminary Training for DEC Program 4-33

**Slide 33.**



**Select two participants to come before the class. Demonstrate Equal Tracking and Equal Pupil Size.**

**Demonstration of HGN. Instruct one participant to demonstrate the administration of HGN to the other participant.**

**Check for Lack of Smooth Pursuit.**

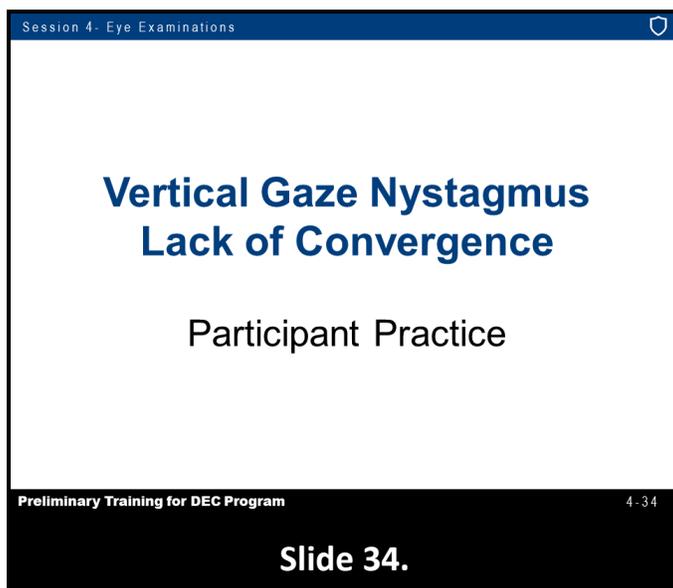
**Check for Distinct and Sustained Nystagmus at Maximum Deviation.**

**Coach and critique the participant-administrator's performance.**

**Estimation of the Angle of Onset. Make sure the participant-administrator checks both eyes.**

**When the participant-administrator has completed the HGN test, instruct the participant-administrator to draw the participant-subject's eye to an angle of 35 degrees. Check the accuracy of this estimate, using the template.**

**Excuse the two participants and thank them for participating.**



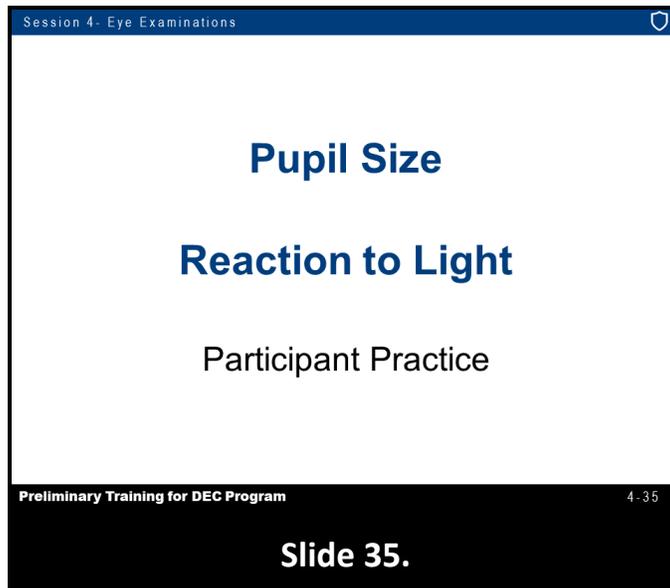
**Demonstration of VGN and LOC. Select two other participants to come before the class and instruct one participant to check the other for VGN.**

**Coach and critique the participant-administrator's performance.**

**Instruct the second participant to check the eyes of the first participant for LOC.**

**Coach and critique the participant-administrator's performance.**

**Excuse the two participants and thank them for participating.**



***Demonstration of Pupil Size Estimation and Test for Reaction to Light. Select two other participants to come before the class and instruct one participant to estimate the other's pupils under Room Light.***



***Pupil size estimation under Room Light. Coach and critique the participant-administrator's performance.***

***Demonstration of Pupil Size Estimation and Test for Reaction to Light. Select two other participants to come before the class and instruct one participant to estimate the other's pupils under Room Light.***

***Pupil size estimation under Room Light. Coach and critique the participant-administrator's performance.***

***Darkroom estimations of pupil size. Instruct second participant to demonstrate how to perform the darkroom estimations of pupil size.***

***Coach and critique the participant-administrator's performance.***

***Point out assessment of the pupil's Reaction to Light takes place in conjunction with the direct-light estimation.***

***Excuse the two participants and thank them for participating.***

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



***Point out in addition to signs of drug use, checks of the Pupil Size and Reaction to Light may reveal signs of injury or existing medical conditions.***

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.



***Solicit participants' comments and questions concerning the purposes of the eye examinations.***

Session 4- Eye Examinations

## Pupil Size Ranges Recap

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

Preliminary Training for DEC Program 4-36

**Slide 36.**

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



***Solicit participants' comments and questions concerning the demonstrations of the eye examinations and the pupil size ranges.***

## D. Relationship of Drug Categories to the Eye Examinations

Session 4- Eye Examinations

### Relationship of Drug Categories to the Eye Examinations

	CNS Depressants	CNS Stimulants	Hallucinogens	Dissociative Anesthetics	Narcotic Analgesics	Inhalants	Cannabis
HGN	Present	None	None	Present	None	Present	None
VGN	Present	None	None	Present	None	Present	None
LOC	Present	None	None	Present	None	Present	Present
Pupil Size							
Reaction to Light							

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.

Preliminary Training for DEC Program 4-37

### Slide 37.



**Selectively reveal the contents of this slide during this discussion.**

Three of the seven drug categories normally will cause HGN.



**Ask the participants which drug categories normally induce 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.



**Ask participants which category.**

Cannabis usually does cause LOC, even though it does not cause nystagmus. The other three categories do not cause a LOC.

Session 4- Eye Examinations

## Relationship of Drug Categories to the Eye Examinations

	CNS Depressants	CNS Stimulants	Hallucinogens	Dissociative Anesthetics	Narcotic Analgesics	Inhalants	Cannabis
HGN	Present	None	None	Present	None	Present	None
VGN	Present	None	None	Present	None	Present	None
LOC	Present	None	None	Present	None	Present	Present
Pupil Size	Normal (1)	Dilated	Dilated	Normal	Constricted	Normal (4)	Dilated (6)
Reaction to Light							

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 some antidepressants usually dilate pupils.  
 (4) Possibly dilated.  
 (6) Possibly normal.

Preliminary Training for DEC Program 4-38

# Slide 38.

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.



***But point out pupils may be normal with Cannabis as per Exception #6.***

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.



***But point out some inhalants may cause pupil dilation as per Exception #4.***

***Point out the term "normal" used in the matrix refers to the DRE average ranges for pupil size.***

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.



***Ask participants which Depressants cause pupil dilation.***

Soma, Quaaludes, and some antidepressants usually dilate pupils.



**Explain Exception #1: Soma, Quaaludes, and some antidepressants usually dilate pupils.**

**Solicit participants' questions and comments.**

Session 4- Eye Examinations

### Relationship of Drug Categories to the Eye Examinations

	CNS Depressants	CNS Stimulants	Hallucinogens	Dissociative Anesthetics	Narcotic Analgesics	Inhalants	Cannabis
HGN	Present	None	None	Present	None	Present	None
VGN	Present	None	None	Present	None	Present	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 or None Visible	Slow	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 some antidepressants usually dilate pupils. (6) Possibly normal.  
 (3) Certain psychedelic amphetamines may cause slowing.  
 (4) Possibly dilated.

Preliminary Training for DEC Program 4 - 39

## Slide 39.

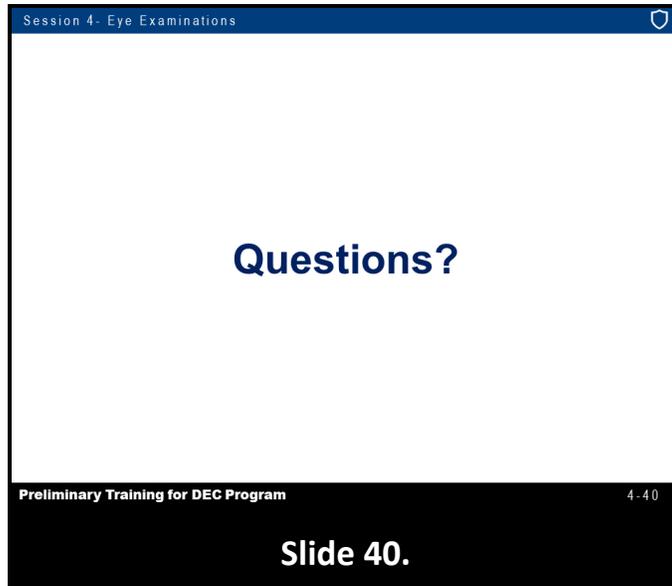
Generally, the pupillary reaction to light is either slowed by the effect of the drug or the pupil reacts normally. This effect may be difficult to observe with Narcotic Analgesics. Though there is always some reaction to light, the constricted pupil caused by Narcotic Analgesics makes it difficult to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



**Point out certain psychedelic amphetamines cause slowing of the pupils as per Exception #3.**

Inhalants will usually slow pupillary reaction.



***Solicit participants' comments and questions concerning Eye Examinations.***

Session 4- Eye Examinations

## 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?

Preliminary Training for DEC Program 4-41

**Slide 41.**

### 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?



1. ***Lack of Smooth Pursuit, Distinct and Sustained Nystagmus at Maximum Deviation, Angle of Onset of Nystagmus***
2. ***Angle of Onset***
3. ***CNS Stimulants, Hallucinogens, Narcotic Analgesics, Cannabis***
4. ***CNS Depressants, Inhalants, Dissociative Anesthetics, Cannabis***



## Test Your Knowledge

5. Name the three lighting conditions under which a DRE makes pupil size estimations.
6. What is the average range of pupil size in room light?
7. Which categories of drugs will usually slow down the reaction of pupils to light?

### Slide 42.

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?



5. ***Room light, Near Total Darkness, Direct Light***
6. ***2.5 – 5.0 mm***
7. ***CNS Depressants, CNS Stimulants, Inhalants***

## 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.*

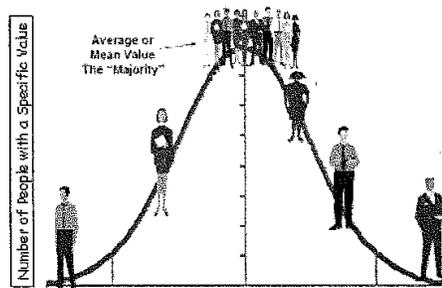
The Drug Evaluation and Classification (DEC) training program and the Drug Recognition Expert (DRE) examination process utilizes a standardized and systematic process assessing a variety of physical indicators to identify drug-impaired drivers. (“Drug Evaluation and Classification Program 7-Day School 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)

**Average is the value that the “Majority” of  
MOST Non Impaired PEOPLE exhibit.**



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*, March 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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Session 5 - Alcohol Workshop

## Learning Objectives

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

Preliminary Training for DEC Program 5-2

**Slide 2.**



***Briefly review the objectives, content and activities of this session.***

***The main emphasis of the alcohol workshop is to evaluate the participant's proficiency in the administration of Standardized Field Sobriety Tests (SFSTs).***

## A. Assignments and Procedures

Session 5 - Alcohol Workshop

### Team Assignments

- One member will be an examiner
- One member will be the recorder
- All others in group will observe/coach
- Each team member will conduct at least one complete examination

Preliminary Training for DEC Program 5-3

**Slide 3.**



***Group participants into teams. The number of participants in each team is determined by dividing the total number of participants by the total number of volunteer drinkers. Example: if there are 23 participants and 7 volunteer drinkers, form five teams of three members and two teams of four members.***

***One member will be an examiner and will complete all portions of the exam. One member will be the recorder and document the findings of the examination on the evaluation form. All others in the group will observe/coach. Each team member will conduct at least one complete examination.***

***Make sure ALL volunteer drinkers read and sign the "Statement of Informed Consent" form prior to receiving any alcohol.***

Session 5 - Alcohol Workshop

## Testing Procedures

- HGN (record onset angle in each eye)
- VGN
- LOC
- MRB
- WAT
- OLS (left foot and right foot)
- FTN

Preliminary Training for DEC Program 5-4

### Slide 4.

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



***Write the sequence of tests and examinations on dry erase board or easel/easel pad.***

- 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)



***Emphasize team will administer each test only once to each volunteer, e.g., only one member of a team will administer the HGN test to a particular volunteer.***

***Emphasize tests and examinations are to be given in the order listed for all volunteers.***

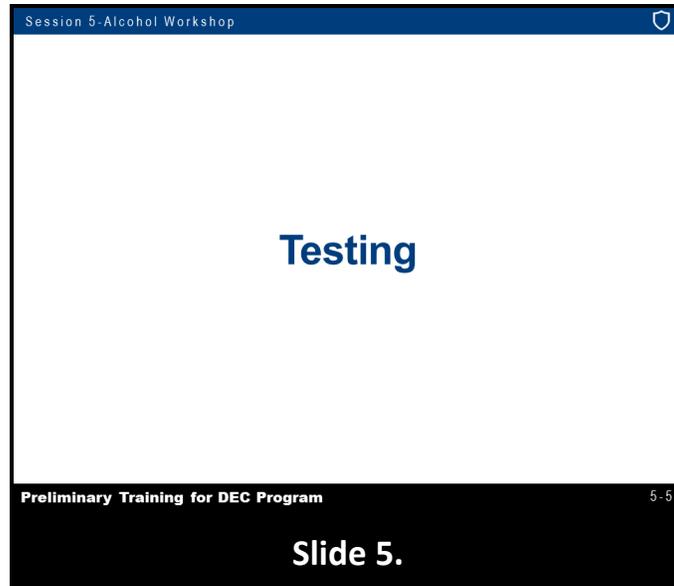
***Teams will record the results of each test and examination.***

