Chapter 10: VIP Gold Standard Examination Procedures

10.1 The Order of the Gold Standard Examination (GSE) Procedures

The following list shows the order of testing for the GSE procedures.

- F2 Color Vision Test
- Lensometry
- Visual Acuity Test
- Stereo Smile II Stereoacuity Test
- Cover Test
- Versions and Ductions
- Noncycloplegic Retinoscopy
- Anterior Segment Assessment including Anterior Chamber Angle Assessment
- Cycloplegic/Mydriatic Drop Instillation
- Cycloplegic Retinoscopy
- Binocular Indirect Ophthalmoscopy

All GSE procedures will be conducted in the VIP medical van. Therefore, adequate overhead illumination will be provided as specified in the VIP medical van protocol. Each GSE area will be equipped with standardized tables, chairs, recording forms, and pens.

10.2 Infection Control Procedure

Supply List: Alcohol prep pads for cleaning instruments; antibacterial wipes; antibacterial lotion for hand washing at the sink with hot water; disposable tissues; 5% dilute bleach solution for wiping countertops; cleaning solution for floors; chemical cleaner for vomit, feces, and urine; paper towels; and disposable latex gloves.

The VIP medical van is equipped with a locking janitorial supply closet with a water supply inside that allows for buckets to be filled with water in a location other than the hand-washing sinks. Cleaning supplies and a small wet/dry vacuum cleaner are stored in the closet. Hand-washing sinks are easily accessible to all personnel working in the van.

1. Hand washing is an extremely important part of infection control. Personnel need to wash their hands with soap and water between examinations, before and after instilling eye drops, before and after performing ophthalmoscopy, and after using the restroom, as needed. Antibacterial wipes may be used as a substitute for hand washing.

2. Hand-held equipment must be cleaned with alcohol prep pads between examinations.

3. Contaminated surfaces must be cleaned with dilute bleach solution. Latex gloves must be worn when cleaning body fluid spills and accidents.

4. The Project Coordinator (PC) or Assistant Project Coordinator (APC) are responsible for cleanup following the GSEs.

10.3 GSE Procedures

10.3.1 Medical History/Drug Allergy Form

Information concerning allergies and allergic reactions to eye drops used during the GSE will be solicited in writing at the time of parental consent for participation in the GSE.

Medical History/Drug Allergy Form

Child's Name_____

Child's Date of Birth_____ **Child's Gender:** ☐ **Male** ☐ **Female**

PLEASE ANSWER THE FOLLOWING QUESTIONS:

Has your child ever been to an eye doctor's office? ☐Yes ☐No

If Yes, did your child have drops put in his/her eyes to make the pupils big (sometimes called "dilating the pupils")? ☐Yes ☐No

If Yes, was the reaction to the drops normal (sensitivity to light, enlarged pupils)? ☐Yes ☐No

If No, what reaction did your child experience (please explain)?

_____

Does your child suffer from seizures? ☐Yes ☐No

If Yes, please explain. _____

Please check any of the following that are relevant to your child:

☐ lazy eye	☐ turned eye or crossed eye	☐ born more than 3 weeks early
☐ eye surgery	☐ eyeglasses	☐ weighed less than 3.5 pounds at birth
☐ lacks interest in near tasks	☐ rubs eyes frequently	☐ frequently closes or covers one eye
☐ blinks excessively	☐ squints	☐ difficulty with hand-eye coordination

Do you consider your child to be Hispanic or Latino? (select only one of the following)

☐ Yes, Hispanic or Latino ☐ No, not Hispanic or Latino

What race do you consider your child to be? (select one or more of the following)

☐ American Indian or Native American	☐ Asian
☐ Black or African American	☐ Native Hawaiian or other Pacific Islander
☐ White	☐ Other
☐ Unable to answer	

CONTACT INFORMATION:

Parent/Guardian Name:_____

Address:_____

City:_____ State: _____ Zip Code: _____

Home Phone: ( )_____ Work Phone: ( )_____

10.3.2 F2 Color Vision Test

What Are You Testing?

The F2 Color Vision Test is used to test how well children can see colors. In this test, the child will have to find hidden black, green, or blue squares.

What You Need to Do the Test:

1. Color vision test with 4 cards (a background card, a training card with a black square, a test card with a blue square, and a test card with a green square).

2. True Daylight Illuminator (Illuminant C) lamp with test card holder base.

3. The Freeman flip-top seat in the waiting area of the van.

4. Measuring tape.

5. Masking tape to make an “X” on the floor.

Getting Ready:

1. Place the lamp on the Freeman seat so that the lamp base rests against the back of the seat. Secure the lamp in place with the seat belt.

2. With masking tape, make an “X” on the floor so that the “X” is 40 cm from where the test card holder sits on the chair. The child will stand during testing.

3. Put the card with the black square and the background card with the purple dots side by side on the lamp test card holder base facing the child.

How You Do the Test:

1. You will use 2 cards at a time in this test. In the training phase, the card with the black square is paired with the card with purple dots. In the testing phase, the card with the green square is paired with the card with the purple dots. Next, the card with the blue square is paired with the card with the purple dots.

2. Turn on the True Daylight Illuminator lamp.

3. Place the card with the black square and the card with the purple dots side by side on the test card holder. Ask the child to point to the card with the black square. Pick up the cards and shuffle them away from the child. Put the

cards back down side-by-side and once again ask the child to point to the card with the black square. Present the 2 cards in this manner up to 5 times, mixing up the left-right position of the 2 cards. Indicate on the data form (1) if the child is able to identify the location of the black square on at least 4 of the 5 presentations or (2) if the child is "**Unable**" to do the test.

4. If the child is "**Unable**" to do the test, indicate that appropriately on the data form and stop the test.

5. Place the card with the green square and the card with the purple dots side-by-side on the table. Ask the child to point to the card with the green square. Pick up the cards and shuffle them away from the child. Put the cards back down side-by-side and once again ask the child to point to the card with the green square. Present the 2 cards in this manner up to 5 times, mixing up the left-right position of the 2 cards. Indicate on the data form (1) if the child is able to identify the location of the green square on at least 4 of the 5 presentations, (2) if the child does not identify the location of the green square on at least 4 of the 5 presentations, or (3) if the test is "**Incomplete**" (e.g., due to poor behavior or inattention).

6. Next, place the card with the blue square and the card with the purple dots side-by-side on the table and ask the child to point to the card with the blue square. Do this up to 5 times, mixing up the left-right position of the 2 cards each time. Indicate on the data form (1) if the child is able to identify the location of the blue square on at least 4 of the 5 presentations, (2) if the child does not identify the location of the blue square on at least 4 of the presentations, or (3) if the test is "**Incomplete**."

What You Tell the Child:

1. Tell the child to stand on the "X."

2. Be sure the child stands straight.

3. Ask the child to find the black square at least 4 and up to 5 times.

4. Ask the child to find the green square at least 4 and up to 5 times.

5. Ask the child to find the blue square at least 4 and up to 5 times.

What You Write Down:

1. Record whether the child is able to find the black square at least 4 times or is "**Unable**" to do the procedure.

2. Record whether the child finds the green square at least 4 times, does not find the green square at least 4 times, or if the test is "**Incomplete**."

3. Record whether the child finds the blue square at least 4 times, does not find the blue square at least 4 times, or if the test is "**Incomplete**."

Remember!

1. Turn on the True Daylight Illuminator lamp.

2. Start with the black square.

3. Remember to place both cards under the True Daylight Illuminator lamp so that they can be easily seen without glare from overhead lights.

10.3.3 Lensometry

What Are You Testing?

Lensometry is a technique that measures the dioptric power of spectacle lenses.

What You Need to Do the Test:

1. A lensometer.

2. The patient's spectacles.

Getting Ready:

1. Adjust the focusing eyepiece of the lensometer so that it reads 0 D on the measuring drum with the target crisply in focus.

How You Do the Test:

1. Place the spectacles in the lensometer with the ocular surface away from the examiner.

2. Measure the right lens first. Then measure the left lens.

3. Center the spectacles within the carriage of the instrument so that the target is centrally aligned within the eyepiece reticle.

4. From an excess plus power direction, rotate the power drum of the lensometer so that the target comes to a sharp focus in the first meridian, simultaneously rotating the axis drum and making its target lines contiguous. This is the first meridian. Note the position of the power drum.

5. Continue rotating the power drum until the second meridian comes into sharp, contiguous focus. This is the second meridian. Note the position of the power and axis drums.

6. If both meridians come to a sharp focus simultaneously, the lens is spherical. If there are two distinctly different foci, the lens is spherocylindrical.

7. If there is an add, measure it.

8. The spherical or spherocylindrical power and axis is recorded in minus cylinder form.

9. The multifocal add, if present, is recorded as a plus add.

Remember!

1. Focus the lensometer before each reading.

2. Carefully fine-tune the power and the axis drums.

3. If the lens is a multifocal lens, look carefully for the maximum plus power position of the lens.

10.3.3.1 Self Assessment for Lensometry:

1. **Practice Lenses:**

   Using each of the lenses numbered 1 through 4:

   - Measure the power of each lens;
   - Record the power of each lens; and
   - Compare your results to the answer key below.

