1 Hour and 45 Minutes

SESSION V

EYE EXAMINATIONS: NYSTAGMUS, CONVERGENCE, PUPIL SIZE AND REACTION TIME

SESSION V EYE EXAMINATIONS: NYSTAGMUS, CONVERGENCE, PUPIL SIZE AND REACTION TO LIGHT

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

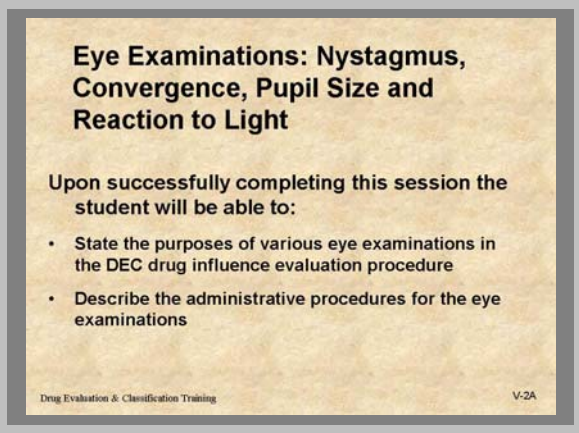
- State the purpose of various eye examinations in the DEC drug influence evaluation procedure.
- Describe the administrative procedures for the eye examinations.
- Describe the clues for each eye examination.
- Conduct the eye examinations and note the clues observed.
- Prepare complete, clear and accurate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

CONTENT SEGMENTS	LEARNING ACTIVITIES
A. Purpose of the Examinations	▪ Instructor Led Presentations
B. Procedures and Clues	▪ Instructor Led Demonstrations
C. Demonstrations	▪ Student Led Demonstrations
D. Document Procedures	▪ Students' Hands On Practice
E. Practice	▪ Reading Assignments

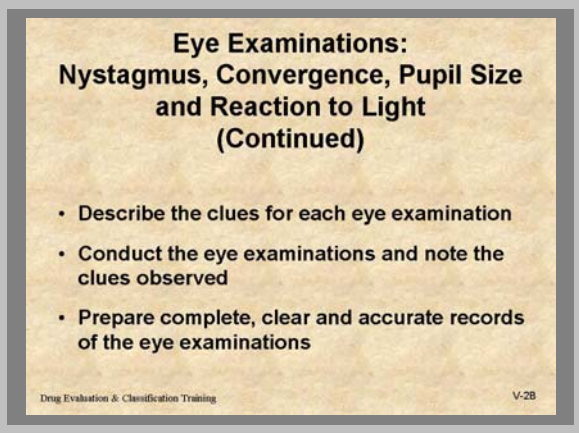
I. EYE EXAMINATIONS

Session 5-1: Eye Examinations

Session 5-2A: Eye Examinations: Nystagmus, Convergence,…



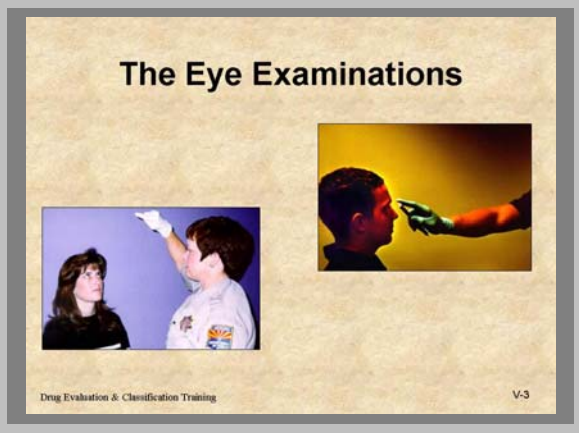
Session 5-2B: Eye Examinations: Nystagmus, Convergence,…(cont.)



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

A. Purposes of the Eye Examinations

Session 5-3: The Eye Examinations



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

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

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

Ask students: "What causes Horizontal Gaze Nystagmus?" Alcohol and certain other drugs will cause Horizontal Gaze Nystagmus.

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

- If Vertical Gaze Nystagmus is observed, the implication may be that the subject ingested a large dose of alcohol for that individual, a Dissociative Anesthetic, such as PCP, or other Depressants or Inhalants.