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



***Solicit questions about the testing procedures.***

## B. Testing



***Hand out Drug Recognition expert (DRE) facesheets, if available.***

***Monitor testing to ensure compliance with the procedures.***

***Always allow a team to complete the full sequence of tests and examinations before sending the volunteer to another team.***

***Offer coaching and constructive criticism as appropriate.***

## C. Feedback and Discussion



***Make a matrix or chart during the discussion phase of the workshop to record the results of the workshop.***

***For each volunteer, select one team to report in detail on each test and examination administered to that volunteer.***

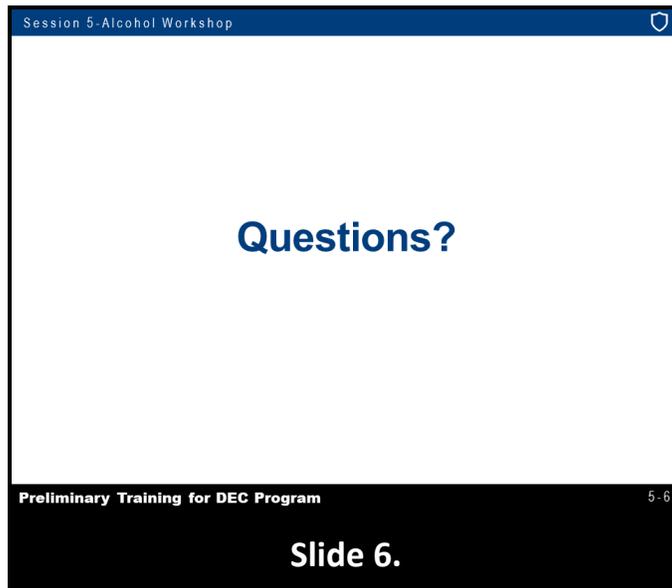
***Call upon participants to report their best estimates as to that volunteer's BAC.***

***Inform participants of the results of that volunteer's breath tests.***

***Continue this process until all volunteers have been reported upon.***

***Solicit participants' questions and comments.***

## D. Alcohol Workshop SFST Proficiency Checklist



***Solicit participants' questions about the Alcohol Workshop.***

**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. \_\_\_\_\_ Gives proper verbal instructions.
3. \_\_\_\_\_ Stimulus held in proper position (approximately 12"-15" from nose, just slightly above eye level).
4. \_\_\_\_\_ Check for equal pupil size and resting nystagmus.
5. \_\_\_\_\_ Check for equal tracking.
6. \_\_\_\_\_ 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).
7. \_\_\_\_\_ Eye held at maximum deviation for a minimum of 4 seconds (no white showing). Check left eye, then right eye. (Repeat)
8. \_\_\_\_\_ Eye moved slowly (approximately 4 seconds) from center to 45° angle.  
Check left eye, then right eye. (Repeat)
9. \_\_\_\_\_ Total the clues.
10. \_\_\_\_\_ 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 walking 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 asks 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. \_\_\_\_\_ Asks subject if all instructions are understood.
8. \_\_\_\_\_ Checks actual time subject holds leg up. (Time for 30 seconds.).

Instructor: \_\_\_\_\_

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

1.

1.

Session 6-Examinations of Vital Signs

## Learning Objectives

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

Preliminary Training for DEC Program 6-2

**Slide 2.**

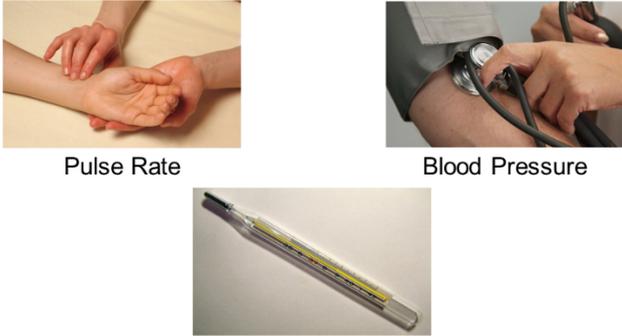


***Briefly review the objectives, content and activities of this session.***

### A. Purpose of the Examination

Session 6-Examinations of Vital Signs

## Vital Signs



Pulse Rate      Blood Pressure

Temperature

Preliminary Training for DEC Program 6-3

**Slide 3.**

The vital signs relevant to the drug influence evaluation process include pulse rate, blood pressure, and temperature.

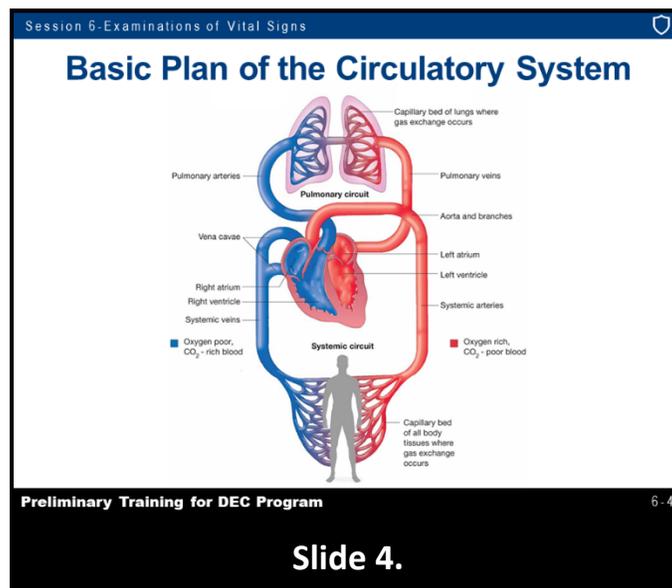


***Point out these vital signs on the wall chart.***

Different types of drugs affect these vital signs in different ways. Certain drugs tend to “speed up” the body and elevate these vital signs. For clarification, pulse may quicken, blood pressure may rise, and/or temperature may rise. Other drugs tend to “slow down” the body and lower these vital signs. For clarification, pulse may slow, blood pressure may drop, and/or 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.



***Point out for purposes of standardization, pulse and blood pressure readings will be obtained using the left arm whenever possible.***



Before we look at the vital signs, we need to look at the circulatory system and how it works. 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.

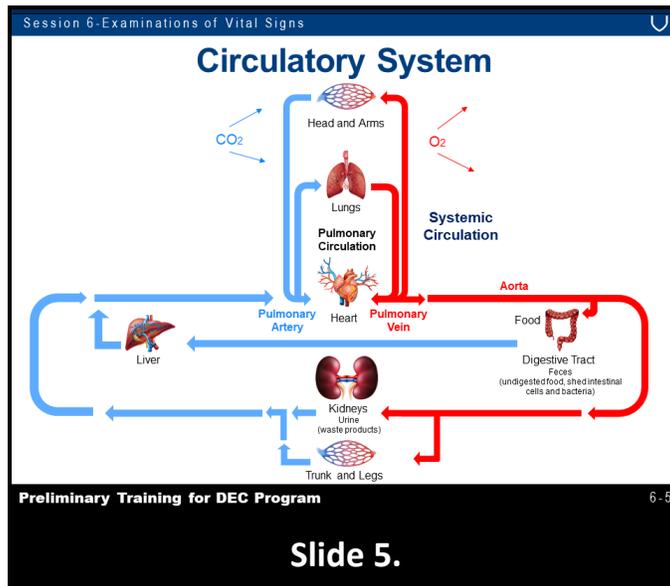


***Point out arteries constrict to aid distribution of blood.***

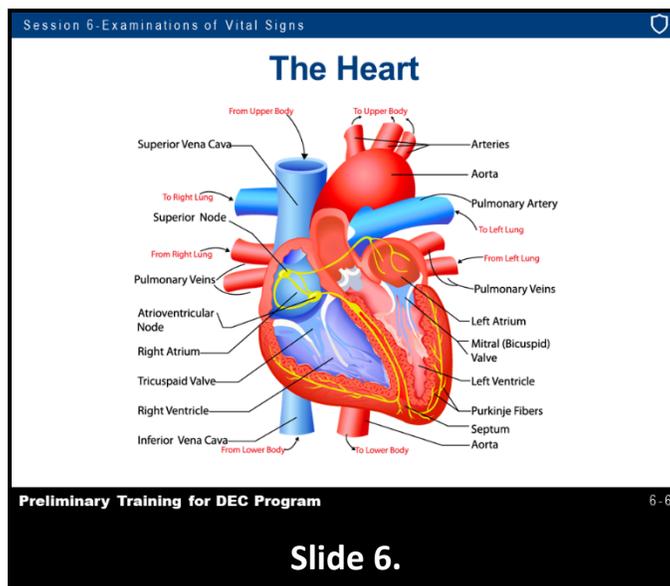
Meshwork joins up again to form small veins which become larger trunks as they travel centrally towards the heart.



***Point out blood does not come into direct contact with the body tissue cells, but rather stays in the blood vessels.***



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. The left atrium and ventricle which is the upper chamber (atrium) receives blood from the great veins, the lower chamber discharges blood into the great arteries. The 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. The 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 and 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.



***Point out heart rate is regulated by the autonomic nervous system.***

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.**

## B. Procedures and Clues

Session 6-Examinations of Vital Signs

### Definitions Concerning “Pulse”

- **Pulse** – Rhythmic dilation and relaxation of an artery that results from the beating of the heart
- **Pulse Rate** – Number of pulsations in an artery per minute
- **Artery** – A strong, elastic blood vessel that carries blood from heart to body tissues
- **Vein** – A blood vessel that carries blood back to heart from body tissues

Preliminary Training for DEC Program 6-8

**Slide 7.**

*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.



***Point out pulse rate is generally equal to the number of contractions of the heart 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.



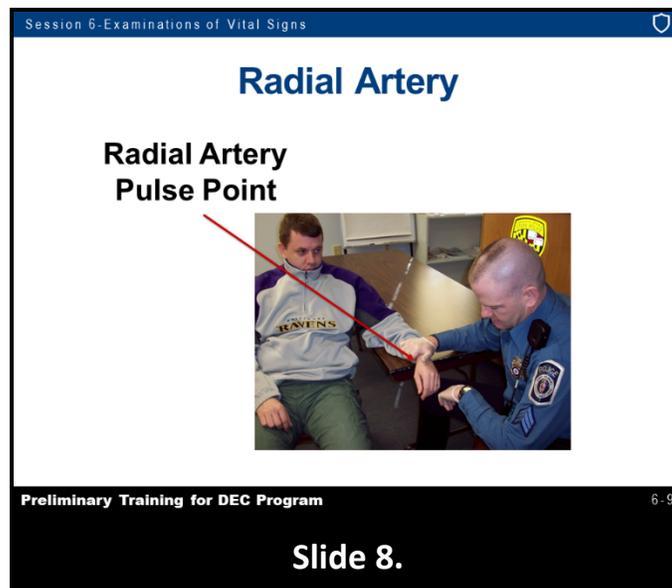
***Emphasize: The “surge” can be felt as the blood is squeezed from the heart through an artery. The pulse cannot be felt in a vein.***

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.



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.



***Point to the radial artery pulse point on your own wrist.***

***Demonstrate this.***

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.



***Demonstrate this.***

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.



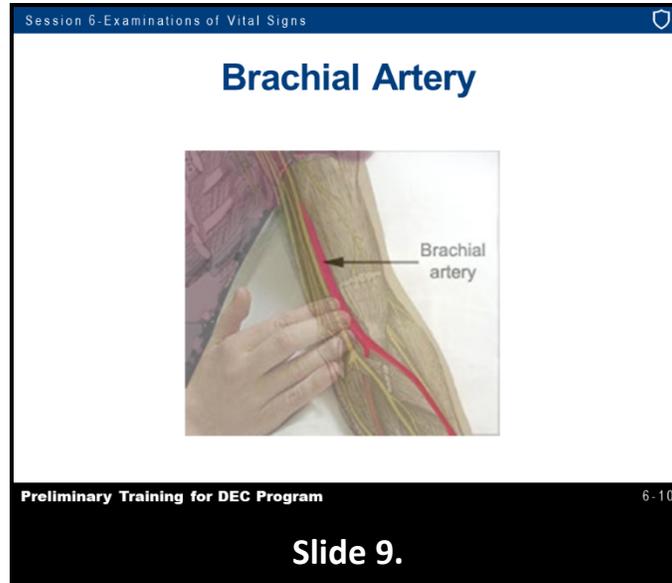
***Point out this procedure can be done by having the subject's palm up or down and the position of the subject and/or DRE may dictate the best position of the subject's palm.***

***Demonstrate this.***

You should be able to feel the pulse in your radial artery.



***Ask participants whether they can feel their pulses. Coach any participants who have difficulty in locating the pulse.***



Another pulse point involves the brachial artery.



***Point to the brachial artery pulse point in your own arm.***

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.



***Instruct participants to roll up their sleeves, if necessary, to expose their brachial artery pulse points.***

Hold your left hand out, with the palm up, and point to the brachial artery.



***Demonstrate this.***

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.