   Answer key for Practice Lenses:

   1. -3.50 DS

   2. +1.25 - 2.00 x 45 or -0.75 + 2.00 x 135

   3. +1.12 DS 3 PD BI @ 135

   4. -2.75 - 1.00 x 180 + 2.00 add or -3.75 + 1.00 x 90 + 2.00 add

2. **Self Assessment Lenses:**

   Using each of the lenses numbered 5 through 8:

   - Measure the power of each lens;
   - Record the power of each lens in the space provided; and
   - Return your answer sheet to the individual identified during your training session.

Lensometry Self Assessment Answer Sheet:

1. _____

2. _____

3. _____

4. _____

10.3.4 Visual Acuity Test

What Are You Testing?

Distance visual acuity testing assesses the ability to discriminate fine details of distance targets under monocular viewing conditions. This protocol is very similar to that used in the Amblyopia Treatment Study II (ATS2.)

What You Need to Do the Test:

1. An Electronic Visual Acuity (EVA) tester consisting of a PC, monitor, cable and Palm.

2. A ruler that can be used to measure distances on the monitor screen.

3. Junior size eye patches (for example, Opticlude) or gauze pads and micropore tape for occlusion.

4. A crowded letter (HOTV) lap card.

5. Single, large letters (one each for the H, O, T, and V) with crowding bars for training the child.

6. Ribbon, string, or similar material attached to the PC monitor stand, marked at the point that is 118 inches (9 feet, 10 inches or 3 m) from the plane of the monitor screen.

Getting Ready:

1. The EVA system should be on for 10 minutes before testing begins.

2. The calibration of the EVA monitor must be checked at the beginning of each day. If the PC is not available for calibrating the monitor for size and luminance, do so by following the “Calibration Instructions for PC Tester” instructions.

3. Overhead lights in the van should be on.

4. Turn on the Palm using the green on/off button located on the upper right corner of the Palm. Remove the stylus from the right side.

5. In the upper right corner of the Palm screen, using the stylus, select the Main menu. Select EVA and the VIP icon. Enter the child's VIP ID number and name code. Enter the child's birth date (dd/mo/yr) which can be found on the child's name tag.

6. Using the measuring ribbon as an aide, position the child in the exam chair so that the child's eyes are 3 meters (9 feet, 10 inches) from the EVA monitor.

How You Do the Test:

Binocular Training/Pretest:

1. Give the child the lap card with the letters H, O, T, and V on it and show the child one of the training cards at a distance approximately 2 feet from the child.

2. For each letter, ask the child to point to the letters on the lap card or to say a name for the letter. Use the same names consistently during testing.

3. Repeat the procedure with all 4 letters. If the response to a presentation is incorrect, ask the child a second time to identify the letter after he/she has identified the other letters. Allow a second attempt for each letter incorrectly identified the first time. If the child cannot respond correctly to all 4 letters, the child may be given a break and given another opportunity to identify the letters as described above. If the child cannot respond correctly to all 4 letters after a break or if there is no time in the schedule for a break, the child is scored "**Unable - Training card**" on the data form.

4. Respond to the question on the Palm display, "Was the child able to do the pretest with the cards?" If the answer is "Yes," proceed with the testing. If the answer is "No" (i.e., the child was "**Unable**"), the message "**Full VA Retest Required"** will appear on the Palm display and you should proceed to the next examination procedure.

5. If the child spontaneously names all the letters correctly, the lap card may be abandoned and the child's verbal responses accepted.

6. Continue the training with the EVA system. Select "**Start Pretest**" from the Palm display. Touch the display to indicate whether the child identified the letter correctly or not. Five letters will be presented during the binocular pretest phase. The child must identify 4 of the 5 letters correctly.

Note: To proceed to the testing phase, the child must identify 4 of 4 or 4 of 5 letters correctly on either the 20/200 or 20/400 series of letters.

7. If the child does not pass the pretest, the Palm display will provide instruction to score the child "**Unable - PC Monitor**." The message "**Full VA Retest Required**" will appear on the Palm display and you should proceed to the next procedure in the examination.

Threshold Determination:

1. Prepare the child for monocular testing by patching the left eye so that the child cannot use the left eye to see the letters. After testing the right eye, as described below, patch the right eye and test the child's left eye.

2. If the child refuses to wear the patch, the child may occlude his/her eye with the palm of his/her hand. The examiner must monitor the child carefully to make sure he/she is not peeking and that the palm is not pressing against the child's eye. Covering the eye with fingers is not allowed because peeking is too easy with only fingers in front of the eye.

3. Continue to follow the instructions on the Palm display and touch the display with the stylus to indicate whether the child has read each letter correctly.

4. After every 2 or 3 responses, give positive comments to the child, regardless of whether the previous response was correct.

5. If the child will not give a response for a letter, encourage the child to guess.

6. The child should be asked to use matching with the lap card if he/she responds with a letter that is not one of the 4 on the chart.

7. If the examiner notices that a child gives a response while not paying attention to the visual acuity task, that response should be ignored. The examiner should re-focus the child's attention on the task and continue testing.

8. Throughout the testing, check to make sure that the child is looking at the EVA monitor and is not squinting.

9. Record the visual acuity result by writing the denominator of the Snellen fraction displayed on the Palm screen on the data form.

10. Repeat the procedure by patching the right eye and testing the left eye.

Retesting Visual Acuity:

1. After completing cycloplegic retinoscopy, recall the child's record by selecting "**VA Retest**" and selecting the correct ID number and name code.

2. If the Palm screen displays "**No VA Retest**" mark the data form accordingly. Visual acuity testing for the child is complete.

3. If the Palm screen displays "**VA Retest**" proceed by following the instructions on the Palm screen using the same technique as specified above for Threshold Determination. If retesting is required because the child was "**Unable**" on either of the binocular pretests, retesting should begin with Step 1 (training cards) of Binocular Training/Pretest. Otherwise, retesting will begin with Threshold Determination.

4. If retesting is required, it must be done with the child wearing the full cycloplegic correction. Test the child in trial frames or, if the child is wearing glasses, lenses needed to achieve the fully cycloplegic refraction can be attached to the glasses using lens-holding clips. An occluder in the trial frames, rather than a patch, should be used for retesting.

5. Test the eye (right or left) with the worse visual acuity first. Consider "**Incomplete**" visual acuity for an eye as the worst possible visual acuity. If visual acuity is the same in both eyes, do the right eye first. Always retest both eyes.

What You Tell the Child:

1. Keep encouraging the child to respond appropriately and sit still in the chair.

2. Tell the child that it is all right to guess if he/she is not sure about a letter being presented.

What You Write Down:

1. If the child refuses to do the test or cannot do the test, mark "**Unable**."

2. Write down the denominator of the Snellen fraction for each eye.

3. If the child stops for any reason before completing the test, mark "**Incomplete**."

Remember!

1. Make sure the occlusive patch or child’s palm completely covers the child's eye.

2. Give positive comments to the child, regardless of whether the previous response was correct.

3. Keep encouraging the child to guess

10.3.5 Stereo Smile Stereoacuity II Test

What Are You Testing?

Stereoacuity testing checks how well the child's two eyes work together.

What You Need to Do the Test:

1. 5 Stereo Smile Stereoacuity cards and a BLANK card.

   Card A = Demo

   Card B = 480 sec arc

   Card C = 240 sec arc

   Card D = 120 sec arc

   Card E = 60 sec arc

   BLANK Card

2. Two marks on the wall, 40 cm apart. One mark indicates the location of the child's eyes; the other mark indicates the location of the test cards.

3. One pair of Magic (Stereo) sunglasses.

4. A small hand-held mirror.

5. Chairs for the examiner and child.

6. A recording form and pen.

Getting Ready:

1. Arrange the examiner's chair in front of the child's chair so that the cards can easily be held at a 40 cm distance from the child at his/her eye level.

2. Have the child choose a pair of Magic (Stereo) sunglasses. (Children wearing glasses WILL wear their eyeglasses for this test.)

3. Hold a hand mirror so the child can admire him/herself with the glasses on to help improve behavior and testability.

4. **Card A** is for training purposes and to determine if the child understands the task. The smile face is easy to see even if the child's eyes are not working together.

5. It is more difficult to see the smile face on testing **Cards B**, **C**, **D** and **E**. The **BLANK Card** has no smile face visible with or without stereo glasses.

How You Do the Test:

1. The child should sit back in his/her chair.

2. Measure the distance (with the string) between the child's eyes and the test card so that it equals 40 cm.

3. Hold **Card A** (training card) and the **BLANK Card** side-by-side in front of the child.

4. Ask the child to point to the smile face. Shuffle the cards behind your back so as to randomly change the position of the smile face so that **Card A** could be either to the right, left, up or down.

5. Repeat this procedure a maximum of 5 times. Randomize the position of the smile face on each trial, taking care not to present the cards in a pattern (i.e. not R, L, R, L).

6. If the child does not give at least 4 correct responses with **Card A** and the **BLANK Card** (2 errors on up to 5 presentations), stop testing and indicate "**Unable**" on the data form.

7. If the child gives a correct response on 4 of 4 presentations or at least 4 of 5 presentations, replace **Card A** with **Card B**. The testing procedure then proceeds in the same manner as the training. Begin testing with **Card B** and the **BLANK Card**.

8. The **BLANK Card** is always used throughout the procedure with one of the other cards.

9. With **Card B** and the **BLANK Card**, the child must correctly locate the smile face on at least 4 of a maximum of 5 presentations.