- Point out that it is very unlikely that a subject would exhibit Vertical Gaze Nystagmus without also exhibiting HGN.

- By comparing the subject's blood alcohol concentration with the angle of onset of Horizontal Gaze Nystagmus, it may be possible to determine that alcohol is or is not the sole cause of the observed Nystagmus.

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

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

Write the formula on the dry erase board or flip-chart:

BAC = 50 – Angle of Onset

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

Explanation: BAC = 100 x blood alcohol (i.e., if blood alcohol is 0.10, BAC = 10)

Example: If onset angle is 35 degrees, then: BAC = 50 – 35 = 15

The corresponding blood alcohol concentration would be approximately 0.15.

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

- 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.

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

- Emphasize that many other facts will also be considered that will help to determine whether Dissociative Anesthetics may be present.

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

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

- Point out that a DRE might begin to suspect the presence of Cannabis if Lack of Convergence was observed but no nystagmus was observed.

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

- CNS Depressants, CNS Stimulants, and inhalants will normally cause the pupils to react slowly. There will generally be little or no movement with Narcotic Analgesics.

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

- Cannabis normally causes dilation of the pupils, although this isn't always observed.

- Point out: pupil dilation due to Cannabis isn't always observed in laboratory studies, but may be due to that lab dose levels are less than "street" doses.

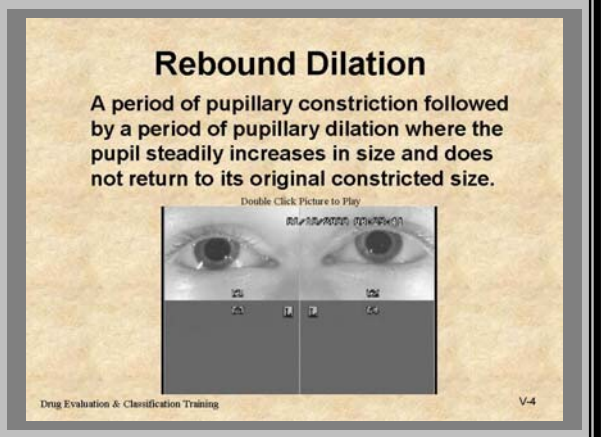
- Some specific Inhalants may cause pupil dilation.

- Narcotic Analgesics will normally cause observable constriction of the pupils.

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

Note: A revision that removed the check for Hippus was approved by the IACP Technical Advisory Panel (TAP), November 2008.

Session 5-4: Rebound Dilation



Powerpoint slide V-4 includes a short video example of Rebound Dilation.

Print on dry erase board or flip-chart: "REBOUND DILATION."

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

Note: This revision was approved by the IACP Technical Advisory Panel (TAP), November 2008.

- Point out: The DRE will record rebound dilation if observed by recording the constricted or the smallest size and the largest or dilated size, i.e., 3.0 - 4.5 mm.

- Example: The pupil is estimated at 8.5mm in near total darkness. Once the penlight is shined into the pupil it constricts to 4.0 mm in the first 2 - 3 seconds. It then steadily dilates to 6.0 mm and remains that diameter for the remainder of the 15 second period while the direct light is shined into the eyes.

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

- Point out that this term is defined in the glossary at the front of the Student's Manual.

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

Pupillary Unrest

Another eye sign that may be observed by the DRE is Pupillary Unrest.

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

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

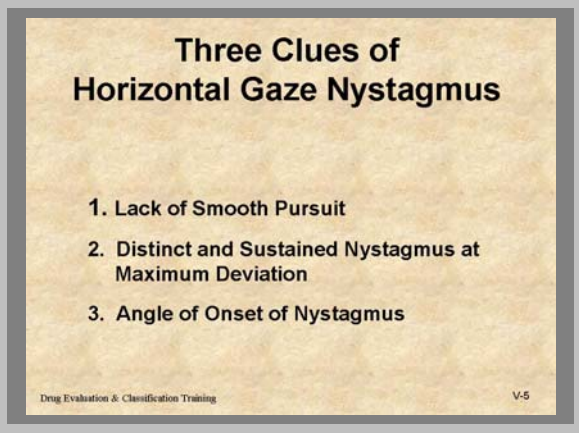
- Pupillary Unrest may be similar to "Hippus" which is defined as a rhythmic change in the pupil size of the eyes, as they dilate and constrict when observed in darkness independent of changes in light intensity, accommodation (focusing), or other forms of sensory stimulation.