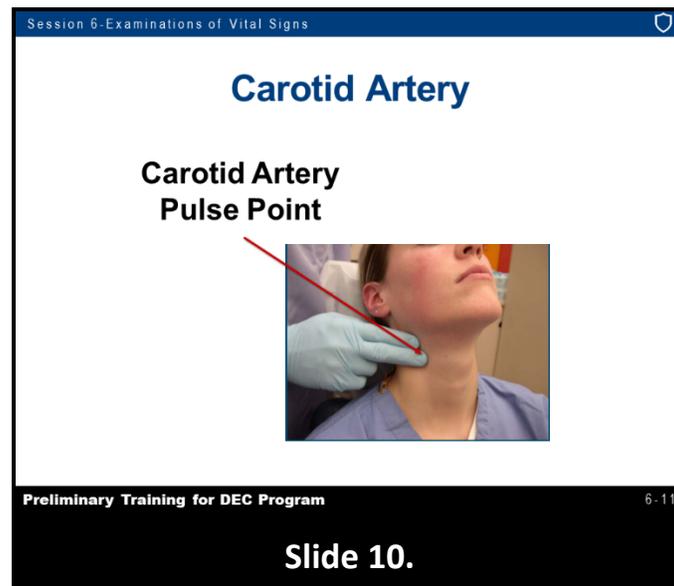


***Demonstrate this.***

You should be able to feel the pulse in your brachial artery.



***Ask participants whether they can feel their pulses. Coach any participant who has difficulty locating the pulse.***



Another pulse point involves the carotid artery.



***Point out the carotid artery pulse point on your own neck.***

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.

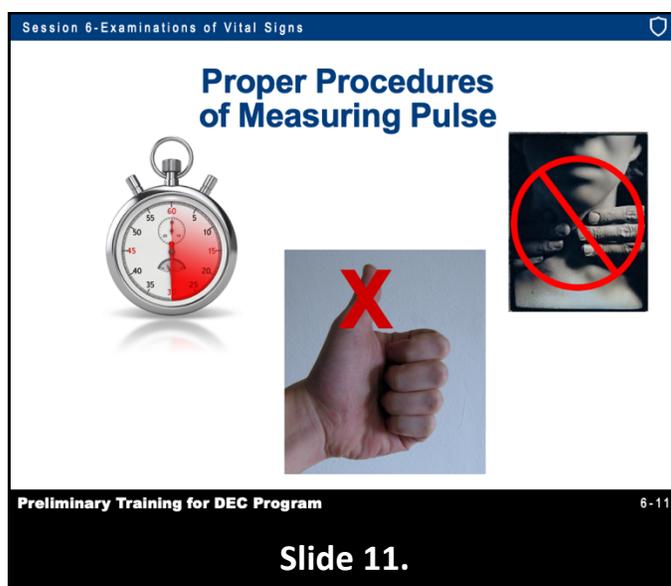


***Demonstrate this.***

You should be able to feel the pulse in your carotid artery.



***Ask participants whether they can feel their pulses. Coach any participant who has difficulty locating the 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.



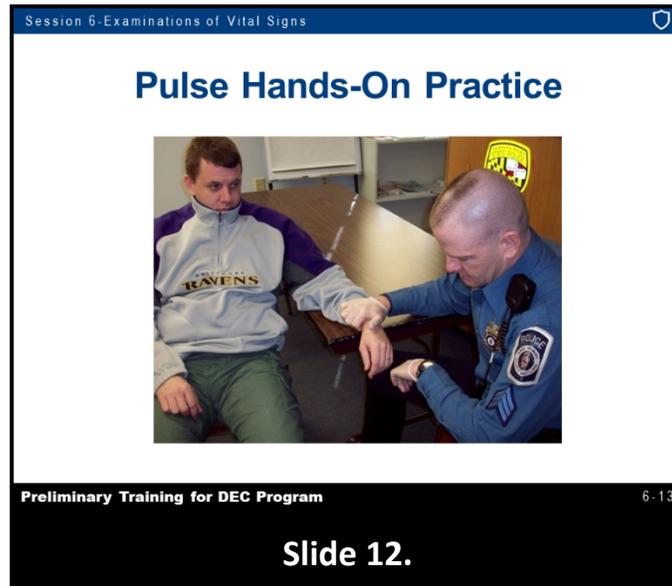
***Point out there is an artery located in the thumb. If you apply pressure with the thumb, you may be actually measuring your own pulse instead of the subject’s.***

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.



**Point out pulse rate is always expressed as “beats per minute.” If you count the beats during an interval of 30 seconds, you must double the result to obtain the pulse rate. The pulse reading should not be an odd number.**

**Point out some people may exhibit irregular (or arrhythmic) heart beats, i.e., where the interval between pulses varies.**



**Instruct participants to work in pairs, taking turns measuring each other’s pulse. Tell participants to record on paper their partner’s pulse rates.**



**Print the following lists on the dry erase board or easel/easel pad.**

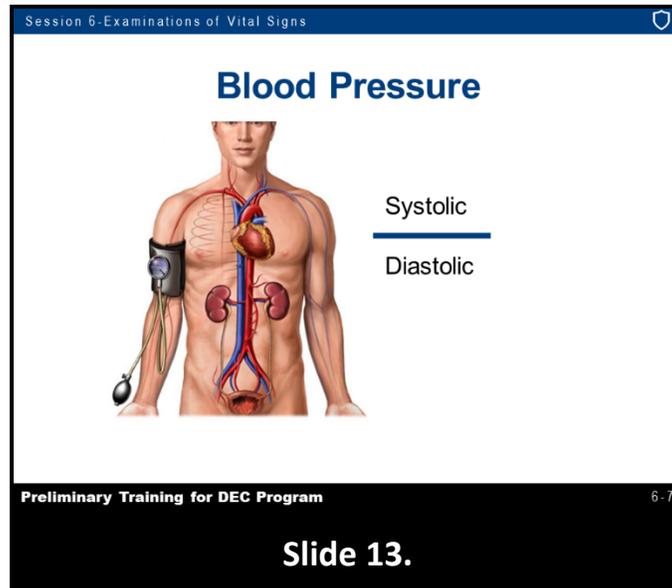
**Monitor, coach, and critique the participants’ practice. Allow the practice to continue for only about 5 minutes.**

- |                  |             |
|------------------|-------------|
| 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+ _____  |



***Tabulate the numbers of participants whose pulse rates were in each of the listed intervals.***

***Point out the average range of pulse rate for DRE purposes is 60-90 beats per minute.***



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



***Point out some people may exhibit irregular (or arrhythmic) heart beats, i.e., where the interval between pulses varies.***

Blood pressure is categorized as systolic or diastolic.



***Ask participants to define “systolic” and “diastolic.”***

Systolic pressure is the maximum force occurring during contraction. Diastolic pressure represents the minimum force occurring when the heart relaxes.



***Point out physical conditioning can also affect blood pressure and pulse rate.***

***Both systolic and diastolic pressures are measured and recorded as follows:***

- ***120 systolic***
- ***80 diastolic***

***Demonstrate proper method of recording on dry erase board or easel/easel pad.***

***Point out ranges of blood pressure varies widely based on a number of factors, including age.***

**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.



***Remind participants hormones modify the activity of specific organs.***

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.

Session 6-Examinations of Vital Signs

## Blood Pressure Definitions

- **Blood Pressure** – Force that circulating blood exerts on walls of arteries
- **Systolic Pressure** – Maximum blood pressure, reached as heart contracts
- **Diastolic Pressure** – Minimum pressure, reached when heart is fully expanded

Preliminary Training for DEC Program 6-14

**Slide 14.**

**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 its minimum when the heart is fully expanded – this is called the diastolic pressure. It is always necessary to measure and record both the systolic and diastolic blood pressure.

**Memory aid:**

- **Systolic: “S” for “Superior”**
- **Diastolic: “D” for “Down”**



**Remind participants “systolic” is the higher number, “diastolic” is the lower number.**



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



**Exhibit a sphygmomanometer.**

**Write “SPHYGMOMANOMETER” on the dry erase board or easel/easel pad.**

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



**Advise participants to check for birth control implants in the upper arm. If the subject has an implant or has a Dialysis Fistula (enlarged vein procedure), blood pressure should be taken on the opposite arm and documented.**



**Hand out stethoscopes and sphygmomanometers (one per each participant is desirable; at minimum, there should be one for every four participants).**

**Point out the components of the sphygmomanometer.**

The compression cuff contains an inflatable rubber bladder. A tube connects the bladder to the manometer, or pressure gauge.



**Clarification: The manometer displays the air pressure inside the bladder.**

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.



**Demonstrate this.**

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.



***Select a participant to come before the class. Have the participant sit in a chair facing the class and roll up a sleeve, if necessary, to expose the left bicep. Wrap the cuff around the participant-volunteer's arm and inflate it.***

As the pressure in the cuff increases, the cuff squeezes tightly on the arm.



***Ask the participant-volunteer whether they can feel the pressure of the cuff.***

When the pressure gets high enough, it will squeeze the artery completely shut.



***Ask participants: "What artery is located in the crook of the arm?" (Point to that location on the participant-volunteer's arm).***

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.



***Release the pressure in the cuff on the participant-volunteer's arm.***

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.



***Ask participants: "How far must the pressure in the cuff drop before the blood can start to squeeze through the artery?"***

Blood will start flowing in the artery once the pressure inside the artery equals the pressure outside the artery.



**Ask participants: “What would happen if we allowed the pressure in the cuff to drop down to the systolic level and held the air pressure at that level?”**

The two pressures will become equal when the air pressure in the cuff drops down to the systolic pressure.



**Point out the blood would spurt through the artery each time the heart contracted but would cease flowing when the heart expanded.**

**Ask participants: “How far down must the air pressure in the cuff drop before the blood will flow through the artery continuously?”**

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.

Session 6-Examinations of Vital Signs

## Measuring Blood Pressure

- Apply enough air pressure to cut off flow of blood through artery
- Slowly release air, about 2 mmHg per second, until blood just begins to spurt through artery: systolic pressure
- Continue to release air until blood flows continuously: diastolic pressure

Preliminary Training for DEC Program 6-17

**Slide 18.**

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



**Demonstrate using the participant-volunteer (apply pressure to the cuff). As DREs, we usually inflate the cuff until the manometer shows a reading of 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.



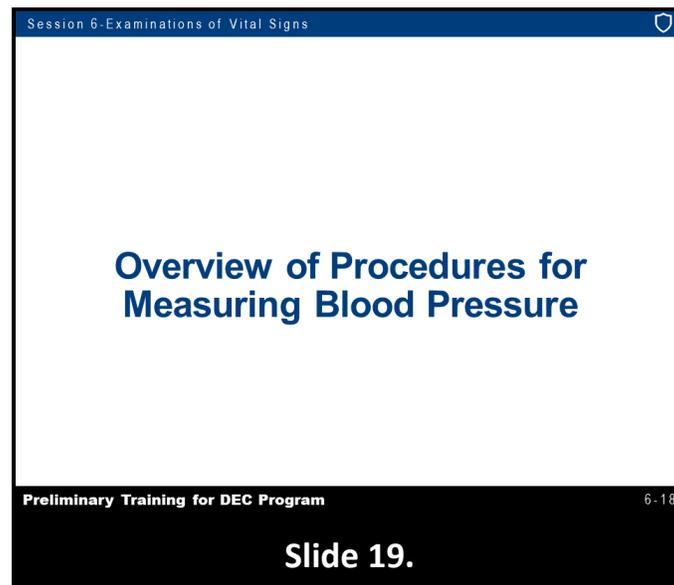
***Emphasize the pressure should drop at approximately 2 mmHg per second (5 sec for each 10 mm drop).***

Continue to release the air pressure until the blood flows continuously through the artery: that level will be the diastolic pressure.



***Ask participants:***

- ***“How can we tell when the blood starts to spurt through the artery?”***
- ***“How can we tell when the blood is flowing continuously through the artery?”***
  - ***Answer: We can listen to the spurting blood using a stethoscope.***



***Exhibit a stethoscope.***

- Apply the stethoscope to the skin directly above the artery.



***Demonstrate using the participant-volunteer.***

- 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.



***This begins as a clear, tapping sound.***

As we continue to allow the air pressure to drop, the surges of blood become steadily longer.

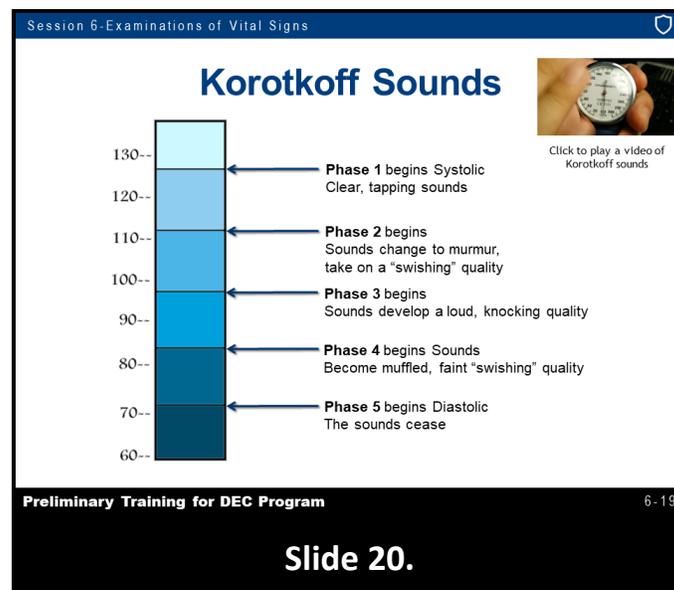


***The sounds take on a swishing quality and become fainter.***

When we drop to the diastolic pressure, the blood slows steadily and all sounds cease.