10. If the child has trouble seeing the target, show the child the demonstration card again and remind him/her what to look for. If the child is still unable to accurately determine the location of the smile face, stop the test.

11. If the child answers incorrectly 2 times on **Card B**, do not continue the test.

12. If the child is successful on **Card B**, replace **Card B** with **Card D** (initially skipping **Card C**) and retest in the same manner (using **Card D** and the **BLANK Card**).

13. If the child is unsuccessful on **Card D** (answers incorrectly 2 times), replace **Card D** with **Card C** and retest in the same manner (using **Card C** and the **BLANK Card**).

14. If the child is successful on **Card D** (correctly locates the smile face on at least 4 of a maximum 5 presentations), replace **Card D** with **Card E** and retest in the same manner (using **Card E** and the **BLANK Card**).

What You Tell the Child:

1. Say to the child: "One of these cards has a smile or happy face on it. Can you point to it?"

2. Provide instruction and encouragement to the child, as needed. Because it takes a few seconds to see the stereo smile face, you need to encourage the child to keep looking at the cards. You can tell the child the "smile" is hiding and that they need to look hard to find it.

3. Smile stickers may be used as an incentive to encourage the child's participation.

What You Write Down:

Training:

1. If the child is unable to locate the smile face on the training card 4 times, record "**Unable to do Card A**."

2. If the child refuses to wear the Magic (Stereo) sunglasses, record "**Unable to do Card A**."

Testing/Scoring:

1. Check the last presentation with 4 correct.

Unable to do Card A	**( )**
Card A	**( )**
Card B	**( )**
Card C	**( )**
Card D	**( )**
Card E	**( )**

$\square_1$ ✓ if incomplete [i.e. if the child got 4 correct on **Card A**, **B**, **C**, or **D**, but did not "fail" (miss 2 out of a maximum of 5 presentations) on the next card (**B**, **C**, **D**, **E**, respectively)].

Remember!

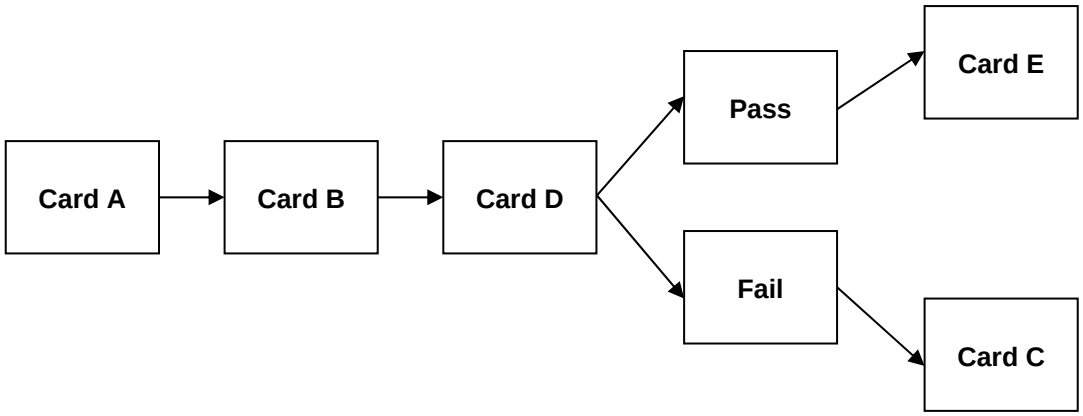
1. The child is unable to do the test if he/she cannot locate the smile face on the demonstration card on at least 4 of 5 presentations or refuses to wear the Magic (Stereo) sunglasses.

2. Hold the **Blank Card** at exactly the same distance from the child as the other card (**A**, **B**, **C**, **D**, or **E**).

3. Be sure the cards are vertical and not tilted forward or backward.

4. Be sure there is no extraneous glare on the cards.

5. A simple flowchart of the order of testing is as follows:



10.3.6 Cover Test

What Are You Testing?

The purpose of performing a cover test is to determine the presence of primary position heterotropias (manifest strabismus) and heterophorias (latent strabismus), as these conditions are often associated with amblyopia in young children. The cover test provides a precise, objective measure of eye alignment and results in information on the presence, magnitude, direction, and frequency of the deviation.

What You Need to Do the Test:

1. A black plastic occluder.
2. Detailed near fixation targets.
3. Remote control for VCR.
4. VIP video tape for distance fixation.
5. Loose prisms or prism bars.

Getting Ready:

1. Turn on the video tape provided for the distance cover test target.
2. Have the targets provided for the near cover test ready for use.

How You Do the Test:

1. The examiner is seated facing the child and slightly to the child's side during distance testing, and directly in front of the child during near testing.
2. First perform the cover test (both the unilateral and alternating cover test procedures) in primary gaze using the distance target at 10 feet (3m).
3. Then, repeat testing at 40 cm.

Distance Cover Test:

Unilateral Cover (Cover-Uncover) Test:

1. Direct the child to look at **details** on the distance fixation target and ask the child to concentrate on the picture.

   For testing of the right eye, place the occluder over the child's left eye while closely observing the child's right eye for movement after the left eye is covered. Allow 3-4 seconds before proceeding in case the child takes up fixation slowly and continue to observe the right eye only for movement.

   For testing of the left eye, repeat the procedure but cover the child's right eye while closely observing the left eye for movement after the right eye is covered. Again, allow 3-4 seconds before proceeding.

2. Repeat the unilateral cover-uncover test a minimum of 3 times for each eye. You may use more repetitions, if necessary, to determine the presence and frequency (i.e. constant or intermittent) of the deviation.

3. Make certain that the occluder completely covers the eye on each cover stroke.

4. If no movement of either the right or left eye is detected when performing the unilateral cover test, then the patient does not have a tropia. Proceed with the alternating cover test to detect the presence of a phoria.

5. If movement of the fellow eye is detected when testing either the right or left eye, the child is strabismic. Check the box on the data form that says "**Tropia, total deviation**." Describe the tropia by completing the set of items in the box at the end of the arrow on the data form.

6. Note the laterality:

   a. Mark *right* when the right eye deviates consistently.

   b. Mark *left* when the left eye deviates consistently.

   c. Mark *alternating* when fixation alternates.

7. Note the frequency: Constant or intermittent.

8. Note the direction:

    a. If the deviating eye moves inward after the fellow eye is covered, an *exotropia* is present.

    b. If the deviating eye moves outward after the fellow eye is covered, an *esotropia* is present.

    c. If the deviating eye moves down after the fellow eye is covered, a *hypertropia* is present.

    d. If the deviating eye moves up after the fellow eye is covered, a *hypotropia* is present.

9. Note the direction of the *larger* directional component of the strabismus: Eso, exo, hyper, hypo. For example, if a child has an esotropia with a hypertropic component and the esotropia is larger, under "**Direction**" on the data form categorize the tropia as an esotropia. Measure and record the magnitude of the larger component of the deviation using the "Measurement Procedure for Strabismus" (described next). All strabismic deviations must be neutralized with prisms, not estimated.

Measurement Procedure for Strabismus:

1. Place either loose prisms or a prism bar before the deviating eye. The prism chosen for starting this procedure is based on the examiner's estimate of the amount of the larger deviation present. For example, if a child has an esotropia with a hypertropic component and the esotropia is larger, use a base-out prism and determine the prism value necessary to neutralize the esotropic component of the deviation.

2. Without allowing binocular fixation, alternately cover the right and left eyes while adding the appropriate base prism until the direction of the larger component of the strabismus in the deviating eye is neutralized (i.e. no movement is observed). Then add additional prism until the deviation reverses direction. For example; for esotropia, add base-out prism until a small exo movement is observed. The value in prism diopters used just before the direction reversal is recorded as the magnitude of the strabismus. Record this on the data form.

3. For your use in providing clinical care to the child, you may neutralize any other smaller deviation observed. Do *not* record the magnitude of the smaller deviation on the data form; you may include this under "**Examination Findings**" on the last page of the GSE forms. You must prism neutralize and record only the larger component of the deviation; that is, the esotropic component in the example cited above.

Alternating Cover Test Procedure for Phorias:

1. If there was no strabismus present on the distance unilateral cover test, the examiner should proceed with the distance alternating cover test to detect the presence and magnitude of a phoria.

   The occluder is introduced and held in place in front of the left eye for at least 1-2 seconds and it is then moved quickly to the right eye and held in place for 1-2 seconds while **not allowing binocular fixation to occur**.

2. This cycle should be repeated at least 3 times as the examiner observes the eye that is being uncovered to detect a re-fixation movement.

3. If no movement is present on the alternating cover test, mark the response labeled "**No tropia or phoria**."

4. If a phoria is detected, mark the response labeled "**Phoria & no tropia**." Describe the phoria by completing the set of items in the box at the end of the arrow. Neutralize the phoria with loose prisms or a prism bar as described next in the "Measurement Procedure for Alternating Cover Test."

5. Note the direction:

   a. If the eye moves inward as the fellow eye is uncovered, an exophoria is present.

   b. If the eye moves outward as the fellow eye is uncovered, an esophoria is present.

   c. If the eye moves down as the fellow eye is uncovered, a hyperphoria is present in that eye.

   d. If the eye moves up as the fellow eye is uncovered, a hypophoria is present in that eye.