Note: This new definition was approved by the IACP Technical Advisory Panel (TAP), November 2008.

Note: Research has shown that Hippus is primarily observed in total darkness conditions and is therefore difficult to detect under the current DRE protocol. Pupillary Unrest has at times been associated with the downside of drugs or polydrug use.

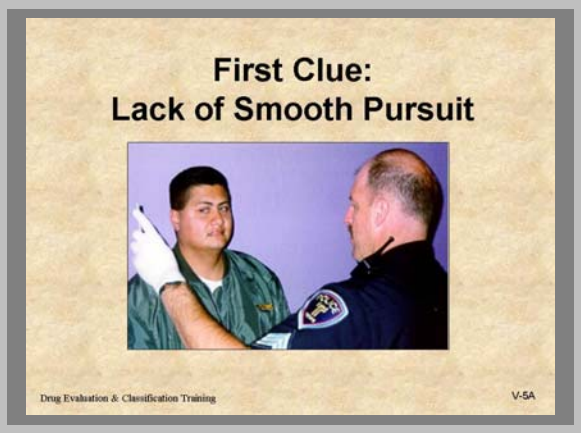
B. Procedures and Clues

Session 5-5: Three Clues of Horizontal Gaze Nystagmus



Remind students that prior to checking for the three clues of nystagmus, they need to check for equal pupil size, equal tracking and resting nystagmus.

Session 5-5A: First Clue: Lack of Smooth Pursuit



<u>First Clue: Lack of Smooth Pursuit</u>

- The first check is for "lack of smooth pursuit."
- If the subject is wearing eyeglasses, have him or her remove them.

Select a student, and demonstrate the first check of HGN on that student.

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

- Note: Research and testing has proven that contacts will not interfere with the HGN test or cause nystagmus.

- Position the stimulus approximately 12 – 15 inches in front of the subject's nose.

- Hold the tip of the stimulus slightly above the level of the subject's eye.

- Point out that this procedure ensures that the subject's eyes will be wide open and easy to observe.

- Instruct the subject to hold the head still and follow the stimulus with the eyes.

- Move the stimulus smoothly, all the way to the subject's left side and back all the way to the right side.

- Point out that the stimulus should be moved at a speed that requires approximately 2 seconds to bring it from the center out all the way to the side. It should then be moved from side to side at the same speed. This means it should take approximately 4 seconds to move from the extreme left to the extreme right.

- Make at least two complete passes of the stimulus: to the left side, to the right side, back to the left side, and finally back to the right side.

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

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

Use these or similar analogies:

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

- A smoothly pursuing eye will roll in the socket the way that a marble or ball bearing would glide smoothly across a polished pane of glass. An eye exhibiting lack of smooth pursuit would move more like that marble rolling over a sheet of heavy gauge sandpaper.

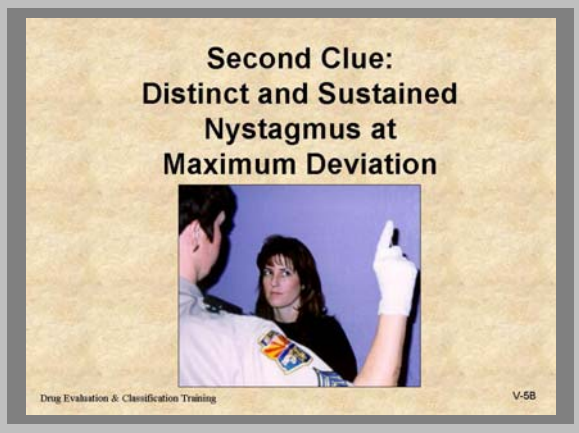
Also, check to be sure that both eyes are tracking in the same way: if one eye is moving smoothly but the other moves hesitantly or not at all, an illness or injury may be present.

Instruct students to work in pairs, taking turns checking each other's eyes for lack of smooth pursuit.

Excuse the student volunteer and thank him or her for participating.

Monitor, coach and critique the students' practice.

Session 5-5B: Second Clue: Distinct and Sustained Nystagmus



<u>Second Clue: Distinct and Sustained Nystagmus</u>

- The second check is for "distinct and sustained nystagmus at maximum deviation."