***Excuse the participant-volunteer and thank him or her for participating.***



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.**

Session 6-Examinations of Vital Signs

## Blood Pressure Measurement

1. Position cuff on bicep so tubes extend down middle of arm
2. Wrap cuff snugly around bicep
3. Clip manometer to subject's sleeve or in location to easily see gauge
4. Twist pressure control valve all the way to right

Preliminary Training for DEC Program 6-21

**Slide 21.**



***Select a participant to serve as a blood pressure subject and demonstrate the procedures using the participant.***

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

Session 6-Examinations of Vital Signs

## Blood Pressure Measurement

- Put stethoscope earpieces in your ears
- Apply stethoscope to brachial artery pulse point
- Rapidly inflate bladder to level high enough to squeeze artery shut (Normally 180)

Preliminary Training for DEC Program 6-22

**Slide 22.**

- Put the stethoscope earpieces in your ears – Make sure the earpieces are turned forward, i.e., toward the nose.
- Place the diaphragm or bell of the stethoscope over the brachial artery.
- Rapidly inflate bladder to a level high enough to squeeze the artery shut (normally 180 mmHg).

Session 6-Examinations of Vital Signs

## Blood Pressure Measurement

- Twist pressure control valve slightly to left (pressure should drop at 2 mmHg per second)
- Keep eyes on gauge and listen for Korotkoff sounds

Preliminary Training for DEC Program 6-23

**Slide 23.**

- Twist the pressure control valve slightly to the left to release the pressure slowly (pressure should drop at 2 mmHg per second).



***Emphasize the need to release the pressure slowly. If the pressure drops too fast, the needle will sweep down the gauge too quickly to be read accurately. The pressure should be released at a speed that takes one second for the needle to move a single gradation (i.e., 2 millimeters of mercury) on the gauge.***

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.



***Excuse participant and thank him or her for participating.  
Solicit participants' questions concerning these procedures.***

Session 6-Examinations of Vital Signs

## Blood Pressure Values

Systolic: 120-140 mm/Hg  
Diastolic: 70-90 mm/Hg

Some people can have significantly different blood pressures

Preliminary Training for DEC Program 6-24

**Slide 24.**

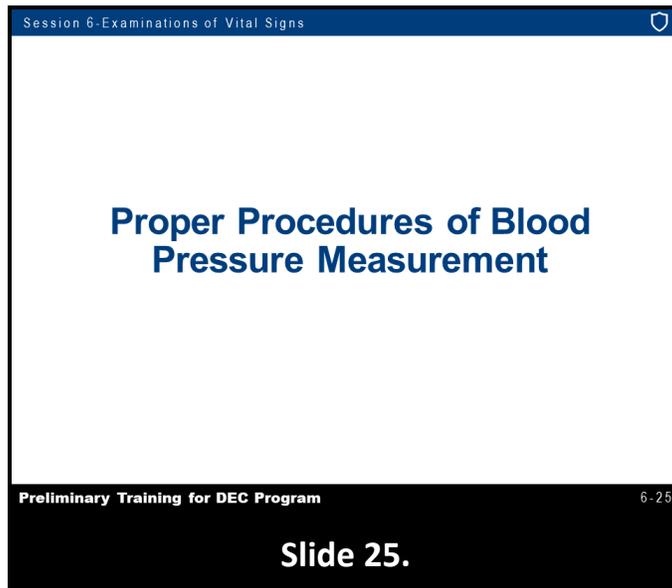
DRE average blood pressure values are:

- Systolic: 120-140 mm/Hg
- Diastolic: 70-90 mm/Hg

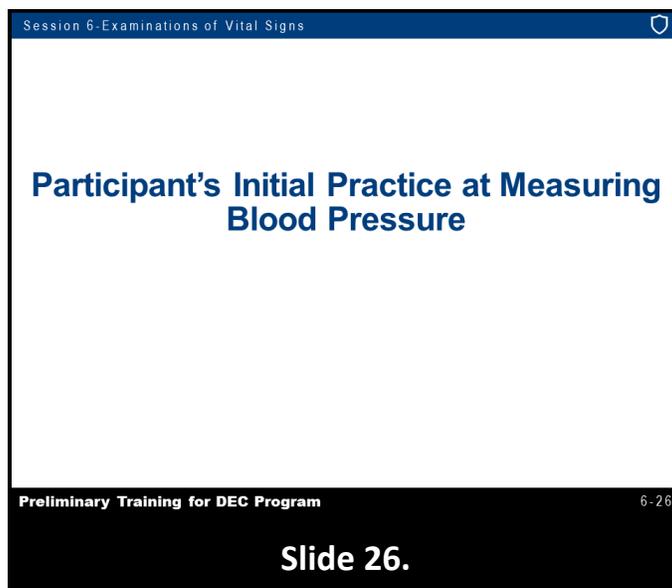
Some people can have significantly different blood pressures: there is a wide variation in human blood pressure.



***Point out: DREs primarily use manual sphygmomanometers that have only even numbered markings on the manometer. Even numbers that best represent the systolic and diastolic readings should be documented. Odd number readings would indicate an electronic digital monitor was used, which is not the recommended blood pressure measuring device for DRE purposes.***



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.



*If at least one sphygmomanometer and stethoscope are available for every two participants, instruct participants to practice in pairs. Otherwise, assign participants to practice in teams of 3 or 4 members.*

## C. Demonstrations

Session 6-Examinations of Vital Signs

### Measuring Body Temperature

- Oral thermometer recommended
- Always use protective disposable mouthpiece
- Position thermometer under subject's tongue
- Have subject refrain from talking when measuring temperature
- Refrain from letting subject drink hot or cold fluids immediately prior to measuring temperature

Preliminary Training for DEC Program 6-27

**Slide 27.**

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



***Exhibit this.***

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.



***Solicit participants' comments and questions concerning this overview of procedures and cues.***



## Measuring Pulse Rate



Preliminary Training for DEC Program

6-28

### Slide 28.



***Select two participants to come before the class.***

***Instruct first participant to measure the second's pulse using the radial artery pulse point. (Simultaneously, instructor should measure the subject's pulse using a carotid artery pulse point).***

***Instruct second participant to measure the first's pulse using the carotid artery pulse point. (Simultaneously, instructor should measure the subject's pulse using a radial artery pulse point).***

***Excuse the two participants and thank them for participating.***



## Measuring Blood Pressure



Preliminary Training for DEC Program

6-29

Slide 29.



***Select two other participants to come before the class.***

***Instruct first participant to measure the second's blood pressure.***

***Have participants reverse roles.***

***Excuse the two participants and thank them for participating.***

## D. Ranges of Vital Signs

Session 6-Examinations of Vital Signs

### DRE Ranges of Vital Signs

- Pulse Rate:
  - ✓ 60 to 90 beats per minute
- Blood Pressure:
  - ✓ Systolic – 120 to 140 mmHg
  - ✓ Diastolic – 70 to 90 mmHg
- Body Temperature:
  - ✓ 98.6 degrees Fahrenheit +/- one degree

Preliminary Training for DEC Program 6-30

**Slide 30.**

Human vital signs vary between individuals. However, the 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 range” for a non-impaired healthy person. When checking a person’s pulse and blood pressure, DREs are assessing the person’s cardiovascular system for signs or indicators of being outside of the expected range of a non-impaired healthy person.



***Remind participants ranges identified for the DEC Program have been established through years of research and with medical input.***

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



***Point out What DREs Need to Know About “DRE Average Ranges” or “expected value” General Rules:***

- The closer the finding is to the Average value for the majority of healthy, non-impaired people, the more likely the person is not exhibiting impairment or is exhibiting no effect in that function
- The farther away from expected value and the closer to the edge of the “Expected Range” for the majority of people, the more possible the person is going to be exhibiting impairment in that function

## E. Relationship of Drug Categories to the Vital Signs Examinations

Session 6-Examinations of Vital Signs

### Drug Categories and Vital Signs

- All seven categories of drugs ordinarily will affect pulse rate and blood pressure
- Some categories usually will lower pulse and blood pressure

Preliminary Training for DEC Program 6-31

**Slide 31.**



***Draw the matrix (at the end of this session) on the dry erase board or easel/easel pad at the outset of this session.***

All seven categories of drugs ordinarily will affect pulse rate and blood pressure. Some categories usually will lower pulse and blood pressure.



***Ask the participants which categories will lower pulse rate and blood pressure.***

CNS Depressants and Narcotic Analgesics usually lower pulse and BP.



***Write "DOWN" on the pulse and blood pressure lines under the columns for Depressants and Narcotics.***

Quaaludes, ETOH, and possibly some antidepressants may cause the pulse to increase. The other five categories all tend to elevate pulse rate.



***Write "UP" on the pulse line under the five remaining columns.***

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.



**Write “UP” on the blood pressure line for those four categories.**

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.



**Remind participants the anesthetic gases include such things as nitrous oxide, amyl nitrite, and ether.**

So for Inhalants, the effect on blood pressure will be up or down.



**Write “UP/DOWN” with the footnote – down with anesthetic gases, up with volatile solvents and aerosols – on the blood pressure line under the Inhalants column.**

Session 6 - Examinations of Vital Signs

## Drug Categories and Vital Signs

Which drug categories affect temperature?

Preliminary Training for DEC Program 6-32

**Slide 32.**

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



**Ask participants which categories usually cause an elevation in body temperature.**

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.



**Write “UP” on the TEMP line under the Dissociative Anesthetics column.**

CNS Stimulants and Hallucinogens also will usually increase body temperature.



**Write “UP” on the TEMP line for CNS Stimulants and Hallucinogens.**

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.



**Write “UP/DOWN/or NORMAL” on the TEMP line for Inhalants.**

One category usually causes body temperature to be lowered.



**Ask participants which category usually lowers temperature.**

Narcotic Analgesics usually lower body temperature.



**Write “DOWN” on the TEMP line for Narcotics.**

The remaining two categories usually do not affect temperature.



**Write “NORMAL” on the TEMP line for Depressants and Cannabis.**

**Solicit participants’ questions and comments.**

Session 6-Examinations of Vital Signs

## Drug Categories and Vital Signs

Which drug categories affect muscle tone?

Preliminary Training for DEC Program 6-33

**Slide 33.**

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



***Ask participants which categories will cause the muscle tone to be rigid.***

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



***Write "RIGID" on the Muscle Tone line for Stimulants, Dissociative Anesthetics, and Hallucinogens.***

Two categories usually cause muscle tone to be flaccid.



***Ask participants which categories cause flaccid muscle tone.***

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



***Write "FLACCID" on the Muscle Tone line for Depressants and Narcotic Analgesics.***

One category usually causes normal muscle tone.



***Ask participants which category causes a normal muscle tone.***

Cannabis usually causes normal muscle tone.



**Write “NORMAL” on the Muscle Tone line for Cannabis.**

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

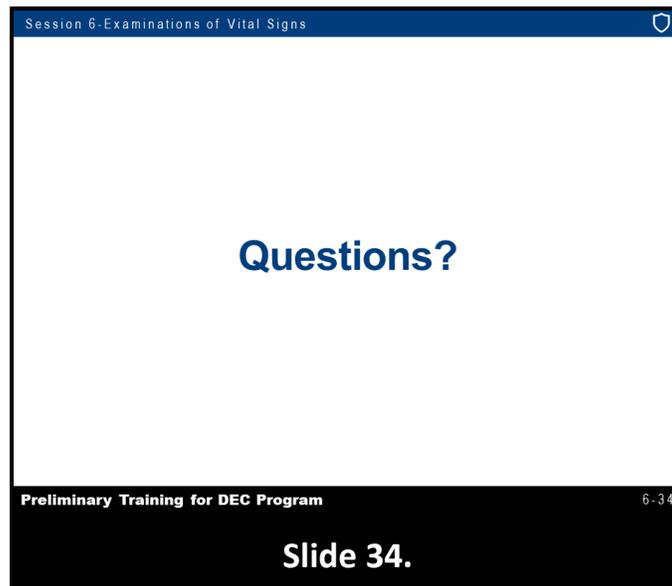


**Ask participants which categories usually cause either normal or flaccid muscle tone.**

Inhalants usually cause either normal or flaccid muscle tone.



**Write “NORMAL or FLACCID” on the muscle tone line for Inhalants.  
Solicit participants’ questions and comments.**



**Solicit participants’ questions about the Examinations of Vital Signs.**

### 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.

## interaction

1.

1.



**Prior to the start of this session, draw a blank drug matrix on the dry erase board or easel/easel pad. Alternatively, slide 2 can be used to selectively reveal indicators.**

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 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 there may be variations due to individual reaction, dose taken and drug interactions.

(1) Soma, Quaaludes, and some anti-depressants usually dilate.  
 (2) ETOH, Quaaludes, and some anti-depressants may elevate.  
 (3) Certain psychedelic amphetamines may cause slowing.  
 (4) Possibly dilated.  
 (5) Down with anesthetic gases, up with volatile solvents and aerosols.  
 (6) Possibly normal.

