## CONTENTS

Introduction  Page 3  
Screeners - General Information  Page 3  
Items & Equipment Needed for Screening  Page 3  
Camera Set-Up & Screening Area Set-Up  Page 3-5  
  - Fuses, Location and Changing Instructions  Page 3  
Cleaning the Camera Parts  Page 6  
  - Chin and Forehead Rest  Page 6  
  - Camera Lens  Page 6  
  - Touch Screen Panel  Page 6  
Paperwork  Page 7  
  Important Things To Remember  Page 7  
Who Can Be Screened?  Page 7  
The Screening Process  Page 8-11  
  - Positioning the Participant  Page 8  
  - Hats, Glasses, Contact Lens  Page 8  
  - Communication During The Process  Page 9-10  
  - Camera Falls To Find The Eye  Page 11  
  - Manual Alignment  Page 11  
Reviewing The Screening Photos  Page 12  
  - What is a good photo?  Page 12  
  - Retaking photos  Page 12  
  - Deleting Photos (Not Recommended)  Page 12  
  - Send Photos For Grading  Page 12  
    (See also Mass Photo Upload)  Page 14  
What If A Clear Photo Can Not Be Taken?  Page 13  
Communicating Results  Page 13  
Sending in Forms/ Lion N. Callahan PDG’s Address  Page 13  
Verizon Wireless Jetpack ®  Page 13  
Mass Upload (Sending photos for grading)  Page 14  
System Shut-Down  Page 15  
Storing the Camera and Miscellaneous Notes  Page 15
WHAT IS DIABETIC RETINOPATHY and RETINOPATHY SCREENING?

Retinopathy is a disease of the retina. The retina is the nerve layer at the back of the eye. It is the part of the eye that "takes pictures" and sends the images from the eye to the brain. Many people with diabetes get retinopathy. This kind of retinopathy is called diabetic retinopathy (retinal disease caused by diabetes).

Diabetic retinopathy can lead to poor vision and even blindness. Frequently, it gets worse over time. At first, the blood vessels in the eye get weak. This can lead to blood and other fluid leaking into the retina from the blood vessels. This is called nonproliferative retinopathy. This is the most common retinopathy. When fluid leaks into the center of the eye it can cause blurry vision. Most people at this stage of nonproliferative retinopathy have no symptoms.

If blood glucose levels stay high, diabetic retinopathy will keep getting worse. New blood vessels grow on the retina. This may sound good but these new blood vessels are weak. They can break open very easily even during sleep. If they break open, blood can leak into the middle part of the eye, in front of the retina, and change vision. This bleeding can also cause scar tissue to form which can pull on the retina and cause the retina to move away from the wall of the eye (retinal detachment). This is called proliferative retinopathy. Sometimes people don't have symptoms until it is too late to treat them. This is why having eye exams regularly is so important. The earlier a problem is detected, the higher the chance of saving a person's eyesight.

Retinopathy can also cause swelling of the macula of the eye. The macula is the middle of the retina which sees details. When the macula swells it can make vision much worse. It can even cause legal blindness. This is called macular edema.

Lions are 'photographers' not diagnosticians. The retinopathy screening process performed by Lions is very simple. 1) One readable image is taken of each eye. 2) The images are sent to a professional for review. 3) Notification is sent advising the participant if his/her eyes are okay he/she will be notified he/she needs to seek care from an eye doctor as soon as possible.

The objective is to achieve the best readable images possible in a timely manner.

SCREENERS

Albeit one (1) person can do retina screening alone this is not an efficient method. Two (2) people are recommended:

1. Photographer: Enters data (name, etc.) into the camera & takes the photographs.
2. Assistant: Cleans the camera, helps photographer position participant, and fills out the card that the participant will leave with. The card will include blood glucose screening, vision acuity and indicate the participant has had a retina scan.

NOTE: These individuals are encouraged to "switch" jobs during the day so that everyone can experience all the steps.

ITEMS & EQUIPMENT NEEDED

<table>
<thead>
<tr>
<th>Camera and Camera Cords</th>
<th>Forms (Glucose &amp; Retina)</th>
<th>Cover for Lights (opt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chairs</td>
<td>Chair Cushion</td>
<td>Paperwork Trays (opt)</td>
</tr>
<tr>
<td>Table (Small is ok)</td>
<td>Pens</td>
<td>Black Cover for Camera</td>
</tr>
<tr>
<td>Alcohol Wipes</td>
<td>Masking Tape</td>
<td>Waste Can</td>
</tr>
<tr>
<td>Lens Cleaner Wipes</td>
<td>Tissues</td>
<td>Eye Chart (Vision Acuity)</td>
</tr>
</tbody>
</table>
1. Plug the camera into the camera table using the short, heavy black cord. a) Plug into the camera beside the On/Off Switch and b) into the front (bottom) of the table.