Measurement Procedure for Alternating Cover Test:

1. If a phoria is detected on the alternating cover test, place either loose prisms or a prism bar before one of the child's eyes. The base direction and amount of prism chosen is based on the examiner's estimate of the child's deviation.

2. Alternate covering the right and left eyes without allowing binocular fixation while increasing the prism power until the movement is neutralized (i.e. no movement is observed). Add additional prism until the direction of the deviation is first reversed.

3. The value in prism diopters obtained just before the direction is reversed is recorded as the magnitude of the phoria.

Near Cover Test:

1. Follow the distance unilateral and alternating cover test procedures as outlined above, but use a near viewing distance (40 cm) for the near cover test procedure.

2. Use the near targets provided at 40 cm instead of the distance target.

3. Establish the correct test distance (40 cm) at the beginning of the procedure. Re-check the viewing distance as needed if the child moves closer or further away during testing.

4. During the near cover test you may have the child "glue the target to the end of your nose" to maintain an accurate testing distance and to reinforce fixation. This will allow the examiner the use of both hands to hold the occluder and prism.

5. While testing, keep reminding the child to look at the fixation targets.

6. Engaging the child in describing the object will help maintain the child's attention and help to stabilize accommodation.

7. Other aspects of testing and measurement are the same to maintain near fixation as was described to maintain distance fixation.

What You Tell the Child:

1. When viewing the near fixation target, have the child describe the characteristics of the object or objects on the target. The important task is to make certain that the child maintains fixation on the near target. ("How many eyes does the clown have? What color is Big Bird?")

What You Write Down:

1. If a tropia is present, record the results as "**Tropia (total deviation)**" and complete the boxed items for Laterality (right, left, or alternating); Frequency (constant or intermittent); the direction of the deviation (eso, exo, hyper, or hypo); and the magnitude of the total deviation. If the tropia is composed of both a horizontal and vertical component, record the characteristics of the larger component on the GSE form; you may record both components under "**Examination Findings**" on the last page of the forms.

2. If no tropia is present but a phoria is detected, record the results as a "**Phoria & no tropia**." Indicate the direction (eso, exo, left hyper, or right hyper) and the magnitude of the deviation.

3. If no tropia is present and no phoria is present, record "**No tropia or phoria**."

4. Check "**Incomplete**" for laterality, frequency, direction, and/or magnitude if the test is aborted (e.g., due to the child's uncooperativeness) before an assessment could be made.

Remember!

1. Keep asking the child to describe the fixation target that you are using while you are doing the test. Direct the child's attention to the **details** on the targets.

2. Make sure the occluder completely covers the eye and stays over the eye for at least 3 seconds.

3. Prism neutralization of all strabismic deviations and phorias must be performed using the alternate cover test.

4. Have several different targets available and change them as needed to help maintain continued and accurate fixation.

10.3.7 Versions and Ductions

What Are You Testing?

Versions test binocular ocular motilities. Ductions test monocular motilities. Ductions are necessary only if abnormalities are detected while testing versions.

What You Need to Do the Test:

1. A transilluminator for the target.

2. If using a Heine instrument, use the tip for the transilluminator.

Getting Ready:

1. Seat the child (without eyeglasses) at arm's length from the examiner.

How You Do the Test:

Versions:

1. It is often helpful to stabilize the child's head with your left hand and move the target with your right hand.

2. Hold a transilluminator about 30 cm from the child in primary gaze.

3. Move the target to your right until the eyes are no longer able to follow. A slight end-point nystagmus (sometimes present) is normal.

4. Next, move the target up and down until the eyes cannot follow. Lift the eyelids on downgaze.

5. Return the target to the extreme right horizontal position and move the target to the opposite extreme left horizontal position.

6. Repeat the up and down positions on this side.

7. Return the target to the center and repeat the up and down positions.

8. Note any restrictions, relative overactions or underactions, A or V patterns, misalignment not in primary gaze, or other abnormalities.

9. If no abnormalities are observed, testing is completed.

Ductions:

1. The monocular procedure is necessary only if abnormalities are noted with the binocular procedure described above.

2. Have the child fixate on a transilluminator at 30 cm (without eyeglasses) as above. Occlude the left eye.

3. Move the light so the right eye is adducted about 23 degrees and move the light straight up, keeping the light directed towards the eye.

4. Move the light down, keeping the light directed towards the eye.

5. Next, move the light so the eye is adducted 40 to 50 degrees. Move the target straight up, keeping the light directed towards the eye.

6. Move the light down, keeping the light directed towards the eye.

7. Maintaining the light in the horizontal plane, position the light in front of the eye being tested and move the light straight towards the nose.

8. Maintaining the light in the same horizontal plane, move the light directly towards the ear.

9. Note any restrictions.

10. Repeat monocular testing by occluding the right eye and asking the child to move the left eye.

What You Tell the Child:

1. Tell the child to fixate on the transilluminator as you move it.

2. It is often helpful to talk about the light in an effort to encourage the child to look at it. You can make comments about looking into the light to see what the child ate for breakfast, to see if a fairy lives inside the light, etc.

What You Write Down:

1. If you observe no binocular abnormalities, mark "**Full and Smooth**."

2. If you observe binocular abnormalities, mark all that were observed: "**Restrictions**," "**Under/Overactions**," "**A/V Patterns**," "**Misalignment**," or "**Other**."

3. Mark "**Unable**" if you are not able to test versions on the child (e.g., due to uncooperativeness).

4. If ductions were performed, write in your observations on the data form.

5. At the end of the data form, you may record other pertinent findings. For example, if you identify a syndrome such as Duane's retraction syndrome, you may note it there.

Remember!

1. Use the transilluminator, do not use a penlight.

2. Encourage the child to fixate on the transilluminator.

3. It may be helpful to stabilize the child's head with your left hand.

10.3.8 Noncycloplegic Retinoscopy

What Are You Testing?

Noncycloplegic retinoscopy measures refractive error. The retinoscopy spectacles ensure that the vertex distance is kept constant and that accommodation is relaxed.

What You Need to Do the Test:

1. A streak retinoscope.
2. A distance fixation target in the form of a VCR and video tape.
3. Remote control for the VCR system.
4. A retinoscopy rack or loose lenses.
5. Retinoscopy spectacles corresponding to the examiner's working distance: +2.00 DS (50 cm), +1.75 DS (57 cm), or +1.50 DS (67 cm).
6. A box of tissues.

Getting Ready:

1. Place the examiner's chair about 50-60 cm from the child.
2. Set up the distance fixation target at least 10 feet from the child.
3. Lower the VCR to the child's eye level.
4. Dim the lights by manually turning off the overhead lights.

How You Do the Test:

1. Position the child facing the distance fixation target at the end of room.
2. The right eye is measured first.
3. The examiner is positioned facing the child so that his/her right eye is directly in front of the child's right eye.
4. Place the retinoscopy glasses (in the appropriate power for the working distance) on the child's face.

5. The examiner activates the distance fixation target with the remote control.

6. Use a retinoscopy lens rack or hand-held trial lenses to neutralize the refractive error.

7. Examiners may perform noncycloplegic retinoscopy in their customary manner.

8. If the child has overt strabismus, care should be taken to perform retinoscopy on axis. Reposition the child and examiner as necessary to achieve distance fixation and to maintain the working distance.

9. The procedure is then repeated for the left eye.

10. Wipe the temples and bridge of the glasses with a tissue after testing.

What You Tell the Child:

1. Tell the child to keep looking at the distance fixation target.

2. Tell the child that you are going to look into his/her eyes with a light.

3. Repeat the instruction to the child to keep looking at the distance fixation target.

What You Write Down:

1. The refractive error present over the retinoscopy spectacles is recorded in standard prescription notation (either plus or minus cylinder form) on the GSE data form. If there is no cylinder, put a dash in each of the fields for Cyl and Axis. If the refractive error is plano, also put a dash in the Sphere field.

2. Record the power of the spherical and cylindrical lenses to the nearest 0.25 diopter. Lens powers must be recorded with two decimal places (.00, .25, .50, or .75).

3. You may use the optical cross on the data sheet as a scratch pad prior to recording the refractive error in standard prescription notation on the GSE data form.

Remember!

1. Constantly remind the child to maintain fixation on the distance target so that accommodation is stable and relaxed.

10.3.9 Anterior Segment Assessment Including Anterior Chamber Angle Assessment

What Are You Testing?

External inspection of the anterior segment assesses the structure and health status of the eye. The procedure includes an assessment of the anterior chamber to determine whether it looks adequately deep for dilation (prior to the instillation of cycloplegic/mydriatic drops).

What You Need to Do the Test:

1. A penlight.
2. A Burton lamp.
3. A hand-held slit lamp.

Getting Ready:

1. Chairs for the child and the examiner are placed 2 feet apart.
2. Seat the child comfortably in the chair.
3. The examiner is seated facing the child.
4. Have the penlight and slit lamp ready for use.

How You Do the Test:

1. This procedure consists of observation of the child's eyes and face and is conducted using magnification and illumination of the slit lamp, as needed.