Select a student and demonstrate the second check of HGN on that student.

- Again position the stimulus as before.
- Move the stimulus all the way to the subject's left side and hold it there so that the subject's eye is turned as far to the side as possible.
- Hold the eye at that position for a minimum of 4 seconds, to check carefully for any jerking that may be present.
- Point out that for this to be a clue, the nystagmus (jerking) must be distinct and sustained.
- When you have completed this check for the left eye, repeat the process for the right eye. Then, do it once again for the left eye, and

again for the right, to verify that distinct and sustained nystagmus is or is not present.

- With this cue, the examiner looks for a very distinct, unmistakable jerking.

- Point out that people exhibit slight jerking of the eye at maximum deviation, even when unimpaired, but this will not be evident or sustained for more than a few seconds. When impaired by alcohol and "D.I.D." drugs, the jerking will be larger, more pronounced, sustained for more than 4 seconds, and easily observable.

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

- A definite, sustained jerking must be seen.

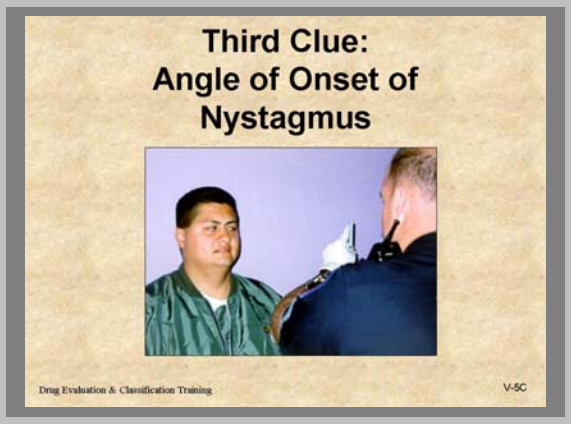
Excuse the student volunteer and thank him or her for participating.

Instruct students to work in pairs, taking turns checking each other's eyes for distinct and sustained nystagmus at maximum deviation.

Monitor, coach and critique the students' practice.

Allow this practice to continue for only about 2 minutes.

Session 5-5C: Third Clue: Angle of Onset of Nystagmus



<u>Third Clue: Angle of Onset</u>

- The final check is for the "angle of onset."

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

- Position the stimulus as before.

- Slowly move the stimulus to the subject's left side, carefully watching the eye for the first sign of jerking.
- Note: Stimulus should be moved at a speed that requires approximately four seconds to travel from center all the way out to the side.

- When you think that you see the eye jerk, stop moving the stimulus and hold it still.

- Verify that the eye is, in fact, jerking.

- Point out that, if the eye is not jerking, it will be necessary to resume moving the stimulus slowly to the side, again observing for the first sign of jerking.

- Once you have established that you have located the point of onset, estimate the angle.

- Point out that 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 student volunteer and thank him/her for participating.

Exhibit a template.

- Point out that the template will be used during practice only.

- Emphasize that if the clues of Horizontal Gaze Nystagmus are markedly different for the two eyes, a neurological or other medical problem (such as head injury) may be present.

Students' Initial Practice of Angle Estimation

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

Instruct students that they are to try to draw their partner's eyes to three different angles:

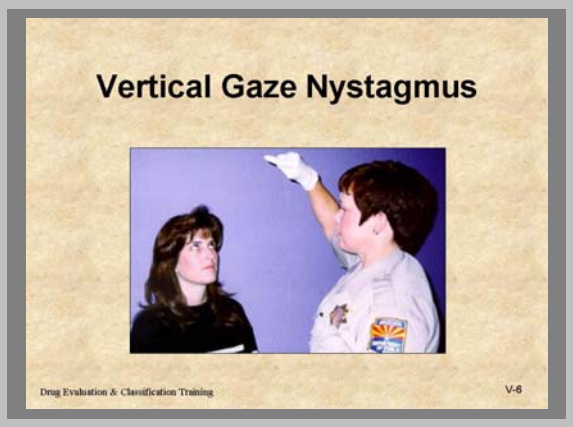
- 30 degrees
- 35 degrees
- 40 degrees

Students will check their accuracy using the template.

Monitor, coach and critique the students' practice.