**Slide 2.**

Session 7-Overview of Signs and Symptoms

## Learning Objectives

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

Preliminary Training for DEC Program 7-3

**Slide 3.**



**Briefly review the objectives, content and activities of this session.**

Session 7-Overview of Signs and Symptoms

## Sign and Symptom Definition

- Sign: An observable or detectable indicator of drug influence
- Symptom: A subjective indicator of drug influence reported by the drug-impaired subject

Preliminary Training for DEC Program 7-4

**Slide 4.**

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. CNS Depressants

Session 7-Overview of Signs and Symptoms

## CNS Depressants

- HGN
- VGN
- LOC



Preliminary Training for DEC Program 7-5

**Slide 5.**

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



**Ask participants to name some examples of CNS Depressants. Make sure the examples given include alcohol, some barbiturates, and some tranquilizers.**

**Indicators of CNS Depressant Influence Found in Eye Exams: Ask participants: “Do depressants cause HGN?”**

Horizontal Gaze Nystagmus (HGN) usually will be present.



**Write "Present" on the HGN line for Depressants.**

**Ask: "Do Depressants cause VGN?"**

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



**Write "Present" on the VERT NYST line for Depressants. Denote in parentheses above "(High Doses)."**

**Ask: "Do CNS Depressants cause LOC?"**

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



**Write "Present" on the LACK CONV line for Depressants.**

Session 7-Overview of Signs and Symptoms

## CNS Depressants

- Pupil Size
- Reaction to Light



Preliminary Training for DEC Program 7-6

**Slide 6.**

The slide content is contained within a black-bordered frame. At the top, a blue header bar contains the text "Session 7-Overview of Signs and Symptoms" and a shield icon. Below the header, the title "CNS Depressants" is centered in blue. Underneath the title is a bulleted list with two items: "Pupil Size" and "Reaction to Light". Below the list are two side-by-side photographs. The left photo shows a person in a blue uniform with a patch on the sleeve examining another person's face. The right photo is a close-up of a person's face looking at a white chart with a grid of small circles. At the bottom of the slide, a black bar contains the text "Preliminary Training for DEC Program" on the left and "7-6" on the right. Below this bar, the text "Slide 6." is centered in white.

**Remind participants depressants usually do not effect pupil size; therefore, pupils will generally be in the average ranges or expected ranges.**

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



**Write “Normal” on the PUPIL SIZE line for Depressants.**

**Remind participants that “normal” represents “DRE average range” or “expected range.”**

But some specific Depressant drugs do affect pupil size.



**Ask: “What are the Depressants that may affect pupil size?”**

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



**Put a (1) next to “Normal” and write “Soma, Quaaludes, and some antidepressants usually dilate.”**

**Ask: “How do CNS Depressants affect pupillary reaction to light?”**

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



**Write “Slow” on the RCTN LIGHT line for Depressants.**

Session 7-Overview of Signs and Symptoms

## CNS Depressants

- Vital signs
  - ✓ Pulse rate
  - ✓ Blood pressure
  - ✓ Body temperature
- Muscle tone

Preliminary Training for DEC Program 7-7

**Slide 7.**



**Indicators of CNS Depressant Influence Found in Checks of the Vital Signs: Ask: “How do Depressants affect pulse rate?”**

Depressants usually lower pulse rate.



**Write “Down” on the PULSE line for Depressants.**

But some specific Depressant drugs may elevate the pulse.



**Ask: “What are the Depressants that may elevate pulse rate?”**

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



**Put a (2) next to “Down” and write “ETOH, Quaaludes, and some antidepressants may elevate” in the Matrix.**

**Ask: “How do Depressants affect blood pressure?”**

Depressants usually lower blood pressure.



**Write “Down” on the Blood Pressure line for Depressants.**

**Ask: “How do Depressants affect body temperature?”**

Depressants usually do not affect body temperature.



**Write “Normal” on the TEMP line for Depressants.**

**Ask: “How do Depressants affect muscle tone?”**

Depressants usually cause flaccid muscle tone.



**Write “Flaccid” on the MUSCLE TONE line for Depressants.**

**Solicit participants’ questions about CNS Depressants.**

## B. CNS Stimulants

Session 7-Overview of Signs and Symptoms

### CNS Stimulants

- HGN
- VGN
- LOC



Preliminary Training for DEC Program 7-8

**Slide 8.**

The CNS Stimulants category includes many drugs.



**Ask participants to name some examples of CNS Stimulants. Make sure the examples include Cocaine and some Amphetamines.**

**Indicators of CNS Stimulant Influence Found in Eye Exams: Ask participants: “Do CNS Stimulants cause HGN?”**

**Write “None” on the HGN line for CNS Stimulants.**

HGN will not be present.



**Ask: “Do CNS Stimulants cause VGN?”**

**Write “None” on the VERT NYST line for CNS Stimulants.**

VGN will not be present.



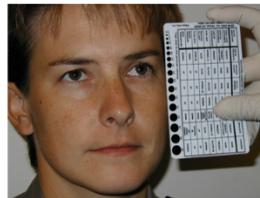
**Ask: “Do CNS Stimulants cause LOC?”**

**Write “None” on the LACK CONV line for CNS Stimulants.**



## CNS Stimulants

- Pupil size
- Reaction to light



Preliminary Training for DEC Program

7-9

**Slide 9.**

**Ask: "How do CNS Stimulants affect pupil size?"**

CNS Stimulants usually cause the pupils to dilate.



**Write "Dilated" on the PUPIL SIZE line for CNS Stimulants.**

**Ask: "What affect do CNS Stimulants normally have on pupillary reaction to light?"**

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



**Write "Slow" on the RCTN LIGHT line for CNS Stimulants.**



## CNS Stimulants

- Vital signs
  - ✓ Pulse rate
  - ✓ Blood pressure
  - ✓ Body temperature
- Muscle tone

### Slide 10.

#### *Indicators of CNS Stimulant Influence Found in Checks of Vital Signs*



**Ask: "How do CNS Stimulants effect pulse rate?"**

CNS Stimulants usually increase pulse rate.



**Write "Up" on the PULSE line for CNS Stimulants.**

**Ask: "How do CNS Stimulants effect blood pressure?"**

CNS Stimulants usually increase blood pressure.



**Write "Up" on the BLOOD PRESS line for CNS Stimulants.**

**Ask: "How do CNS Stimulants effect body temperature?"**

CNS Stimulants usually elevate body temperature.



**Write "Up" on the TEMP line for CNS Stimulants.**

**Ask: "How do CNS Stimulants effect muscle tone?"**

CNS Stimulants usually cause a rigid muscle tone.



**Write "Rigid" on the MUSCLE TONE line for CNS Stimulants.**

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

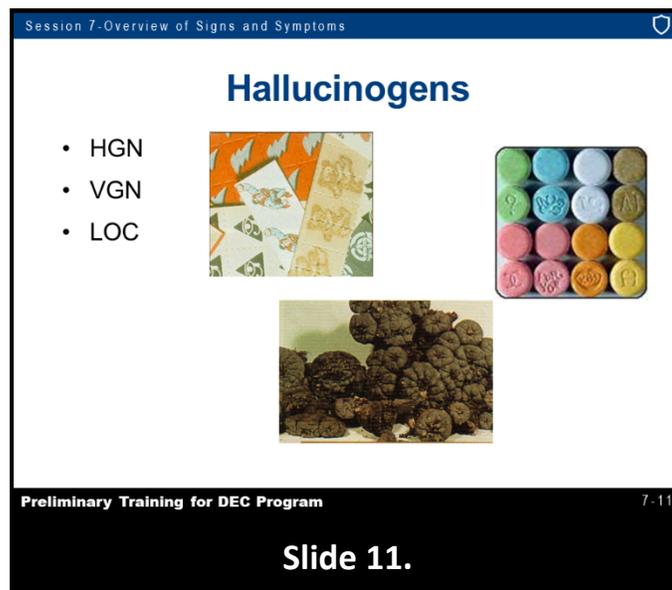
A grinding of the teeth, referred to as "bruxism" may also be noticed.



***Point out, as shown on the matrix, signs of Stimulant influence are almost exactly opposite of the signs of Depressant influence.***

***Solicit participants' questions about CNS Stimulants.***

### C. Hallucinogens



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



***Ask participants to name some hallucinogenic drugs. Make sure the examples include some natural Hallucinogens as well as some synthetics.***

***Indicators of Hallucinogen Influence Found in Eye Exams: Ask participants: "Do Hallucinogens cause HGN?"***

Hallucinogens typically do not effect HGN and therefore will not be present.



***Write "None" on the HGN line for Hallucinogens.***

***Ask: "Do Hallucinogens cause VGN?"***

VGN will not be present.



**Write “None” on the VERT NYST line for Hallucinogens.**

**Ask: “Do Hallucinogens cause LOC?”**

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

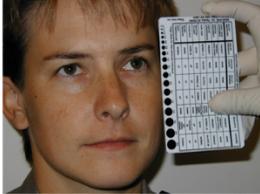


**Write “None” on the LACK CONV line for Hallucinogens.**

Session 7-Overview of Signs and Symptoms

## Hallucinogens

- Pupil Size
- Reaction to Light

Preliminary Training for DEC Program 7-12

Slide 12.



**Ask: “How do Hallucinogens affect pupil size?”**

Hallucinogens usually cause the pupils to dilate.



**Write “Dilated” on the PUPIL SIZE line for Hallucinogens.**

**Ask: “What affect do Hallucinogens normally have on pupillary reaction to light?”**

Normally, Hallucinogens do not effect pupillary reaction to light.



**Write “Normal” on the RCTN LIGHT line for Hallucinogens.**

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



**Put a (3) next to “Normal” and write “certain psychedelic Amphetamines may cause slowing” in the Matrix.**

Session 7-Overview of Signs and Symptoms

## Hallucinogens

- Vital signs
  - ✓ Pulse rate
  - ✓ Blood pressure
  - ✓ Body temperature
- Muscle tone

Preliminary Training for DEC Program 7-13

**Slide 13.**



**Indicators of Hallucinogen Influence Found in Checks of Vital Signs: Ask: “How do Hallucinogens affect pulse rate?”**

Hallucinogens usually increase pulse rate.



**Write “Up” on the PULSE line for Hallucinogens.  
Ask: “How do Hallucinogens affect blood pressure?”**

Hallucinogens usually increase blood pressure.



**Write “Up” on the BLOOD PRESS line for Hallucinogens.  
Ask: “How do Hallucinogens affect body temperature?”**

Hallucinogens usually elevate body temperature.



**Write “Up” on the TEMP line for Hallucinogens.  
Ask: “How do Hallucinogens affect muscle tone?”**

Hallucinogens usually cause a rigid muscle tone.



**Write “Rigid” on the MUSCLE TONE line for Hallucinogens.**

**Point out, as shown on the matrix, major signs of Hallucinogen influence are nearly identical to the major signs of Stimulant influence.**

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.



**Point out, in the 7-Day DRE School, participants will learn some general indicators that help to distinguish Hallucinogen influence from Stimulant influence. But emphasize it is often difficult to distinguish between these two categories. Solicit participants’ questions about Hallucinogens.**

## D. Dissociative Anesthetics

Session 7-Overview of Signs and Symptoms

### Dissociative Anesthetics

- HGN
- VGN
- LOC

Preliminary Training for DEC Program 7-14

**Slide 14.**

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



**Ask participants: “What does ‘analog’ mean in this context?”**

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.



**Write “Ketamine: An analog of PCP” on the dry erase board or easel/easel pad.**

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 and Ketaset. Dextromethorphan is a drug found in numerous over-the-counter substances.



***Point out Dextromethorphan, also known as DXM, is a widely abused substance and is easy to obtain.***

***Indicators of the Dissociative Anesthetics Found in Eye Exams: Ask participants: "Do Dissociative Anesthetics cause HGN?"***

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



***Write "Present" on the HGN line for Dissociative Anesthetics.***

***Both HGN and VGN were noted in various DRE evaluations conducted on persons impaired by DXM. Research has also confirmed HGN in persons impaired by DXM.***

***Ask: "Do Dissociative Anesthetics cause VGN?"***

VGN usually will be present.



***Write "Present" on the VGN line for Dissociative Anesthetics.***

***Ask: "Do Dissociative Anesthetics cause LOC?"***

LOC usually will be present.

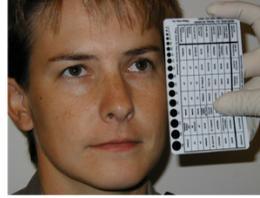


***Write "Present" on the LACK CONV line for Dissociative Anesthetics.***



## Dissociative Anesthetics

- Pupil Size
- Reaction to Light



Preliminary Training for DEC Program

7-15

**Slide 15.**

**Ask: "How do Dissociative Anesthetics affect pupil size?"**

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.



**Write "Normal" on the PUPIL SIZE line for Dissociative Anesthetics.**

**Actual DRE evaluations conducted on persons impaired by DXM resulted in pupils in the DRE average size ranges.**

**Ask: "What affect do Dissociative Anesthetics normally have on pupillary reaction to light?"**

Dissociative Anesthetics normally will not affect pupillary reaction to light.



**Write "Normal" on the RCTN LIGHT line for this category.**



## Dissociative Anesthetics

- Vital signs
  - ✓ Pulse rate
  - ✓ Blood pressure
  - ✓ Body temperature
- Muscle tone

### Slide 16.



***Indicators of Dissociative Anesthetic Influence Found in Checks of Vital Signs:  
Ask: "How do Dissociative Anesthetics affect pulse rate?"***

Dissociative Anesthetics usually increase pulse rate.



***Write "Up" on the PULSE line for this category.  
Ask: "How do Dissociative Anesthetics affect blood pressure?"***

Dissociative Anesthetics usually elevate blood pressure.