2. Specifically, observe the following:

    - Anterior chamber angle (this must be completed prior to drop instillation).
    - A penlight is used to illuminate the eye directly from the temporal side, parallel to the iris surface and the examiner looks for a shadow on the nasal iris, suggesting a very shallow anterior chamber. If there is no shadow, then the child may be dilated for the cycloplegic examination. It is recognized that complete assessment of the angle would include gonioscopy. The VIP-Study investigators do not feel the procedure is feasible in young children and that the risk of angle closure glaucoma in children in this age range is extremely low.
    - Eyelashes.
    - Lid position and shape.
    - Eye positioning in orbit (enophthalmos or exophthalmos).
    - Completeness and frequency of blinking.
    - Epiphora or tearing.
    - Conjunctiva.
    - Cornea.
    - Sclera.
    - Iris and pupil.
    - Lens.

What You Write Down:

1. Write down on the data form one of the following: "**Normal**," "**Abnormal**," or "**Unable**."

2. Note any anterior segment abnormalities that are clinically significant or conditions requiring further care or referral (i.e. ptosis, blepharitis, and conjunctivitis).

3. Indicate if you judge the anterior chamber to be too shallow to allow safe dilation of the child's eyes.

Remember!

1. Judge whether the anterior chamber appears adequately deep for dilation.

10.3.10 Cyclopegic/Mydriatic Drop Instillation

What Are You Testing?

Cycloplegic retinoscopy and binocular indirect ophthalmoscopy require prior instillation of cycloplegic/mydriatic drops. This procedure describes the technique of eye drop instillation.

What You Need to Do the Test:

1. A bottle of VIP combination drops.
2. A box of tissues.
3. An assistant, if available.
4. A washable toy for the child to hold during eye drop instillation.

Getting Ready:

1. Wash your hands or use an antibacterial wipe prior to and after eye drop instillation.
2. Give the child a toy to hold and have him/her lie down on the Freeman flip-top seat looking up towards the ceiling.

How You Do the Procedure:

1. If the anterior chamber is too shallow, do **not** administer drops. Indicate on the data form that no drops were given.
2. Grasp the child's top and bottom eyelids with your fingers and quickly instill one combination drop in each of the child's eyes. Wipe any excess drops or tears on the child's cheek with a tissue.
3. The hand holding the bottle should be braced on the child's forehead.
4. If available, have an assistant hold the child's head or hands.
5. Twenty to thirty seconds later follow with a second combination drop in each eye, while pressing your finger on the child's lower punctum to minimize systemic absorption. Wipe any excess drops or tears on the child's cheek with a tissue. **This second drop is not optional.**
6. Retinoscopy should occur in 30-40 minutes after the last drop.

What You Tell the Child:

1. Tell the child to look up at the ceiling.

2. Tell the child that you are going to place an eye drop in his/her eye.

3. Tell the child that he/she may briefly feel the first eye drop.

4. Prior to the instillation of the second drop, repeat the instruction to the child to keep looking up at the ceiling.

What You Write Down:

1. Indicate the drops that were administered to each eye.

2. Write down the time that the last drop was instilled.

3. Indicate on the data form if no drops were given.

Remember!

1. Block the punctum and wipe any excess tears or eye drops with the tissue.

2. Instill the eye drops quickly.

10.3.11 Cycloplegic Retinoscopy

What Are You Testing?

Cycloplegic retinoscopy measures the child's refractive error. It is the Gold Standard refraction technique. The retinoscopy spectacles ensure that the vertex distance is kept constant and that residual accommodation is relaxed.

What You Need to Do the Test:

1. A streak retinoscope.
2. A distance fixation target in the form of a VCR and tape.
3. Remote control for the VCR system.
4. A retinoscopy rack or trial lens set.
5. Retinoscopy spectacles corresponding to the examiner's working distance: +2.00 DS (50 cm), +1.75 DS (57 cm), or +1.50 DS (67 cm).
6. A box of tissues.

Getting Ready:

Place the examiner's chair to allow for a 50 to 67 cm working distance.

1. Set up the distance fixation target at least 10 feet from the child's chair.
2. Instill the eye drops a minimum of 30 minutes before performing cycloplegic retinoscopy.
3. Lower the VCR to the child's eye level.
4. Dim the lights by manually turning off the overhead lights.

How You Do the Test:

1. Position the child facing the distance fixation device at the end of room.
2. The right eye is measured first.
3. The examiner is positioned facing the child so that his/her right eye is directly in front of the child's right eye.
4. Place the retinoscopy glasses (in the appropriate power for the working distance) on the child's face.

5. The examiner activates the distance fixation target with the remote control.

6. Use a retinoscopy lens rack or hand-held trial lenses to neutralize the refractive error.

7. The examiner may perform cycloplegic retinoscopy in his/her customary manner.

8. If the child has overt strabismus, care should be taken to perform retinoscopy on axis. Reposition the child and examiner as necessary to achieve distance fixation and to maintain the working distance.

9. The procedure is then repeated for the left eye.

10. Wipe off the temples and bridge of the glasses with a tissue after testing.

What You Tell the Child:

1. Tell the child to keep looking at the distance fixation target.

2. Tell the child that you are going to look in his/her eyes with a light.

3. Repeat the instruction to the child to keep looking at the distance fixation object.

What You Write Down:

1. The refractive error present over the retinoscopy spectacles is recorded in standard prescription notation (either plus or minus cylinder form) on the data sheet. If there is no cylinder, put a dash in each of the fields for Cyl and Axis. If the refractive error is plano, also put a dash in the Sphere field.

2. Record the power of the spherical and cylindrical lenses to the nearest 0.25 diopter. Lens powers must be recorded with two decimal places (.00, .25, .50, or .75).

3. You may use the optical cross on the data form as a scratch pad prior to recording the refractive error in standard prescription notation on the GSE form.

Remember!

1. The examiner must constantly remind the child to maintain fixation on the distance target so that retinoscopy occurs on axis and any residual accommodation, if present, is stable and relaxed.

10.3.12 Binocular Indirect Ophthalmoscopy

What Are You Testing?

Binocular Indirect Ophthalmoscopy (BIO) is a technique that provides a thorough view of the retina and vitreous through a dilated pupil in order to evaluate the health of the interior of the eye and to identify structural abnormalities that may be associated with reduced visual acuity thereby aiding in the diagnosis of amblyopia.

What You Need to Do the Test:

1. A binocular indirect ophthalmoscope.

2. A hand-held +20 D or +28 D condensing lens.

3. A penlight toy or sparkle ball to maintain interest and fixation by the child.

Getting Ready:

1. Chairs for the child and the examiner are placed 2 feet apart.

2. The child should have received the cycloplegic eye drops between 30 and 50 minutes prior to ophthalmoscopy.

3. Wash and dry your hands before performing the procedure on each child.

How You Do the Test:

1. The BIO is positioned on the examiner's head, and the headband, oculars, pupillary distance, and illumination system are adjusted.

2. The right eye is examined first.

3. The examiner is positioned facing the child, so that the examiner is directly in front of the child's right eye.

4. Hold the condensing lens in the left hand, between the thumb and index fingers.

5. **Posterior pole view:** Brace the dominant hand on the child's face while holding the condensing lens in front of the child's right eye, keeping the lens parallel to the child's face. It may be helpful to hold a penlight or fixation target near the examiner's right ear and encourage the child to look at the target with their left eye. This should allow the examiner to obtain a view of the disc and macula. Only hold the child's eyelids open if necessary.

6. **Mid-peripheral views:** Ask the child to look up and shine the BIO into the center of the condensing lens and pupil, adjusting the relationship between the BIO, condensing lens, and child's pupil to provide for a clear reflex filling the width of the lens.

7. Failure to obtain peripheral views does not require recording abnormal.

8. Scan the fundus through the condensing lens in all positions of gaze, directing the child to change fixation as instructed. Move the fixation target accordingly to help obtain peripheral views.

9. The procedure is then repeated for the left eye.

What You Tell the Child:

1. Tell the child that you are going to look into his/her eyes with a light.

2. Tell the child to keep looking in the proper direction of gaze (toward the fixation target) and to keep his/her eyes open wide.

3. Periodically repeat the instruction to keep looking in the proper direction of gaze toward the fixation target.

What You Write Down:

1. Mark whether the structure is normal or abnormal for each anatomical site (macula, disc, media, and mid-peripheral retina). If a site cannot be viewed, mark "**Incomplete**."

2. Abnormal should be marked only if the findings indicate a condition or possible condition affecting eye health or vision. Such findings as nevi, large optic cups (but within the range of variation of healthy eyes) **should not be noted** as abnormal.

3. Specify abnormalities in the write-in box.

Remember!

1. Keep reminding the child to keep his/her eyes open and to maintain steady attention to the fixation target during the exam.

2. Keep the relationship between the BIO, condensing lens, and child stable and synchronized so that the image of the fundus within the condensing lens is optimal.