Allow this practice to continue for only about 3 minutes.

Session 5-6: Vertical Gaze Nystagmus



Vertical Gaze Nystagmus

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

Select a student and demonstrate the Vertical Gaze Nystagmus test on the student.

- Position the stimulus horizontally, approximately 12 – 15 inches in front of the subject's nose.
- Instruct the subject to hold the head still and follow the stimulus with the eyes only.
- Raise the stimulus until the subject's eyes are elevated as far as possible.
- Watch closely for evidence of jerking.
- Point out that the examiner should keep the subject's eyes elevated for approximately four (4) seconds to verify that the jerking really is present.
- Point out that it is permissible to repeat the VGN check to verify if the jerking was or was not observed.

Excuse the student volunteer and than them for participating.

Students' Initial Practice of the Vertical Gaze Nystagmus Test

Instruct students to work in pairs, taking turns administering the Vertical Gaze Nystagmus test to each other.

Monitor, coach and critique the students' practice.

Allow this practice to continue for only about 2 minutes.

Session 5-7: Lack of Convergence

Lack of Convergence

The test for Lack of Convergence is also very simple.

Select a student and demonstrate the check for Lack of Convergence on that student.

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

- If the subject wears glasses during reading and near visual tasks and they are readily available, ensure that the eyeglasses are worn for the check for Lack of Convergence.

- Note: In testing for LOC, the role of clear vision and focusing can have significant effect on the convergence of the eyes. In the clinical setting, the LOC check is routinely conducted with the eyeglasses on if

normally worn by the subject during reading and near visual tasks. If the subject's eyeglasses are not readily available, the DRE should still conduct the test.

Note: This revision to the LOC exam was approved by the IACP Technical Advisory Panel (TAP), November 2008.

- Note: Citations for clinical use of testing with subject wearing eyeglasses for LOC:
  - "Clinical Procedures for Ocular Examination": Kurtz and Carlson; McGraw-Hill Medical, 3rd edition, Sept. 26, 2003.
  - "A Recognized Clinical Trial of Treatments for Convergence Insufficiency in Children": Scheiman, Cotter, Cooper, et.; Arch Ophthalmol, Jan 2005.
- Position the stimulus approximately 12-15 inches in front of the subject's face.
- Instruct the person to hold their head still and follow the stimulus with the eyes only.
- Keep the object 12-15 inches away from the person's nose, and start to move the stimulus slowly in a circle, approximately the same size as the subject's face.
- Point out that this initial circular motion helps to verify that the subject has focused on the stimulus and is able to track it. Emphasize that it doesn't matter whether the circular motion is clockwise or counter-clockwise.
- Once you have verified that the subject is tracking the stimulus, move it slowly and steadily toward the bridge of the nose.
- Hold the stimulus near the bridge of the nose for approximately one (1) second. The stimulus should not come any closer than approximately two (2) inches from the bridge of the nose.
- Carefully observe the subject's eyes to determine whether both eyes converge.
- Point out that if the subject being tested is wearing contact lenses, make note of the fact and conduct the check for LOC as normal.

Excuse the student volunteer and thank him/her for participating.

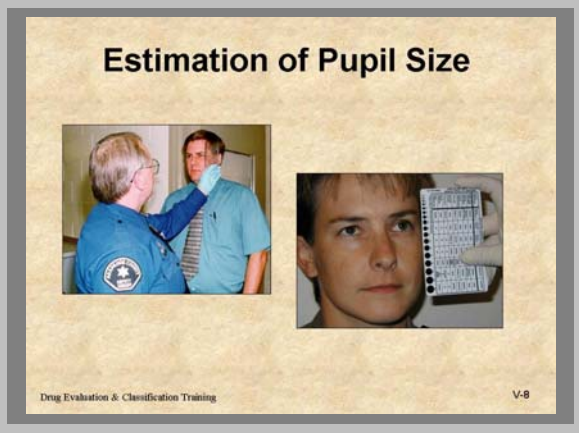
Students' Initial Practice of the Check for the Lack of Convergence

Instruct students to work in pairs, taking turns testing each other's eyes for Lack of Convergence.

Monitor, coach and critique the students' practice.

Allow this practice to continue for only about 2 minutes.