***Write "Up" on the BLOOD PRESS line for this category.  
Ask: "How do Dissociative Anesthetics affect body temperature?"***

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



***Write "Up" on the TEMP line for this category.  
Ask: "How do Dissociative Anesthetics affect muscle tone?"***

Dissociative Anesthetics usually cause rigid muscle tone.



**Write “Rigid” on the MUSCLE TONE line for Dissociative Anesthetics.**

**Point out PCP tends to produce the eye indicators associated with Depressants and the vital sign indicators associated with CNS Stimulants or Hallucinogens.**

**Solicit participants’ questions about Dissociative Anesthetics.**

## E. Narcotic Analgesics

Session 7-Overview of Signs and Symptoms

### Narcotic Analgesics

- HGN
- VGN
- LOC



Preliminary Training for DEC Program 7-17

**Slide 17.**

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



**Ask participants to name some examples of Narcotic Analgesics. Make sure the examples include some natural opiates as well as some synthetics.**

**Indicators of Narcotic Analgesic Influence Found in Eye Exams: Ask participants: “Do Narcotic Analgesics cause HGN?”**

There is typically no effect of HGN on VGN with Narcotic Analgesics, therefore HGN will not be present.



**Write “None” on the HGN line for Narcotic Analgesics.**

**Ask: “Do Narcotic Analgesics cause VGN?”**

VGN will not be present.



**Write “None” on the VGN line for Narcotic Analgesics.**

**Ask: “Do Narcotic Analgesics cause of LOC?”**

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

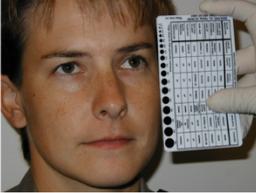


**Write “None” on the LACK CONV line for Narcotic Analgesics.**

Session 7-Overview of Signs and Symptoms

## Narcotic Analgesics

- Pupil Size
- Reaction to Light

Preliminary Training for DEC Program 7-18

### Slide 18.



**Ask: “How do Narcotic Analgesics effect pupil size?”**

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



**Write “Constricted” on the PUPIL SIZE line for Narcotic Analgesics.**

**Ask: “What affect do Narcotic Analgesics normally have on pupillary reaction to light?”**

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.



**Write “Little or None Visible” on the RCTN LIGHT line for Narcotic Analgesics.**

## Narcotic Analgesics

- Vital signs
  - ✓ Pulse rate
  - ✓ Blood pressure
  - ✓ Body temperature
- Muscle tone

### Slide 19.



***Indicators of Narcotic Analgesic Influence Found in Checks of Vital Signs: Ask: “How do Narcotic Analgesics affect pulse rate?”***

Narcotic Analgesics usually lower pulse rate.



***Write “Down” on the PULSE line for Narcotic Analgesics.  
Ask: “How do Narcotic Analgesics affect blood pressure?”***

Narcotic Analgesics usually lower blood pressure.



***Write “Down” on the BLOOD PRESS line for Narcotic Analgesics.  
Ask: How do Narcotic Analgesics affect body temperature?”***

Narcotic Analgesics usually lower body temperature.



***Write “Down” on the TEMP line for Narcotic Analgesics.  
Ask: “How do Narcotic Analgesics affect muscle tone?”***

With a Narcotic Analgesic, muscle tone will be flaccid.



***Write “Flaccid” on the MUSCLE TONE line for Narcotic Analgesics.  
Solicit participants’ questions about Narcotic Analgesics.***

## F. Inhalants

Session 7-Overview of Signs and Symptoms

### Inhalants

- HGN
- VGN
- LOC



Preliminary Training for DEC Program 7-20

**Slide 20.**

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



***Ask participants to name some commonly abused Inhalants.***

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: Ask participants: “Do Inhalants cause HGN?”***

With most Inhalants, HGN usually will be present.



***Write “Present” on the HGN line for Inhalants.***

***Ask: “Do Inhalants cause VGN?”***

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



**Write “Present” on the VGN line for inhalants. Denote in parentheses “(High Doses).”**

**Ask: “Do Inhalants cause LOC?”**

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

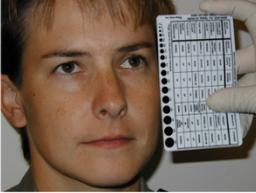


**Write “Present” on the LACK CONV line for Inhalants.**

Session 7-Overview of Signs and Symptoms

## Inhalants

- Pupil Size
- Reaction to Light

Preliminary Training for DEC Program 7-21

### Slide 21.

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



**Ask: Do Inhalants affect pupil size?**

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



**Write “Normal” on the PUPIL SIZE line for Inhalants.**

Some Inhalants may cause pupil dilation.



**Put a (4) next to “Normal” and write “Possibly dilated” below the matrix.**

**Ask: “What affect do Inhalants typically have on pupillary reaction to light?”**

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.



**Write “Slow” on the RCTN LIGHT line for Inhalants.**

Session 7-Overview of Signs and Symptoms

## Inhalants

- Vital signs
  - ✓ Pulse rate
  - ✓ Blood pressure
  - ✓ Body temperature
- Muscle tone

Preliminary Training for DEC Program 7-22

**Slide 22.**



**Indicators of Inhalant Influence Found in Checks of Vital Signs: Ask: “How do Inhalants affect pulse rate?”**

Inhalants usually elevate pulse rate.



**Write “Up” on the PULSE line for Inhalants.**

**Ask: “How do Inhalants affect blood pressure?”**

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



**Write “Up/Down” on the BLOOD PRESS line for Inhalants.**

**Put a (5) next to “Up/Down” and write down below the matrix “Down with Anesthetic Gases and Up with Volatile Solvents and Aerosols.”**

**Ask: How do Inhalants affect body temperature?”**

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



**Write “Up/Down/Normal” on the TEMP line for Inhalants.**

**Ask: “How do Inhalants affect muscle tone?”**

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



**Write “Normal or Flaccid” on the MUSCLE TONE line for Inhalants.**

**Solicit participants’ questions about Inhalants.**

## G. Cannabis

Session 7-Overview of Signs and Symptoms

### Cannabis

- HGN
- VGN
- LOC

Preliminary Training for DEC Program 7-23

**Slide 23.**



**Indicators of Cannabis Influence Found in Eye Exams: Ask participants: “Does Cannabis cause HGN?”**

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



**Write “None” on the HGN line for Cannabis.**

**Ask: “Does Cannabis cause VGN?”**

VGN will not be present.



**Write “None” on the VERT NYST line for Cannabis.**

**Ask: “Does Cannabis cause LOC?”**

Under the influence of Cannabis, LOC will be present.



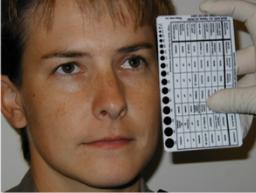
**Write “Present” on the LACK CONV line for Cannabis.**

**Point out Cannabis is the only category that causes LOC but does not cause nystagmus.**

Session 7-Overview of Signs and Symptoms

## Cannabis

- Pupil Size
- Reaction to Light

Preliminary Training for DEC Program 7-24

### Slide 24.



**Ask: “How does Cannabis affect pupil size?”**

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



**Write “Dilated” on the PUPIL SIZE line for Cannabis. Put a (6) next to “Dilated” and write “Possibly Normal.”**

**Ask: “What affect does Cannabis normally have on pupillary reaction to light?”**

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



**Write “Normal” on the RCTN LIGHT line for Cannabis.**

Session 7-Overview of Signs and Symptoms

## Cannabis

- Vital signs
  - ✓ Pulse rate
  - ✓ Blood pressure
  - ✓ Body temperature
- Muscle tone

Preliminary Training for DEC Program 7-25

**Slide 25.**



***Indicators of Cannabis Influence Found in Checks of Vital Signs: Ask: “How does Cannabis affect pulse rate?”***

Cannabis usually elevates pulse rate.



***Write “Up” on the PULSE line for Cannabis.***  
***Ask: “How does Cannabis affect blood pressure?”***

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



***Write “Up” on the BLOOD PRESS line for Cannabis.***  
***Ask: “How does Cannabis affect body temperature?”***

Cannabis usually leaves temperature near the normal body temperature ranges.



***Write “Normal” on the TEMP line for Cannabis.***  
***Ask: “How does Cannabis affect muscle tone?”***

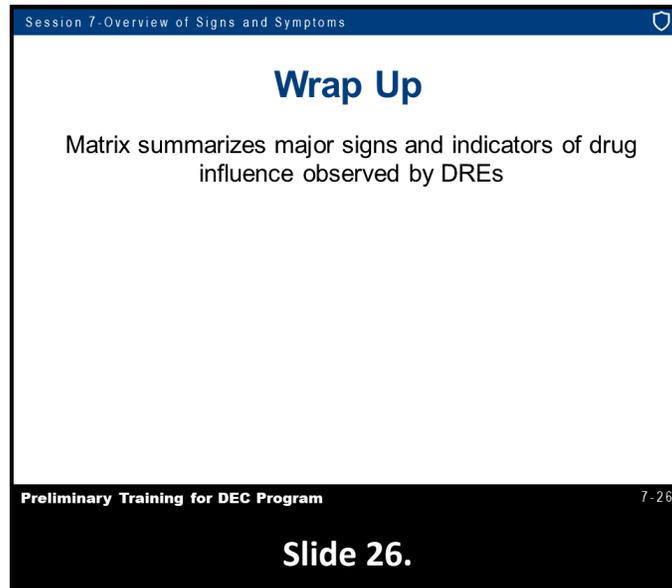
Cannabis usually causes normal muscle tone.



**Write “Normal” on the MUSCLE TONE line for Cannabis.**

**Solicit participants' questions about Cannabis.**

## H. Wrap-Up



***Point out the matrix summarizes the major signs of drug influence observed by DREs. But emphasize there are other signs and indicators that the DRE considers in reaching a determination as to the category or combination of categories affecting a particular subject.***

***These additional signs, symptoms, and indicators will be covered in depth during the 7-Day DRE School.***

***Solicit participants' questions.***

Session 7-Overview of Signs and Symptoms

# Questions?

Preliminary Training for DEC Program 7-27

**Slide 27.**



***Solicit participants' questions about the Overview of Signs and Symptoms.***





***Prior to the start of this session, draw the Alcohol Symptomatology chart from this session on a dry erase board or flip chart.***

Session 8 - Alcohol as a Drug

## Learning Objectives

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

Preliminary Training for DEC Program 8-2

**Slide 2.**



***Briefly review the objectives, content and activities of this session.***

***Pose this question to the class: "This is a course on drug-impairment recognition. Why do we have a session on alcohol?"***

***GUIDE the participants' responses to bring out these and other appropriate points:***

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.



***By understanding the basic fundamental concepts of how alcohol effects the body, participants will gain a better understanding of the concept of how drugs effect the body.***

## A. Brief Overview of Alcohol

Session 8-Alcohol as a Drug

### Alcohol

A family of closely-related chemicals whose molecules are made up of hydrogen, carbon, and oxygen.

Preliminary Training for DEC Program 8-3

**Slide 3.**

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.



**Clarification: All of the “alcohols” are chemicals that impair driving ability.**

But only one can be tolerated by the human body in substantial quantities.



**Clarification: Most “alcohols” are highly toxic and will cause blindness or death if consumed in significant quantities. Only one is intended for human consumption.**

**Ask participants: What are the names of some of the chemicals that are “alcohols”?**

Session 8-Alcohol as a Drug

## Common Types of Alcohol

METHYL ALCOHOL  
(Methanol)

ISOPROPYL ALCOHOL  
(Isopropanol)

ETHYL ALCOHOL  
(Ethanol)

Preliminary Training for DEC Program 8-4

**Slide 4.**

Three of the more commonly known “alcohols” are Methyl, Isopropyl, and Ethyl. Methyl Alcohol, also known as Methanol, or “wood alcohol”. Isopropyl Alcohol, also known as Isopropanol, or “rubbing alcohol”.



***Ethanol is the only kind of alcohol humans can tolerate in significant quantities.***

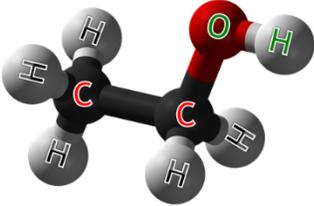
Ethyl Alcohol, also known as Ethanol, or “beverage alcohol”.

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.

Session 8-Alcohol as a Drug

## Ethanol

- Ethyl Alcohol
  - ✓ (Intended for human consumption)
- Chemical Symbols:
  - ✓ ETOH
  - ✓ C<sub>2</sub>H<sub>5</sub>OH



Preliminary Training for DEC Program 8-5

**Slide 5.**

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.

Session 8-Alcohol as a Drug

## Production of Ethanol

FERMENTATION

- Yeast combines with sugars from fruit or grains in chemical reaction resulting in ETOH

DISTILLATION

- Fermented beverage is boiled at controlled temperature to extract and concentrate ethanol fumes

Preliminary Training for DEC Program 8-6

**Slide 6.**

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.



***Ask participants: “Why can’t fermentation produce a higher ethanol concentration than 14%?”***

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.



***Ask participants to name some “distilled spirits” (e.g., whiskey, vodka, gin, rum, etc.)***

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

Session 8 - Alcohol as a Drug

## Common Drink Sizes

**Bottle of Beer**

- 12 ounces of fluid @ 5% alcohol equals 0.60 ounces of pure alcohol

**Glass of Wine**

- 5 ounces of fluid @ 12% alcohol equals 0.60 ounces of pure alcohol

**Shot of Whiskey (80-Proof)**

- 1 and 1/2 ounces @ 40% alcohol equals 0.60 ounces of pure alcohol

Preliminary Training for DEC Program 8-7

### Slide 7.

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 (craft, microbrewery, and imported beverages may contain a higher ethanol concentration).