**FUSES:** If necessary to change fuses, "TWIST and PULL" to remove old fuse. "PUSH and TWIST" to install new fuse.
2. There are two cords.

   The ELECTRIC POWER CORD (the thinner black cord) is permanently attached to the table. Plug this cord into a power outlet.

   Next, plug the heavy black cord into the front of the table (just above where the electric cord is attached) and into the side of the camera beside the 'green' on/off switch.

   Tape cords to the floor with wide masking tape to prevent accidents.

   Electric Power Cord is attached to the camera here.

3. Remove the lens cap and store in a safe place immediately to prevent loss. (Suggestion: Store in your camera bag immediately upon removing!)

4. Turn the camera on at the On/Off switch. The camera will require no more than ten (10) minutes warm up and typically is much faster than 10 minutes. Turn on the Verizon Wireless Jetpack.  (See page 13 for Jetpack instructions)

5. Darken the room as much as possible. Close drapes. Cover any bright computer screens, etc. Better images are achieved in a dark room. However, you must be able to see to enter information via the camera's keyboard. If possible, have a helper positioned beside the rooms light switch to assist. Otherwise you will be getting up and down and not using your time productively.

6. Place a chair for the participant and the photographer. A cushion will be helpful to aid shorter individuals in correct positioning at the camera. Children or short adults may need to stand for photographs. Have one or more other chairs, away from the camera, for participants to wait while the operator enters data. This helps keep the camera lens clean!

7. Determine where you will place "incoming" paperwork from the Diabetes Screeners.

8. Determine where you will store completed forms.

9. Set-up cleaning and screening supplies near the camera.
10. CLEANING THE CHIN / FOREHEAD REST AND LENSES

A. Cleaning the CHIN and FOREHEAD REST - You will need isopropyl alcohol wipes to clean the entire area where the participant places his/her chin and forehead during set-up and after each participant. Use only ISOPROPYL ALCOHOL. Other cleaning agents may include an oxidizing agent that will damage the surfaces.

B. Cleaning the CAMERA LENS - The camera lens should be cleaned by using a small hand pump (air blower) to blow away dust. Should the camera lens require heavier cleaning, for instance due to the presence of a fingerprint, clean the camera lens with PHOTOGRAPHIC LENS CLEANING WIPES. Other chemicals will damage the lens.

1. To use the LENS CLEANING ASSISTANT : - From the Home Screen, click on TOOLS (top right corner of screen; looks like drawing of a wrench), then SYSTEM, then SERVICE, then LENS CLEANING ASSISTANT. A pop-up screen will instruct you to cover the optical head of the DRS with a black cloth, or turn off all ambient light. Press the SHOOT button. The camera will take a picture of the front lens and display it to you. Clean the lens as indicated, then SHOOT again. Repeat until the lens is clean.

2. To use the AUTOMATED LENS CLEANER - From ADMINISTRATION (top right corner of screen, click on SYSTEM, then SERVICE, then LENS CLEANING ASSISTANT.

C. Cleaning the TOUCH SCREEN PANEL - The touch screen panel should be cleaned only with a cloth dampened with water. Do not use alcohol or detergents to clean the touch screen as these may damage the film covering the panel.

NOTE: Any talking at all after the participant is positioned at the camera is likely to leave tiny droplets on the lens which will appear as ‘spots’ in the photographs.
PAPERWORK - FILL OUT FORMS COMPLETELY!

DIABETIC (BLOOD GLUCOSE) SCREENING, VISION TEST & PAPERWORK

Keep in mind Retina Screening is associated with grant dollars. There is a good reason for every question on the forms. The forms must be filled out completely. Glucose Screeners will complete this form and portions of the retinopathy form. The retina screener will complete the remainder of the retina form. A participant must receive a blood glucose screening prior to retina screening unless he/she is diabetic and can provide his/her own test numbers. Remember to ask when the test was conducted and note this on the form. Eyes (Vision Acuity) will also be tested, at this point, using an eye chart.

IMPORTANT THINGS TO REMEMBER

1. Add camera number to the top of EACH retinopathy screening form. This is important for matching the transmitted images to the paperwork.

2. Medical Consent form must be witnessed.

3. Retinopathy form must be signed (witnessed) by the retinopathy screener.

4. If the participant tells you something significant about his/her eye(s) remember to write it down on the form.

WHO SHOULD PROCEED FROM BLOOD GLUCOSE SCREENING TO RETINA SCREENING?

ALL DIABETICS
ALL PRE-DIABETICS
ALL A1C>5.7

ALL HIGH BLOOD GLUCOSE ABOVE NORMAL LEVELS
Anyone Who Wishes To Be Screened Regardless of glucose level.