Session 5-8: Estimation of Pupil Size



Estimating Pupil Size

- The pupils of our eyes continually adjust in size to accommodate different lighting conditions.
- We use a device called a pupillometer to estimate the size of the subject's pupils.

Exhibit a pupillometer.

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

Demonstrate the positioning of the pupillometer.

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

Select a student and demonstrate pupil size estimation using the student.

Explain to the students that "Accomodation Reflex" is an 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.

Note: Refer students to the glossary of terms in their manual for the definition of Accommodation Reflex.

This should not be confused with pupillary unrest, the continuous, irregular change in the size of the pupils that may be observed under room or steady light conditions or with pupillary light reflex which is the pupil's normal reaction to the changes in light. Point out the importance of keeping the stimulus steady and having the subject maintain his/her focus on the stimulus.

Demonstrate the Accommodation Reflex by having the students focus on an object very close and one at a distance.

Note: Accomodation Reflex was approved for addition into this session by the IACP Technical Advisory Panel (TAP), November 2008.

The Three Lighting Conditions

Write on the dry erase board or flip-chart "The Three Lighting Conditions."

Pupil sizes are estimated under three different lighting conditions:

- Room Light
- Near Total Darkness
- Direct Light

Estimation of Pupil Size under Room Light

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

- Point out that since room lighting conditions can vary considerably and often cannot be controlled, the range of pupil sizes may be broad.

Student's Initial Practice of Pupil Size Estimation

Instruct students to work in pairs, taking turns checking each other's pupils.

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

Monitor, coach and critique the students' practice.

Allow this practice to continue for only about 2 minutes.

Estimation of Pupil Size under Near Total Darkness

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

Demonstrate this.

Select a student to participate in demonstrations of darkroom pupil estimations.

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

Demonstrate this.

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

- Repeat this procedure for the subject's right eye.

Demonstrate this.

Estimation of Pupil Size under Direct Light

- Bring the penlight from the side of the subject's face and shine it directly into their left eye.

Demonstrate this.

- Position the penlight so that it illuminates and approximately fills the subject's eye socket.

Demonstrate this.

- Emphasize that the penlight should be positioned so that the beam just "fits" the eye socket.

- Hold the penlight in that position for 15 seconds, and bring the pupillometer up alongside the left eye.

- Find the circle or semi-circle that is closest in size to the pupil.

- Remind students to position the penlight so that the beam exactly "fits" the eye socket when the beam is brought directly into the eye.

- Repeat this procedure for the subject's right eye.

Monitor, coach and critique the students' practice.

Allow the practice to continue for only about 2 minutes.

Solicit students' comments and questions concerning the eye examinations.

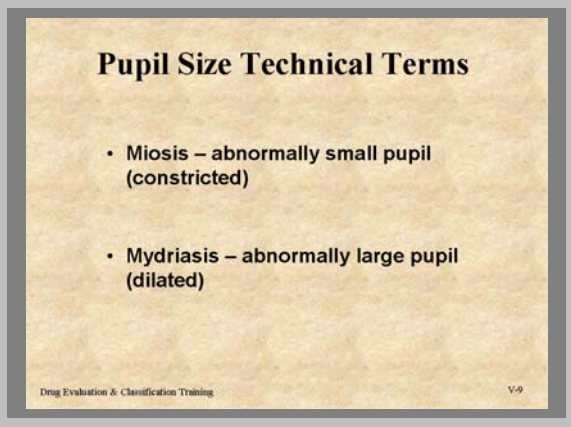
Normal Sizes for the Pupil

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

- Point out that results of studies indicated there are significant differences between the average pupil size in the three test conditions.

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

Session 5-9: Pupil Size Technical Terms



Technical Terms

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

Write average pupil size and ranges for the following lighting levels on a flipchart or dry erase board.

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

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

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

Reaction to Light

Assessment of the pupil's reaction to light takes place immediately before the check of pupil size under direct light.

- Once again, start by bringing the uncovered light from the side of the subject's face directly into his or her left 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.
- Emphasize: We consider the pupil's reaction to be slow if it takes more than one second to reach full constriction.
- Hold the direct light on the subject's eye for 15 seconds to assess pupil reaction.
- Also check for Rebound Dilation during this 15 second period.
- Caution should be used by the officer so as not to move the light beam or allow the bulb to change in light intensity.
- When you have completed this process for the left eye, repeat it for the right eye.
- Students' initial practice in assessing the pupil's reaction to light.