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.



**Source:**

*What Is A Standard Drink?* (n.d.). Retrieved June 14, 2022, from National Institute on Alcohol Abuse and Alcoholism: <https://www.niaaa.nih.gov/alcohol-health/overview-alcohol-consumption/what-standard-drink>

***Point out “Proof” of a distilled spirit is equal to twice the ethanol concentration.***

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



***Solicit participants’ comments and questions on this overview.***

## B. Physiological Processes



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 administered 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.

Session 8 - Alcohol as a Drug

## Absorption of Alcohol

Getting the ethanol out of the stomach and into the blood.

Preliminary Training for DEC Program 8-9

**Slide 9.**

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



***Point to that "route of passage" on visual.***

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.



***Point to that "route of passage" on visual.***

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.

Session 8 - Alcohol as a Drug

## Absorption of Alcohol

Getting the ethanol out of the stomach and into the blood.

Preliminary Training for DEC Program 8-10

**Slide 10.**



***Point to the pylorus on the visual.***

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.



***Ask this question: But what will happen if there is food in the stomach when the person drinks alcohol?***

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.



***Solicit participants' comments and questions about the absorption of alcohol into the blood.***

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

Session 8 - Alcohol as a Drug

## Distribution of Alcohol

- Getting the ethanol into body's tissues and organs
- Basic Principle:
  - ✓ Ethanol goes wherever it finds water

Preliminary Training for DEC Program 8-11

**Slide 11.**

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.**

Session 8 - Alcohol as a Drug

## Which Parts of the Body Have a Lot of Water?

  
BRAIN

  
LIVER

  
MUSCLE TISSUE

  
KIDNEYS

## Which Parts Contain Very Little Water?

  
BONES

  
FATTY TISSUE

Preliminary Training for DEC Program 8-12

**Slide 12.**



***Ask this question and solicit responses from participants: Which parts of the body have a lot of water?***

***Reveal answers once participants have responded***

- Brain
- Liver
- Muscle tissue
- Kidneys



***Pose this question: “Which parts contain very little water?”***

- Bones
- Fatty tissue



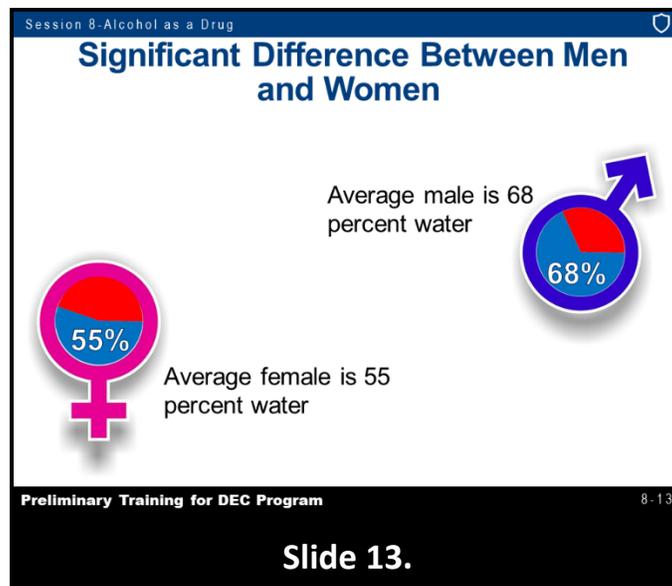
***Point to “fatty tissue” on visual.***

The fatty tissue will receive very little of the alcohol.



***Point to “muscle tissue” on visual.***

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.



***Ask participants to suggest why this significant difference exists.***

The female body has more fatty tissue than does the male body.



**Clarification: The female's extra fatty tissue serves as a "shock absorber" and thermal insulator to protect a baby in the womb.**

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.



**Ask participants: Suppose a woman and a man who weigh exactly the same drink exactly the same amount of alcohol under exactly the same conditions. Who will reach the higher BAC? The woman's BAC will be higher than the man's because she has less water in which to distribute the alcohol.**

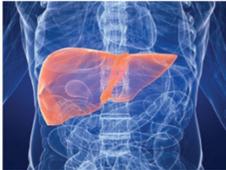
**Solicit participants' comments and questions about the distribution of alcohol in the body.**

Session 8 - Alcohol as a Drug

## Elimination of Alcohol

Direct Excretion:

- Breath, sweat, tears, urine, etc.
- Metabolism:
- Primarily in the liver



Preliminary Training for DEC Program 8-14

**Slide 14.**

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.



**Click to reveal the Question, and then the Answer.**

**Ask participants: What organ in the body is primarily responsible for chemically breaking the alcohol 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.

Session 8 - Alcohol as a Drug

## Metabolism in the Liver

- Liver burns ethanol
- Process is aided by alcohol dehydrogenase enzyme
- Ultimate products of chemical reaction are carbon dioxide and water

Preliminary Training for DEC Program 8-15

**Slide 15.**

Metabolism of alcohol actually consists of a slow, controlled burning of the alcohol.



**Click to reveal the second “bullet.”**

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.



**Click to reveal the third “bullet.”**

The reaction of alcohol with oxygen ultimately produces carbon dioxide and water, which can be directly expelled from the body.

Session 8 - Alcohol as a Drug

## Metabolism in the Liver

Due to metabolism, the average person's BAC drops by about 0.015 per hour

Preliminary Training for DEC Program 8-16

**Slide 16.**

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



***Pose this problem to the class: Suppose a person reaches a peak BAC of 0.15. How long will it take for his or her body to eliminate all of the alcohol? [Answer: ten hours.  $(0.15 - (x \text{ hours})(0.015/\text{hour}) = 0, x = 10$ ]***

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.

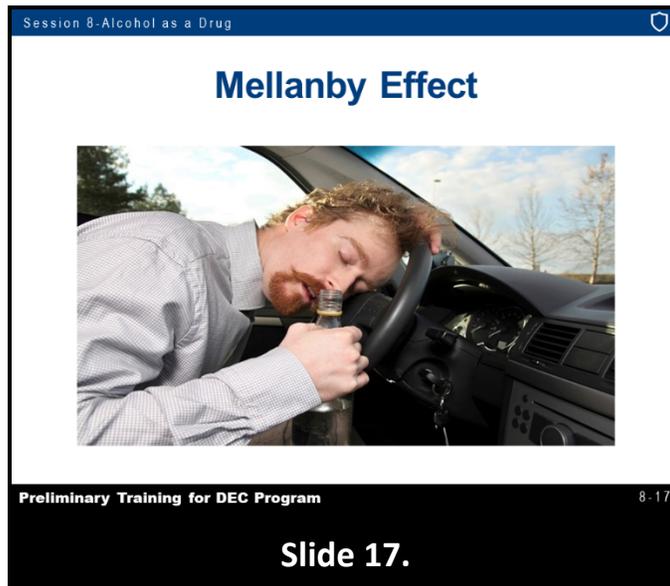


***Ask this question: How can we speed up the metabolism of alcohol?***

- 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



***Solicit participants' comments and questions about the elimination of alcohol from the body.***



***This is a scientific effect studied and brought to us by Sir Edward Mellanby in the early 1900s.***

A person feels more impaired while his/her BAC is still rising, than at the same level while his/her BAC is declining. The person is not less impaired, but they “feel better;” (the “Mellanby Effect”) which makes them more likely to drive while impaired. Even though a person may feel better on the declining curve, their impairment may be worse. Sample analogy: Imagine driving on a feeder road to the freeway. The speed limit on that feeder road is 45-mph. 45-mph feels like a good speed. You then merge onto the freeway and drive at speeds of 65- to 70-mph. You reach your exit, exit back onto a feeder road. You decrease your speed to 45 mph; however, now 45-mph feels painstakingly slow. This is the Mellanby Effect in a nutshell; you felt the 45-mph was faster before you went faster. You felt you were more impaired before you were more intoxicated.



***Sources to Reference for More Information:***

Alcohol and the Driver. Council on Scientific Affairs. (1986). *JAMA*, 255(4), 522-527.

Holland, M. G., & Ferner, R. E. (2017). A systematic review of the evidence for acute tolerance to alcohol - the "Mellanby effect". *Clinical toxicology*, 55(6), 545-556. doi:10.1080/15563650.2017.1296576

Mellanby, E. (n.d.). Alcohol: Its Absorption Into and Disappearance from Blood Under Different Conditions. *British Medical Research Committee, Special Report Series*, No. 31. London: H.M.S.O., 1919.

Moskowitz, H., Daily, J., & Henderson, R. (2014). *The Mellanby Effect in Moderate and Heavy Drinkers*.



**The findings of the study done by Sir Edward Mellanby:**

1. At a blood alcohol concentration on the way up, a person will feel more impaired than at the same blood alcohol concentration on the way back down. A person on the declining prong of the BAC curve will feel “better,” but still be impaired. For example, at a BAC of 0.05 when a person’s BAC is rising, will feel more impaired and refuse to drive; as compared to the person at a BAC of 0.05 when they are on the declining prong of the BAC curve.
2. The skills needed to drive safely are objectively worse on the declining prong of the BAC curve, even though the person subjectively feels better.
3. A person is more likely to drive impaired on the declining BAC prong because of loss of inhibitory control.

## C. Symptomatology of Alcohol

Session 8-Alcohol as a Drug

ALCOHOL	
HGN	Present
VGN	Present (HIGH DOSES)
LACK CONV	Present

Preliminary Training for DEC Program 8-19

**Slide 19.**



*Prior to the start of this session, the instructor drew the chart on the dry erase board or easel/easel pad.*

*Ask participants: "What category of drugs is alcohol most closely associated?" (CNS Depressant)*

Horizontal Gaze Nystagmus (HGN) will be present.



*Indicators of Alcohol Influence Found in Eye Exams: Write "Present" on the HGN line.*

*Ask: "Does alcohol cause VGN?"*

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



*Write "Present" on the VGN line. Denote in parentheses "(high doses)."*

*Ask: "Does alcohol cause the eyes to be unable to converge?"*

Under the influence of alcohol, Lack of Convergence (LOC) frequently will be present.



*Write "Present" on the LACK CONV line.*

Session 8 - Alcohol as a Drug

ALCOHOL	
HGN	
VGN	
LACK CONV	
PUPIL SIZE	
RCTN LIGHT	
PULSE RATE	
BLOOD PRESS	
TEMP	
MUSCLE TONE	

Preliminary Training for DEC Program 8-20

**Slide 20.**



**Ask: "How does Alcohol affect pupil size?"**

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



**Write "Normal" on the PUPIL SIZE line.**

**Ask: "How does alcohol normally affect pupillary reaction to light?"**

Alcohol will cause pupillary reaction to light to be slow.



**Write "Slow" on the RCTN LIGHT line.**

**Indicators of Alcohol Influence Found in Checks of Vital Signs: Ask: "How does alcohol affect pulse rate?"**

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.



**Write "Down" on the PULSE line. Refer to the matrix exception for pulse.**

**Ask: "How does alcohol affect blood pressure."**

Blood pressure response to alcohol will normally be down.



**Write “Down” on the Blood Press line.**

**Ask: “How does alcohol affect body temperature?”**

Alcohol usually leaves body temperature near the average range.



**Write “Normal” on the TEMP line.**

**Ask: “How does alcohol affect muscle tone?”**

Alcohol usually causes flaccid muscle tone.



**Write “Flaccid” on the MUSCLE TONE line.**

Session 8 Alcohol as a Drug

ALCOHOL	
HGN	Present
VGN	Present (High Doses)
LACK CONV	Present
PUPIL SIZE	Normal
RCTN LIGHT	Slow
PULSE RATE	Down <sup>2</sup>
BLOOD PRESS	Down
TEMP	Normal
MUSCLE TONE	Flaccid

<sup>2</sup> May be elevated.

Preliminary Training for DEC Program 8-21

**Slide 21.**



**Solicit participants’ questions about the signs and symptoms of alcohol.**

Session 8 - Alcohol as a Drug

## Overdose Signs and Symptoms Alcohol Poisoning

- Abnormally Slow Breathing
- Confusion
- Conscious but Unresponsive (stupor)
- Hypothermia
- Pale Skin
- Unconscious
- Vomiting

Preliminary Training for DEC Program 8-22

**Slide 22.**

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**.

Alcohol poisoning 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

Session 8 - Alcohol as a Drug

## Blood Alcohol Concentration

What does it mean?

- Number of grams of alcohol found in 100 milliliters of 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.

Preliminary Training for DEC Program 8-23

**Slide 23.**



*Reveal only the question at the top.*

What does “Blood Alcohol Concentration (BAC)” mean?



***Solicit participants’ responses.***

***Click to reveal the bottom of the slide.***

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.

A screenshot of a presentation slide. The title bar at the top reads "Session 8 - Alcohol as a Drug". The main title is "Grams, Milligrams and Nanograms". The slide contains a bulleted list: "A 'gram' is pretty light (it takes almost 500 grams to make one pound)", "One gram is equal to one thousand milligrams", ".08 grams are equal to 80 milligrams", and "If a person has a BAC of 0.08, he or she has 80 milligrams of alcohol in every 100 milliliters of blood." The footer of the slide reads "Preliminary Training for DEC Program" and "8 - 24". Below the slide, the text "Slide 24." is displayed in white on a black background.