10.4 GSE Forms

10.4.1 VIP Form GE

Vision In Preschoolers Study

Gold Standard Exam

VIP Form GE (302.5)

Page 1 of 7

1. Identification

ID: _ _ - _ _ - _ _ _ _ DOB: _ _ - _ _ - _ _ _ _
Day Month Year

Name: _____

2. Color Square Test

a) Pretest

Able ( )1

Unable ( )0 → Stop color test. Go to Item 3

b) Finds **green** square 4 or 5 times

Yes ( )1

No ( )0

Incomplete ( )2

c) Finds **blue** square 4 or 5 times

Yes ( )1

No ( )0

Incomplete ( )2

3. Visual Acuity - Binocular Pretest

Able ( )1 → 3a. Visual Acuity - OD 20/_____ ☐1 ✓ if incomplete

3b. Visual Acuity - OS 20/_____ ☐1 ✓ if incomplete

Unable - Training card ( )2

Unable - PC Monitor ( )3

4. Determine if VA retest required.

No VA re-test required ( )0

VA re-test required ( )1

Coord Ctr Use Only: Initials_ _ _

Date: _ _ - _ _ - _ _

Vision In Preschoolers Study

Gold Standard Exam

5. Stereo Smile
(Check 1 card only–the last card with 4 correct)

Unable to do Card A ( )$_0$ **(STOP!)**

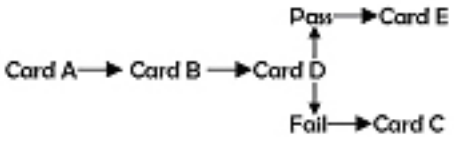
Card A ( )$_1$

Card B ( )$_2$

Card C ( )$_3$

Card D ( )$_4$

Card E ( )$_5$



☐$_1$ ✓ if incomplete

6. Distance cover testing

Tropia (total deviation) ( )$_1$

No tropia and no phoria ( )$_2$

No tropia; phoria unknown ( )$_3$

Can't determine ( )$_4$

Phoria & no tropia ( )$_5$

6A. Laterality ☐$_1$ ✓ if incomplete
- Right ( )$_1$
- Left ( )$_2$
- Alternating ( )$_3$

6B. Frequency ☐$_1$ ✓ if incomplete
- Constant ( )$_1$
- Intermittent ( )$_2$

6C. Direction (largest) ☐$_1$ ✓ if incomplete
- Eso ( )$_1$
- Exo ( )$_2$
- Hyper ( )$_3$
- Hypo ( )$_4$

6D. Magnitude ____PD ☐$_1$ ✓ if incomplete
(Total Deviation)

6E. Direction (largest) ☐$_1$ ✓ if incomplete
- Eso ( )$_1$
- Exo ( )$_2$
- Left Hyper ( )$_3$
- Right Hyper ( )$_4$

6F. Magnitude ____PD ☐$_1$ ✓ if incomplete
(Total Deviation)

ID: __ __ - __ __ - __ __ __

Name: _____

Vision In Preschoolers Study

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7. Near cover testing

Tropia (total deviation) ( )1

No tropia and no phoria ( )2

No tropia; phoria unknown ( )3

Can't determine ( )4

Phoria & no tropia ( )5

7A. Laterality ☐1 ✓ if incomplete
- Right ( )1
- Left ( )2
- Alternating ( )3

7B. Frequency ☐1 ✓ if incomplete
- Constant ( )1
- Intermittent ( )2

7C. Direction (largest) ☐1 ✓ if incomplete
- Eso ( )1
- Exo ( )2
- Hyper ( )3
- Hypo ( )4

7D. Magnitude ____PD ☐1 ✓ if incomplete
(Total Deviation)

7E. Direction (largest) ☐1 ✓ if incomplete
- Eso ( )1
- Exo ( )2
- Left Hyper ( )3
- Right Hyper ( )4

7F. Magnitude ____PD ☐1 ✓ if incomplete
(Total Deviation)

8. Versions

No tropia in non-primary gaze ( )1

Tropia in non-primary gaze ( )2

Can't Determine ( )3

8A. Abnormalities (Comments):

_____

_____

8B. Ductions (Comments):

_____

_____

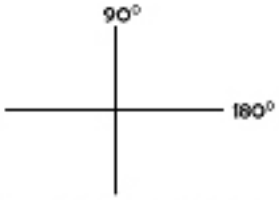
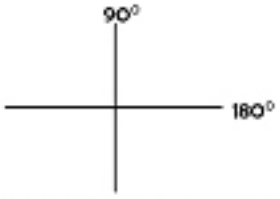
ID: __ __ - __ __ - __ __ __

Name: _____

Vision In Preschoolers Study

Gold Standard Exam

9. Non-cycloplegic retinoscopy
Use zeros or dashes in <u>each</u> field [sphere, cyl, axis] for plano

OD	OS
+/− ___.__ × ___ (Circle / Sphere / Circle / Cyl / Axis)	+/− ___.__ × ___ (Circle / Sphere / Circle / Cyl / Axis)
OR Can't Determine ☐ 1	Can't Determine ☐ 1
☐ 	☐ 

10. Anterior segment

Normal	( )1
Abnormal	( )2 → 10A. Abnormal, Specify: _____ _____ _____
Too shallow for drops	( )3
Can't Determine	( )4

11. Drops

NOTE: Both sets of combination drops are REQUIRED!

Check if administered	**OD**	**OS**
a) ✓ Check if no drops administered	☐	☐
b) 0.5% proparacaine (Optional)	( )1	( )1
c) 1st combination drop (Required)	( )1	( )1
d) 2nd combination drop (Required)	( )1	( )1

12. Time last drop:

__ __:__ __

ID: __ __ - __ __ - __ __ __

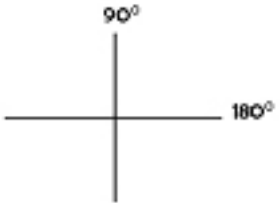
Name: _____

Vision In Preschoolers Study

Gold Standard Exam

13. Cycloplegic retinoscopy

Use zeros or dashes in <u>each</u> field [sphere, cyl, axis] for plano

OD	OS
+ / - ___ . __ __ (Circle / Sphere) + / - ___ . __ __ (Circle / Cyl) x ____ (Axis)	+ / - ___ . __ __ (Circle / Sphere) + / - ___ . __ __ (Circle / Cyl) x ____ (Axis)
☐ 1 ✓ if retinoscopy glasses refused	☐ 1 ✓ if retinoscopy glasses refused
OR Can't Determine ☐ 1	Can't Determine ☐ 1
WORK SPACE 	WORK SPACE 

14. Is VA retest required?

No ( )0

Yes ( )1 ____

Test with full cycloplegic refraction in place

Test worse eye first. If no difference, test right eye first.

14a. Visual Acuity - OD

20/_____

☐ 1 ✓ if incomplete/unable

14b. Visual Acuity - OS

20/_____

☐ 1 ✓ if incomplete/unable

ID: __ __ - __ __ - __ __ __

Name: _____

Vision In Preschoolers Study

Gold Standard Exam

15. Binocular indirect ophthalmoscopy

OD EXAM	Normal	Abnormal	Incomplete
a) Macula	( )1	( )2	( )3
b) Disc	( )1	( )2	( )3
c) Media	( )1	( )2	( )3
d) Mid-Periph Ret	( )1	( )2	( )3

15A. Specify:

_____

_____

_____

16. Binocular indirect ophthalmoscopy

OS EXAM	Normal	Abnormal	Incomplete
a) Macula	( )1	( )2	( )3
b) Disc	( )1	( )2	( )3
c) Media	( )1	( )2	( )3
d) Mid-Periph Ret	( )1	( )2	( )3

16A. Specify:

_____

_____

_____

17. Any extraordinary findings on the entire exam? (Clinically important conditions that have not yet been identified).

Yes ( )1

No ( )0

17A. Comments:

_____

_____

_____

18. Examiner

a). Examiner's Initials: ___ ___

First Last

b). Examiner's Certification Number:

___ ___ ___ ___

19. Date of Exam

___ ___ / ___ ___ / 200 ___

Month Day Year

ID: __ __ - __ __ - __ __ __

Name: _____

Vision In Preschoolers Study

Gold Standard Exam

NOTE: Detach this page ONLY from the rest of the form and keep it in the child's VIP folder. Do NOT return this page to the Coordinating Center. This page should be used as a reference to respond to parents' questions.

Examination findings

_____

_____

_____

_____

_____

Spectacle correction

None ☐ **OR**

OD: + / - __ __ . __ __ (Circle / Sphere) + / - __ __ . __ __ (Circle / Cyl) x __ __ __ (Axis)

OS: + / - __ __ . __ __ (Circle / Sphere) + / - __ __ . __ __ (Circle / Cyl) x __ __ __ (Axis)

Referrals Made (If any)

Additional Notes

_____

_____

_____

_____ _____

Signature Date

ID: __ __ - __ __ - __ __ __

Name: _____

10.4.2 VIP Form GG (For Children Wearing Glasses)

Vision In Preschoolers Study

Gold Standard Exam

For Children Wearing Glasses

VIP Form GG (303.5)

Page 1 of 9
Yellow

1. Identification

ID: __ - __ - ____ DOB: __ - __ - ____
Day Month Year

Name: _____

2. Color Square Test

a) Pretest
Able ( )1
Unable ( )0 → Stop color test. Go to item 3

b) Finds **green** square 4 or 5 times

Yes ( )1
No ( )0
Incomplete ( )2

c) Finds **blue** square 4 or 5 times

Yes ( )1
No ( )0
Incomplete ( )2

(Use zeros or dashes in each field [sphere, cyl, axis] for plano)

3. Lensometry

Single Vision Spectacles ( )1 →
3A. OD: + / - ___ . __ - ___ . __ x ___
Circle Sphere Cyl Axis
3B. OS: + / - ___ . __ - ___ . __ x ___
Circle Sphere Cyl Axis