Have students work in pairs, checking each others pupil reaction.

C. Demonstrations

Demonstration of Horizontal Gaze Nystagmus

Select two students to come before the class.

Check for Lack of Smooth Pursuit

Instruct one student to demonstrate the administration of Horizontal Gaze Nystagmus to the other student.

Check for Distinct and Sustained Nystagmus at Maximum Deviation

Coach and critique the student administrator's performance.
Make sure that the student administrator checks both eyes.

Estimation of Angle of Onset

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

Excuse the two students and than them for participating.

Demonstration of Vertical Gaze Nystagmus and Lack of Convergence

Select two other students to come before the class.

Instruct one student to check the other for Vertical Gaze Nystagmus.

Coach and critique the student administrator's performance.

Instruct the second student to check the eyes of the first student for Lack of Convergence.

Excuse the two students and thank them for participating.

Demonstration of Pupil Size Checks and Test for Reaction to Light

Select two other students to come before the class.

Pupil Size Estimation under Room Light

Instruct one student to check the other's pupils under room light.

Coach and critique the student administrator's performance.

Darkroom Checks of Pupil Size

- Near total darkness
- Direct light

Instruct the second student to demonstrate how to perform the dark room checks of pupil size.

Coach and critique the student administrator's performance.

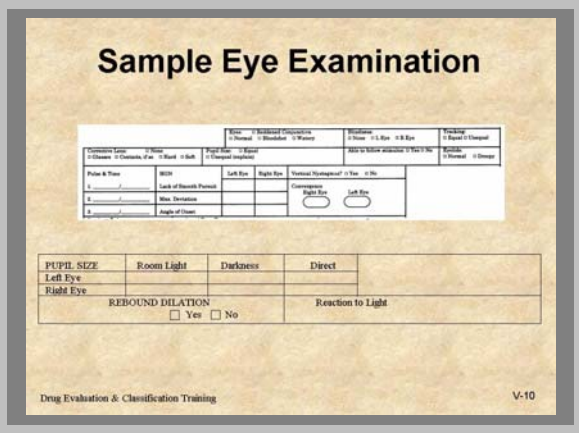
- Point out that assessment of the pupil's reaction to light takes place in conjunction with the direct light check.

Excuse the two students and thank them for participating.

Solicit students' comments and questions concerning these demonstrations of the eye examinations.

D. Documentation Procedures

Session 5-10: Sample Eye Examination



Instruct students to turn to the Standardized Drug Influence Evaluation Form in their manuals, or handout forms to the students.

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

- Check for equal pupil size.
- Check for resting nystagmus.
- Assessment of tracking ability.
- Initial assessment of Nystagmus angle of onset.
- The next section of the form is devoted to the Eye Examinations.
- Point out that section of the form.

<u>*Horizontal Gaze Nystagmus*</u>

- Emphasize that all three checks of the HGN test must be documented for each eye.
- Remind students that they must indicate the numerical number of the angle of onset and not just check-mark the box.

<u>*Vertical Gaze Nystagmus*</u>

- Point out that “yes” implies that Vertical Gaze Nystagmus was present, “No” implies that it was not present.

Lack of Convergence

- Point out that it will be necessary to diagram the movement of the eyes.

The darkroom eye examinations are documented in a subsequent section of the form.

- Point out the location of that section.

- Emphasize that all darkroom checks of the eyes must be performed and documented independently for each eye.

Solicit students' comments and questions concerning procedures for documenting the eye examinations.

E. Practice

Instruct students to practice in pairs.

Each student will conduct a complete set of eye examinations on his or her partner.

Students then will "reverse roles."

Preliminary Eye Exams

Tell the students to record their estimations of their partner's pupil sizes on the standard Drug Influence Evaluation Form.

Monitor, coach and critique students' practice.

- Check for equal pupil size.

- Check for resting nystagmus.

- Assessment of tracking ability.

- Initial estimation of nystagmus angle of onset.

Eye Exams

Make sure each student administers a complete series of eye examinations at least once.

- Horizontal Gaze Nystagmus.

- Vertical Gaze Nystagmus.
- Lack of Convergence.