Session 8 - Alcohol as a Drug

### Grams, Milligrams and Nanograms

- A “gram” is pretty light (it takes almost 500 grams to make one pound)
- One gram is equal to one thousand milligrams
- .08 grams are equal to 80 milligrams
- If a person has a BAC of 0.08, he or she has 80 milligrams of alcohol in every 100 milliliters of blood.

Preliminary Training for DEC Program 8 - 24

**Slide 24.**

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.



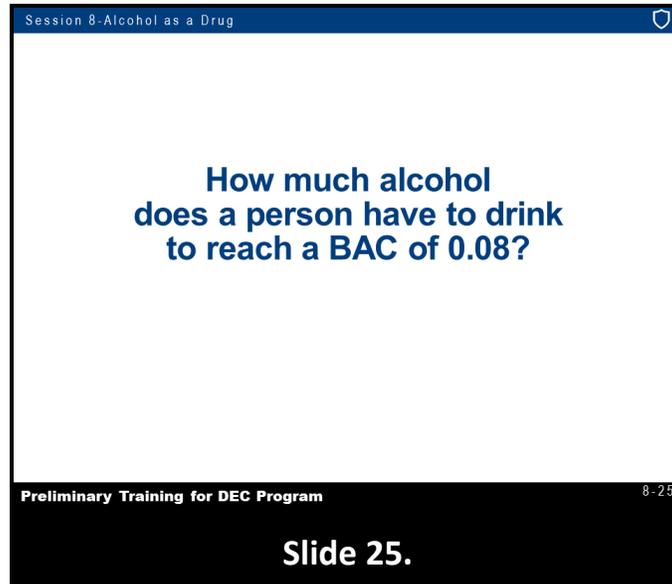
***For your information: It actually takes 454 grams to make a pound. A milliliter is a measure of volume.***

***It takes about 500 milliliters to make a pint. Example: A 12-ounce can of beer has about 350 milliliters.***

The so-called “illegal limit” of BAC is 0.08 in most States. 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.



***BAC results are reported in a variety of units. Two common variations are milligrams/milliliters and percent. There are 1000 milligrams (mg) in one gram; therefore, 0.08 grams equals 80 milligrams (mg) and a BAC of 0.08 would be reported as 80 mg of ethanol/100ml of blood. Percent means parts of 100.***



***Ask the class this question: How much alcohol does a person have to drink to reach a BAC of 0.08?***

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.



***Display two standard-sized shot glasses filled with water.***

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.



***Hold up the two shot glasses while posing the next question.***

***Ask the class this question: Does it take a lot of ethanol or only a little to impair a person?***

***Solicit participants' responses to the question.***

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.



***Hold up the glasses again.***

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.

Session 8 - Alcohol as a Drug

### More on Grams and Nanograms

- One milligram is equal to one million nanograms
- A person whose BAC is 0.08 has 800,000 nanograms of alcohol in every milliliter of blood

Preliminary Training for DEC Program 8-26

**Slide 26.**

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.



***For your information: The prefix "milli" derives from the Latin word mille, meaning one thousand. That means it takes nearly five hundred thousand milligrams to make a pound.***

If one gram is equal to one thousand milligrams, then one tenth of a gram is equal to one hundred milligrams.



***Now reveal the remainder of the slide.***

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 one milliliter of blood.

Session 8-Alcohol as a Drug

## More on Grams and Nanograms

How does alcohol compare with other drugs?



Preliminary Training for DEC Program 8-27

**Slide 27.**



*What kinds of concentrations of other drugs does it take to produce impairment?*

*Don't solicit responses to this question; it is purely rhetorical.*

Session 8-Alcohol as a Drug

## Questions?

Preliminary Training for DEC Program 8-28

**Slide 28.**



*Solicit participants' questions about Alcohol as a Drug.*



## 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.

### Slide 29.

## Test Your Knowledge



***Direct participants to turn to the review questions at the end of Session 8 of their participant guide.***

***Pose each question to the class and solicit responses. Make sure all participants understand the correct answers.***

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.



1. ***ETOH***
2. ***Fermentation***
3. ***True***
4. ***False. The average woman actually has a good deal less water, pound-for-pound, than the average man. She has about 55% water, he is about 68% water.***



## Test Your Knowledge

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?

### Slide 30.

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?



5. ***“Proof” means twice the ethanol percentage of the beverage. For example, 80 proof vodka is 40% ethanol.***
6. ***carbon, hydrogen, and oxygen***
7. ***True***
8. ***The pylorus, or pyloric valve.***



## Test Your Knowledge

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?

### Slide 31.

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?



**9. True**

**10. The man had more to drink**

**11. The liver is where most metabolism takes place.**



## Test Your Knowledge

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 30 minutes for the average 175-pound man to “burn off” the alcohol in one 12-ounce can of beer.

### Slide 32.

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.



**12. Alcohol dehydrogenase is the enzyme that serves as a catalyst for alcohol's metabolism in the liver.**

**13. 0.015 percent. (But remember, this is an average value, with wide variations among individuals).**

**14. False. The average 175-pound man will need more like ninety minutes to metabolize the alcohol.**



Session 9-Preparing for the DRE School

## Learning Objective

Understand logistics and other arrangements necessary for participation in 7-Day DRE School

Preliminary Training for DEC Program 9-2

**Slide 2.**



***Briefly review the objectives, content and activities of this session.***

### A. 7-Day DRE School

Session 9-Preparing for the DRE School

## 7-Day DRE School

- Dates
- Location
- Dress Code
- Material Needed
- Transportation
- Lodging
- Other

Preliminary Training for DEC Program 9-3

**Slide 3.**

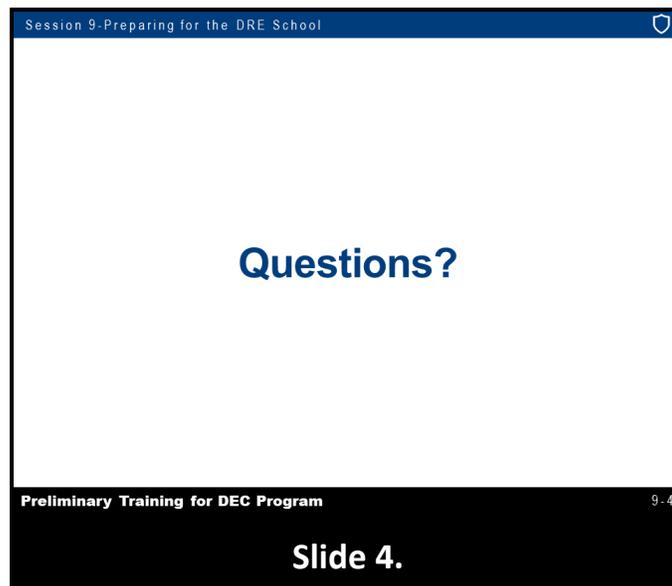


***Review the following points with the participants:***

- 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)



***Tell the participants to open their manual to Session 9. Point out some very important suggestions of “things to do prior to the DRE School” are given there. Emphasize the participants will be expected to be fully prepared when they come to the school. This is also a good time for the participants to begin preparation of their professional Curriculum Vitae (CV). A worksheet for the CV is provided in the Participant Manual.***



***Solicit participants’ questions about Preparing for the DRE School.***

## **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)

1.

1.

Session 10-Conclusion of the Preliminary Training

## Learning Objectives

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

Preliminary Training for DEC Program 10-2

**Slide 2.**

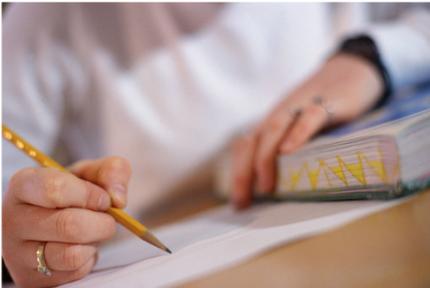


***Briefly review the objectives, content and activities of this session.***

### A. Post Test and Critique

Session 10-Conclusion of the Preliminary Training

## Post-Test and Critique



Preliminary Training for DEC Program 10-3

**Slide 3.**



***Post Test: Hand out copies of the post test. Allow about 15 minutes for participants to complete the test.***

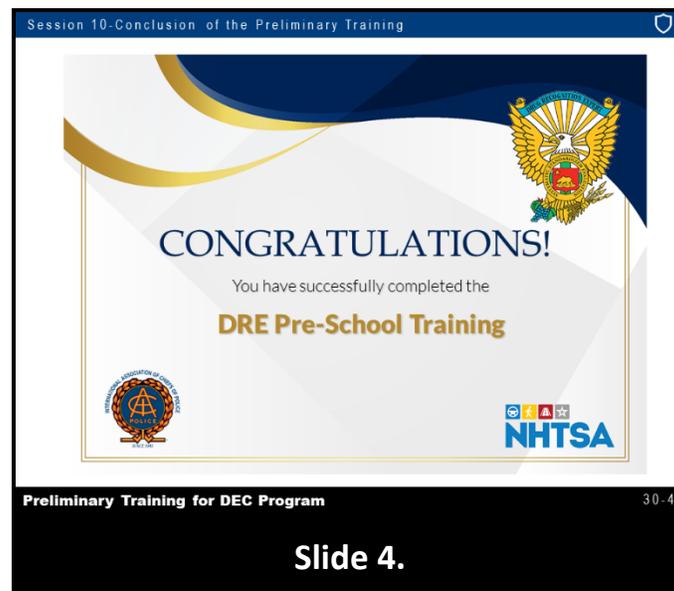
***Critique: Hand out copies of the Participant's Critique Form. Allow about 15 minutes for participants to complete the critique.***



***Review of the Post Test: Go over the post test questions. Limit this review to 10 minutes. Instruct participants to retain the Pre-School post test as a study guide for the upcoming DRE School.***

***Collect the completed critiques.***

## B Certificate and Dismissal



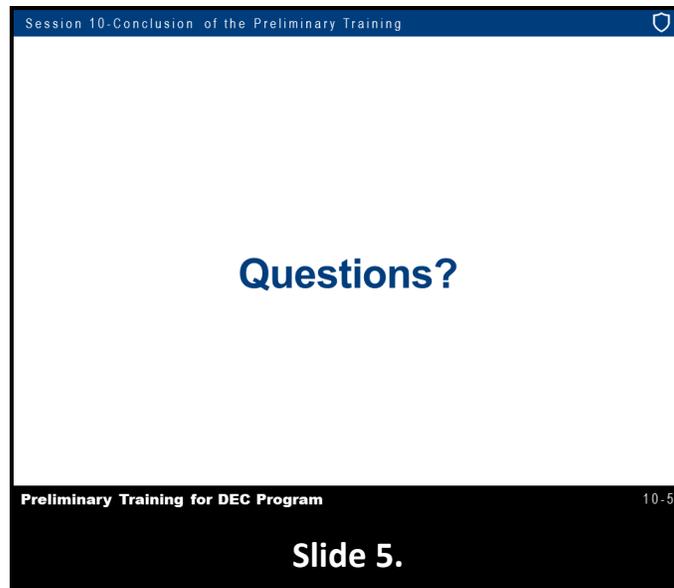
***Hand out certificates of course completion.***

***Hand back the participants' Certification Progress Logs, making sure an instructor has signed the Pre-School line on each log.***

***Remind participants they must bring Progress Logs with them to the DRE School.***

***Thank participants for their participation.***

## C. Session Wrap-Up



***Solicit participants' comments concerning the Conclusion of the Preliminary Training session.***

## 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: _____ _____	0	0	0	0	0
2. I can identify the twelve major components of the drug recognition process. Comments: _____ _____	0	0	0	0	0
3. I can administer and interpret the psychophysical tests used in a drug evaluation. Comments: _____ _____	0	0	0	0	0
4. I can conduct the eye examinations used in the evaluations. Comments: _____ _____	0	0	0	0	0
5. I can check the vital signs used in the evaluation. Comments: _____ _____	0	0	0	0	0
6. I can list the major signs and symptoms associated with each drug category. Comments: _____ _____	0	0	0	0	0

***Please rate how helpful each workshop session was for you personally.***

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

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

<b>Item</b>	<b>Agree</b>	<b>Disagree</b>	<b>Not Sure</b>
I wish we had more practice with drinking volunteers.	○	○	○
There was too much “war story” telling in this course.	○	○	○
I know have a much better idea as to what the drug recognition process is all about.	○	○	○
The course was at least one-half day too long.	○	○	○
I got a great deal of practical, useful information from this course.	○	○	○
I’m still confused as to what the drug recognition process is.	○	○	○
I think I could do a pretty good job conducting a drug evaluation right now, without additional training.	○	○	○
The course should have been at least one-half day long.	○	○	○
We spent too much time with the volunteer drinker session.	○	○	○
Some of the practice sessions were dragged out a bit too much.	○	○	○
Instructors were not as well prepared as they should have been.	○	○	○
The course was a good review, but it really didn’t teach me anything new.	○	○	○
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.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This course was not quite as good as I expected it to be.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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

---



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

---



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	Poor	Fair	Good	Very Good	Excellent
Please rate the overall quality of the course.	<input type="radio"/>				

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: _____ _____	<input type="radio"/>				
Comments: _____ _____	<input type="radio"/>				
Comments: _____ _____	<input type="radio"/>				
Comments: _____ _____	<input type="radio"/>				
Comments: _____ _____	<input type="radio"/>				

Name (optional): \_\_\_\_\_

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