Bi-focal ( )2 →
3C. OD: + / - ___ . __ - ___ . __ x ___
Circle Sphere Cyl Axis
3D. OS: + / - ___ . __ - ___ . __ x ___
Circle Sphere Cyl Axis
3E. OD: + _ . __ OS: + _ . __

4. Visual Acuity - Binocular Pretest (with glasses)

Able ( )1 →
Unable - Training card ( )2
Unable - PC Monitor ( )3

4a. Visual Acuity - OD **(With GLASSES)**
20/_____ ☐1 ✓ if incomplete
4b. Visual Acuity - OS **(With GLASSES)**
20/_____ ☐1 ✓ if incomplete

5. Determine if VA retest required.

No VA re-test required ( )0
VA re-test required ( )1

Coord Ctr Use Only: Initials__ __ __
Date: __ __ - __ __ - __ __

Vision In Preschoolers Study

Gold Standard Exam

For Children Wearing Glasses

6. Stereo Smile WITH GLASSES
(Check 1 card only-the last card with 4 correct)

Unable to do Card A ( )0 **(STOP, go to item 7.)**

Card A ( )1
Card B ( )2
Card C ( )3
Card D ( )4
Card E ( )5

☐1 ✓ if incomplete

7. Distance cover testing (Without Glasses)

Tropia (total deviation) ( )1
No tropia and no phoria ( )2
No tropia; phoria unknown ( )3
Can't determine ( )4
Phoria & no tropia ( )5

7A. Laterality ☐1 ✓ if incomplete
Right ( )1
Left ( )2
Alternating ( )3

7B. Frequency ☐1 ✓ if incomplete
Constant ( )1
Intermittent ( )2

7C. Direction (largest) ☐1 ✓ if incomplete
Eso ( )1
Exo ( )2
Hyper ( )3
Hypo ( )4

7D. Magnitude ____PD ☐1 ✓ if incomplete
(Total Deviation)

7E. Direction (largest) ☐1 ✓ if incomplete
Eso ( )1
Exo ( )2
Left Hyper ( )3
Right Hyper ( )4

7F. Magnitude ____PD ☐1 ✓ if incomplete
(Total Deviation)

ID: __ __ - __ __ - __ __ __

Name: _____

Vision In Preschoolers Study

Gold Standard Exam

For Children Wearing Glasses

8. Near cover testing (Without Glasses)

Tropia (total deviation) ( )1
No tropia and no phoria ( )2
No tropia; phoria unknown ( )3
Can't determine ( )4
Phoria & no tropia ( )5

8A. Laterality ☐1 ✓ if incomplete
Right ( )1
Left ( )2
Alternating ( )3

8B. Frequency ☐1 ✓ if incomplete
Constant ( )1
Intermittent ( )2

8C. Direction (largest) ☐1 ✓ if incomplete
Eso ( )1
Exo ( )2
Hyper ( )3
Hypo ( )4

8D. Magnitude ____PD ☐1 ✓ if incomplete
(Total Deviation)

8E. Direction (largest) ☐1 ✓ if incomplete
Eso ( )1
Exo ( )2
Left Hyper ( )3
Right Hyper ( )4

8F. Magnitude ____PD ☐1 ✓ if incomplete
(Total Deviation)

ID: __ __ - __ __ - __ __ __

Vision In Preschoolers Study

Gold Standard Exam

For Children Wearing Glasses

9. Distance cover testing (With Glasses)

Tropia (total deviation) ( )$_1$
No tropia and no phoria ( )$_2$
No tropia; phoria unknown ( )$_3$
Can't determine ( )$_4$
Phoria & no tropia ( )$_5$

9A. Laterality ☐$_1$ ✓ if incomplete
Right ( )$_1$
Left ( )$_2$
Alternating ( )$_3$

9B. Frequency ☐$_1$ ✓ if incomplete
Constant ( )$_1$
Intermittent ( )$_2$

9C. Direction (largest) ☐$_1$ ✓ if incomplete
Eso ( )$_1$
Exo ( )$_2$
Hyper ( )$_3$
Hypo ( )$_4$

9D. Magnitude ____PD ☐$_1$ ✓ if incomplete
(Total Deviation)

9E. Direction (largest) ☐$_1$ ✓ if incomplete
Eso ( )$_1$
Exo ( )$_2$
Left Hyper ( )$_3$
Right Hyper ( )$_4$

9F. Magnitude ____PD ☐$_1$ ✓ if incomplete
(Total Deviation)

ID: __ __ - __ __ - __ __ __

Vision In Preschoolers Study

Gold Standard Exam

For Children Wearing Glasses

10. Near cover testing (With Glasses)

Tropia (total deviation) ( )1
No tropia and no phoria ( )2
No tropia; phoria unknown ( )3
Can't determine ( )4
Phoria & no tropia ( )5

10A. Laterality ☐1✓ if incomplete
Right ( )1
Left ( )2
Alternating ( )3

10B. Frequency ☐1✓ if incomplete
Constant ( )1
Intermittent ( )2

10C. Direction (largest) ☐1✓ if incomplete
Eso ( )1
Exo ( )2
Hyper ( )3
Hypo ( )4

10D. Magnitude ____PD ☐1✓ if incomplete
(Total Deviation)

10E. Direction (largest) ☐1✓ if incomplete
Eso ( )1
Exo ( )2
Left Hyper ( )3
Right Hyper ( )4

10F. Magnitude ____PD ☐1✓ if incomplete
(Total Deviation)

11. Versions

No tropia in non-primary gaze ( )1
Tropia in non-primary gaze ( )2
Can't Determine ( )8

11A. Abnormalities (Comments):

_____

_____

_____

11B. Ductions (Comments):

_____

_____

_____

ID: __ __ - __ __ - __ __ __

Name: _____

Vision In Preschoolers Study

Gold Standard Exam

For Children Wearing Glasses

12. Non-cycloplegic retinoscopy
(Without Presenting Glasses)

(Use zeros or dashes in <u>each</u> field [sphere, cyl, axis] for plano)

OD	OS
+ / - ___ . __ __ **+ / -** ___ . __ __ x ____	**+ / -** ___ . __ __ **+ / -** ___ . __ __ x ____
Circle Sphere Circle Cyl Axis	Circle Sphere Circle Cyl Axis
OR **Can't Determine** ☐ 1	**Can't Determine** ☐ 1
WORK SPACE 90° 180°	**WORK SPACE** 90° 180°

13. Anterior segment

Normal	( )1
Abnormal	( )2 → 13A. Abnormal, Specify: _____ _____ _____
Too shallow for drops	( )3
Unable	( )4

14. Drops

NOTE: Both sets of combination drops are REQUIRED!

Check if administered	**OD**	**OS**
a) ✓ Check if no drops administered	☐	☐
b) 0.5% proparacaine (Optional)	( )1	( )1
c) 1st combination drop (Required)	( )1	( )1
d) 2nd combination drop (Required)	( )1	( )1

15. Time last drop:

__ __:__ __

ID: __ __ - __ __ - __ __ __

Name: _____

Vision In Preschoolers Study

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For Children Wearing Glasses

16. Cycloplegic retinoscopy (Without Presenting Glasses)
(Use zeros or dashes in <u>each</u> field [sphere, cyl, axis] for plano)

OD	OS
+ / − ___ . __ Circle Sphere + / − ___ . __ Circle Cyl × ___ Axis	+ / − ___ . __ Circle Sphere + / − ___ . __ Circle Cyl × ___ Axis
☐1 ✓ if retinoscopy glasses refused	☐1 ✓ if retinoscopy glasses refused
OR Can't Determine ☐1	Can't Determine ☐1
WORK SPACE 90° 180°	WORK SPACE 90° 180°

17. Is VA retest required

No ( )0
Yes ( )1 ____

Test with full cycloplegic refraction in place

Test worse eye first. If no difference, test right eye first.

17a. Visual Acuity - OD
20/_____ ☐1 ✓ if incomplete/unable

17b. Visual Acuity - OS
20/_____ ☐1 ✓ if incomplete/unable

18. Binocular indirect ophthalmoscopy

OD EXAM	Normal	Abnormal	Incomplete
a) Macula	( )1	( )2	( )8
b) Disc	( )1	( )2	( )8
c) Media	( )1	( )2	( )5
d) Mid Periph. Ret	( )1	( )2	( )5

18A. Specify:
_____
_____
_____
_____

ID: __ __ - __ __ - __ __ __
Name: _____

Vision In Preschoolers Study

Gold Standard Exam

For Children Wearing Glasses

19. Binocular indirect ophthalmoscopy

OS EXAM	Normal	Abnormal	Incomplete
a) Macula	( )1	( )2	( )3
b) Disc	( )1	( )2	( )3
c) Media	( )1	( )2	( )3
d) Mid Periph. Ret	( )1	( )2	( )3

19A. Specify:

_____

_____

_____

_____

20. Any extraordinary findings on the entire exam? (Clinically important conditions that have not yet been identified)

Yes ( )1
No ( )0

20A. Comments:

_____

_____

_____

_____

21. Examiner

a). Examiner's Initials: ___ ___
First Last

b). Examiner's Certification Number:

___ ___ ___ ___

22. Date of Exam

___ ___ - ___ ___ - 200 ___
Month Day Year

ID: __ __ - __ __ - __ __ __

Name: _____

Vision In Preschoolers Study

Gold Standard Exam

For Children Wearing Glasses

NOTE: Detach this page ONLY from the rest of the form and keep it in the child's VIP folder. Do NOT return this page to the Coordinating Center. This page should be used as a reference to respond to parents' questions.