Pupil Size Estimations

- Room Light.
- Near Total Darkness.
- Direct Light.

If possible, the training room should be at least somewhat darkened for this final stage of practice.

Reporting out of Pupil Size Estimations

Instructor: While the students practice is still going on, print the matrix at the end of this session on the dry erase board or flip-chart.

Tell the students that we will tabulate the pupil sizes of everyone in the class, for each of the three lighting conditions. For simplicity, tell the students that we will tabulate the left eye pupil sizes only.

Room Light Tabulation:

- Direct the students' attention to the first column of the matrix.

Say: "Let's concentrate now only on the room light estimations."

Ask: "How many of you found that your partners had pupils of 2.0 mm or less in room light?" (Get a show of hands; count them; print the number in the first box of the first column).

Then ask: "How many had partners with a 2.5 mm pupil in room light?" (Count the hands and print the number in the 2nd box).

Continue this until you get to the last box in the 1st column: "How many had partners with pupils of 8.0 mm or larger?" (Count the hands; print the number).

Near Total Darkness Tabulation:

- Repeat this process for each of the other two lighting conditions.

Direct Light Tabulation:

- Make appropriate comments about the number of students whose pupils are outside the normal range of size under the various lighting levels.

Session 5-11: Questions

Pupil Size	Room Light	Near Total Darkness	Direct Light
2.0 mm			
2.5 mm			
3.0 mm			
3.5 mm			
4.0 mm			
4.5 mm			
5.0 mm			
5.5 mm			
6.0 mm			
6.5 mm			
7.0 mm			
7.5 mm			
8.0 mm and above			

Attachment A

PARTICIPANT PROFICIENCY EXAMINATION
STANDARDIZED FIELD SOBRIETY TEST BATTERY

Participant Name: _____ Date: _____

I. HORIZONTAL GAZE NYSTAGMUS

_____ 1. Have subject remove glasses if worn.

*_____ 2. Stimulus held in proper position (approximately 12”-15” from nose, just slightly above eye level.

_____ 3. Check for equal pupil size and resting nystagmus.

_____ 4. Check for equal tracking.

*_____ 5. Smooth movement from center of nose to maximum deviation in approximately 2 seconds and then back across subject’s face to maximum deviation in right eye, then back to center. Check left eye, then right eye. (Repeat)

*_____ 6. Eye held at maximum deviation for a minimum of 4 seconds (no white showing). Check left eye, then right eye. (Repeat)

*_____ 7. Eye moved slowly (approximately 4 seconds) from center to 45 angle. Check left eye, then right eye. (Repeat)

_____ 8. Check for Vertical Gaze Nystagmus. (Repeat)

II. WALK-AND-TURN

_____ 1. Instructions given from a safe position.

*_____ 2. Tells subject to place feet on a line in heel-to-toe manner (left foot behind right foot) with arms at sides and gives demonstration.

*_____ 3. Tells subject not to begin test until instructed to do so and asks if subject understands.

*_____ 4. Tells subject to take nine heel-to-toe steps on the line and demonstrates.

*_____ 5. Explains and demonstrates turning procedure.

*_____ 6. Tells subject to return on the line taking nine heel-to-toe steps.

*_____ 7. Tells subject to count steps out loud.

*_____ 8. Tells subject to look at feet while walking.

*_____ 9. Tells subject not to raise arms from sides.

*_____ 10. Tells subject not to stop once they begin.

*_____ 11. Asks subject if all instructions are understood.

III. ONE-LEG STAND

_____ 1. Instructions given from a safe position.

_____ 2. Tells subject to stand straight, place feet together, and hold arms at sides.

_____ 3. Tells subject not to begin test until instructed to do so and asked if subject understands.

*_____ 4. Tells subject to raise one leg, either leg, approximately 6" from the ground, keeping raised foot parallel to the ground, and gives demonstration.

*_____ 5. Tells subject to keep both legs straight and to look at elevated foot.

*_____ 6. Tells subject to count out loud in the following manner: one thousand one, one thousand two, one thousand three, until told to stop, and gives demonstration.

_____ 7. Checks actual time subject holds leg up. (Time for 30 seconds.)

Instructor: _____

Note: In order to pass the proficiency examination, the student must explain and cannot omit the numbers marked with an asterisk (*).