Examination findings

_____

_____

_____

_____

_____

Spectacle correction

None ☐ **OR**

OD: **+ / -** (Circle) __ __ . __ __ **+ / -** (Circle) __ __ . __ __ (Sphere / Cyl) x __ __ __ (Axis)

OS: **+ / -** (Circle) __ __ . __ __ **+ / -** (Circle) __ __ . __ __ (Sphere / Cyl) x __ __ __ (Axis)

Referrals Made (if any)

Additional Notes

_____

_____

_____

_____ _____

Signature Date

ID: __ __ - __ __ - __ __ __

Name: _____

10.5 GSE Reminders

10.5.1 F2 Color Vision Testing GSE Reminders

1. PC's record F2 results on GSE data forms.

2. An extra label containing all of the child's information that needs to be entered into the Palm Pilot is provided directly to the GS Examiners.

3. Children will wear their glasses when doing the F2 Color test.

4. If the child's glasses are tinted, the F2 test is done with trial frames.

10.5.2 EVA Visual Acuity Testing GSE Reminders

1. Key your ID number, child's ID number, first 2 letters of first & last name & DOB into Palm Pilot while PC conducts F2 Color testing and prior to child entering exam room.

2. If the child wears glasses, use the GSE "with glasses" form (yellow form).

3. Pretest *binocularly* with the 4 crowded HOTV letters at approximately 2 feet.

4. Child must be able to identify (match) all 4 letters (additional training permitted).

5. If a parent helps the child answer, the tester must:

    - Move in front of the monitor and block the child's view.
    - Pretend to make a change to the system.
    - Move away from the monitor and present the same letter to the child.

6. The initial test of visual acuity is made with the child wearing his/her current glasses.

7. VIP Criteria for Retesting VA: Visual acuity retesting must be conducted at the end of the eye examination if:

   - A VA was not obtained for one or both eyes.
   - For 3-year-olds: One or both eyes have VA *worse than* 20/50.
   - For 4-year-olds: One or both eyes have VA *worse than* 20/40.
   - There is an inter-eye difference of 0.2 logMAR or greater and the worse eye is 20/32 or worse.

8. When conducting VA retesting:

   - Retest both eyes – start with the eye with the worse acuity.
   - Test the child in the full cycloplegic refraction. Use trial frames or clips that attach extra lenses to the child's glasses.

10.5.2.1 EVA Equipment Failure

1. If the Palm system fails after completing testing on the right eye, to test the left eye do the following:

   - Bypass (click through) the binocular phase.
   - Advance directly to the cue: "Is the left eye patched?"
   - Proceed with testing.
   - Write down the results for the left eye on the data form.
   - Because data for the right eye will not be saved in the Palm, follow the instructions contained in "VIP Criteria for Retesting VA" to decide if retesting is necessary.

10.5.3 Stereo Smile II Stereoacuity Testing GSE Reminders

1. Put glasses on the child.

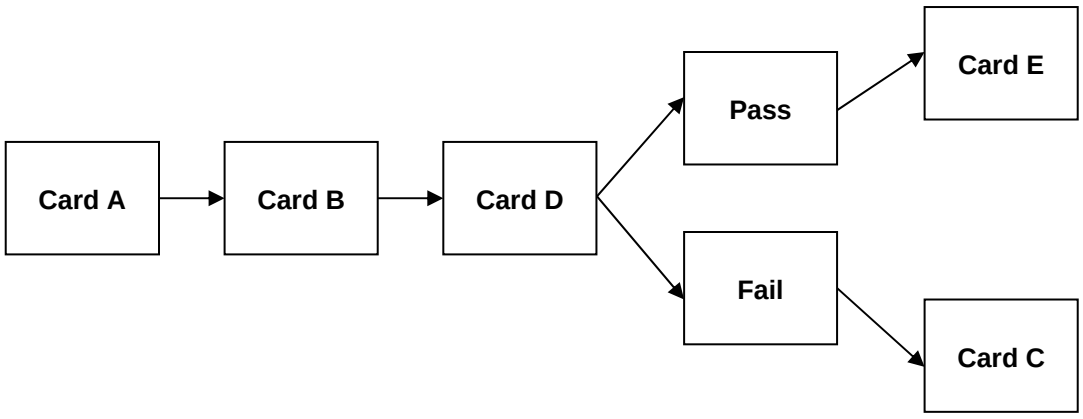
2. Use the marks on the wall to make sure that the distance between the child's eyes and the test cards is 40 cm.

3. Repeatedly show **Card A** paired with the **BLANK card** until:

   - The child gets 4 out of 4 or 4 out of 5 correct **[CONTINUE TO CARD B + BLANK]** or
   - The child misses 2 **[STOP; check UNABLE on data form]**.

4. Repeatedly show **Card B** paired with the **BLANK card** until:
    - The child gets 4 out of 4 or 4 out of 5 correct **[CONTINUE TO CARD D + BLANK]** or
    - The child misses 2 **[STOP; check CARD A on data form]**.
5. Repeatedly show **Card D** paired with the **BLANK card** until:
    - The child gets 4 out of 4 or 4 out of 5 correct **[CONTINUE TO CARD E + BLANK]** or
    - The child misses 2 **[STOP; GO TO CARD C + BLANK]**.
6. If you continued to **Card E + BLANK**, repeatedly show **Card E** paired with the **BLANK card** until:
    - The child gets 4 out of 4 or 4 out of 5 correct **[STOP; check CARD E on data form]** or
    - The child misses 2 **[STOP; check CARD D on data sheet]**.
7. If you went to **Card C + BLANK**, repeatedly show **Card C** paired with the **BLANK card** until:
    - The child gets 4 out of 4 or 4 out of 5 correct **[STOP; check CARD C on data form]** or
    - The child misses 2 **[STOP; check CARD B on data sheet]**.
8. Wipe off the temples and bridge of the glasses.

Flowchart:



10.5.4 Cover Testing GSE Reminders

1. When a tropia **or** a phoria is present; measure the angle:
    - With prism before the deviating eye.
    - Measure using the alternate cover stroke.
    - Record the total deviation in prism diopters:
        - in 5D for tropia
        - in 5F for phoria
2. When measuring a tropia with the alternate cover stroke, do NOT allow the subject to re-fuse while changing measuring prisms.
3. Record only the magnitude of the larger deviation; additional information can be written on the recording form under the clinical care section.
4. Sticker fixation targets exactly like those found on the fixation sticks may be substituted for the sticks. The sticker is placed on the examiner's nose to maintain the correct fixation distance.

10.5.5 Noncycloplegic Retinoscopy GSE Reminders

1. Dim the lights.
2. Use retinoscopy glasses corresponding to the examiner's working distance.
3. Wipe off the temples and bridge of the glasses after testing.
4. Turn the overhead lights back on.

10.5.6 Drop Instillation GSE Reminders

1. The standard procedure is 2 drops of the VIP combination agent in each eye for cycloplegia/mydriosis.
2. The second instillation of drops is **Not** optional.
3. Cycloplegic retinoscopy is completed at least 30 minutes after instillation of all drops.

10.5.7 Cycloplegic Retinoscopy GSE Reminders

1. Dim the lights.
2. Use retinoscopy glasses corresponding to the examiner's working distance.
3. Wipe off the temples and bridge of the glasses after testing.
4. Turn overhead lights back on.
5. Remember to indicate if the child wouldn't wear retinoscopy glasses.

10.5.8 Binocular Indirect Ophthalmoscopy GSE Reminders

1. Cup to disc ratios are judged abnormal:
   - For African Americans at > 4D.
   - For non African Americans at > 3D.
   - At ≥ 2D difference between the eyes.
2. Observation of mid-peripheral retina is adequate; no need to view far periphery.

10.5.9 Anterior Segment Assessment GSE Reminders

1. When the anterior chamber angle is judged to be abnormal:
   - Drops should not be administered.
   - The child should be referred for complete exam.

10.6 Communicating the Results of the GSE to Parents/Guardians and Management/Referral of Subjects with Vision Problems

Parents/guardians of children examined from both Medical Home and Educational/Daycare settings will be advised of their child's GSE results. For those children enrolled in Head Start sites, the Head Start Nurse/Health Coordinators will also be advised of the GSE results, with parental permission. Following the GSE, parents/guardians will receive "Parent Summary of Eye Exam Results" form (see Chapter 5). The PC or APC will prepare the summary letter for the review and signature

of the GS Examiner at the time of the GSE session. The Principal Investigator will review all summary letters prior to distribution. The letters will be distributed to each parent/guardian following the exam. For those children enrolled in Head Start, the Head Start Nurse/Health Coordinator at the child's Head Start site will receive a copy of the summary letter for inclusion in the child's Head Start file. With parental permission, a copy of the summary letter will also be sent to the child's health care provider. One copy of the parent summary letter will be included in the child's subject file at the Clinical Center.

Children found to have vision problems or potential vision problems as determined by the GSE will be managed as follows: Children who require follow-up care will be referred to the appropriate health-care provider. Parents/guardians (and Head Start Nurse/Health Coordinators for those children enrolled in Head Start) will be advised of the outcomes of each child undergoing the GSE and any need for follow-up care.