Participants with blood glucose in the diabetic or pre-diabetic blood glucose ranges will be asked to fill out a MEDICAL CONSENT RELEASE FORM and continue to retina screening. Note: It is not uncommon for a participant to know they are diabetic or pre-diabetic and be taking medication to control blood glucose levels. These individuals should continue from blood glucose screening to retina screening.
SCREENING

1. Ask the participant to have a seat while you prepare to take photographs.

2. Review the paperwork for completeness. If any information is missing ask the participant to fill it in. A complete address including city, state and zip code is needed. CHECK TO MAKE SURE EMAIL ADDRESS IS READABLE. Make sure the eye test (paper chart) was done. If not, send the participant back to the blood glucose screeners for eye test. Enter LAST NAME, FIRST NAME, BIRTHDATE & GENDER into the camera's keyboard. (Code: Code is not needed. Leave 'blank' as it is.)

3. Double check (proofread) entries. CLICK ON SAVE.
4. Make sure the chin rest and forehead rest area have been wiped with alcohol wipes.

Note: All participants should remove glasses and hats. For participants with hair that may fall in front of their eyes ask them to please push their hair back away from their eyes. One hair will make a significant line in the photo as will a rogue eyelash! Talking by the participant after he/she begins positioning will cause spots on the image. As much as possible. try not to engage in two-way conversation. CONTACT LENS MAY REMAIN IN PLACE IN THE EYE.
5. While participant sits away from the camera explain how he/she needs to be positioned at the camera and inform him/her how the process will work.

   a) The test is non-invasive, in particular the system will never touch your eye and you will only see a flash of light when a photograph is taken;

   b) Find a comfortable position, keeping the chin and forehead firmly pressed against the rests; (If chin needs to be adjusted, ask the participant to sit back and tell you which direction it needs to go.)

   c) Please do not TALK after you are in position. If you need to respond to a question please do so with a "closed mouth" sound (examples: "Uh huh" or "Unt uh"). If asked if you need to be higher or lower please indicate by pointing up or down. If you must talk, please sit back from the camera.

   d) At the beginning of each test, the unit will move around to find your pupil;

   e) When the test starts look straight in front of you and when a small light becomes visible anywhere within the field look steady at it; "Eyes wide open...steady, steady, don't blink"

   f) Open your eyes wide so that eyelids do not interfere and try to not blink during the test;

   g) Please do not move during the test;

   h) If you follow these instructions the acquisition of a single photo will take less than 30 seconds.

6. Position the participant at the camera and adjust as needed.
   a) The camera table height is adjusted with the switch on the side of the table.
   b) The chin level is adjusted with a keyboard "Chinrest UP" and "Chinrest DOWN" keys.

7. GREEN LIGHT -- The START button is only enabled if the chin rest is engaged. If the participant is not properly positioned on the chin rest, the START button will not be enabled and it will not be possible to start the photo acquisition process. If you do not see a green light the participant is not in the right position. Adjust as needed.

8. START! Push the "start" key. From this point the camera will do the work!
This is the point when saying "Eyes Wide Open-Steady, Steady- Wide Open" is most effective!

COMMUNICATION: It is important to communicate during the process. Most important is to instruct the participant to KEEP HIS/HER EYES WIDE OPEN when you see the focus line center on the pupil because the photo is about to be taken! Second in importance is telling the participant when to blink between photographs.

Discussion Suggestions
1. You will observe a light while the camera looks for your right eye.
2. The camera is centering on your right pupil. ("Stay Steady, Look Straight Ahead")
3. Keep your eyes wide open - the camera is ready to photograph your right eye.
4. Between photos now - Blink! Blink! Blink!
5. You are seeing the light again. The camera is repositioning to your left eye.
6. The camera is centering on your left pupil. ("Stay Steady, Look Straight Ahead")
7. Keep your eyes wide open - the camera is ready to photograph your left eye.
8. That's it. Please relax while I review the photos.
FAILURE TO FIND THE EYE: If, for some reasons, the automated eye search fails, a message is displayed. Reasons for failure include: improper participant positioning, participant not fixating steadily, participant moving the head and/or the gaze during eye search. If any of the above situations applies, try to fix the cause (re-position the participant, instruct her/him to steadily fixate at the target and/or to not move) BEFORE proceeding with manual alignment.

MANUAL ALIGNMENT: Use the UP / DOWN / LEFT / RIGHT buttons to adjust the optical head position and align the participant’s eye to the instrument front lens. As soon as the eye is detected using manual alignment the automated procedure will resume.

9. Images: After the second eye, both images will appear on the screen.
REVIEWS THE SCREENING PHOTOS

1. Look at the photographs. Photos are not being read. They are simply being reviewed to ensure a high quality photo has been taken.

   a. A high quality photo shows blood vessels. A high quality photo is not too light or too dark. A high quality photo has no "dirty lens" or hair line marks. You may notice a bright spot in the photo. This is normal. It is the optic nerve. The optic nerve must show in the photo. Photos suitable for grading are not blurry or hazy.

2. RETAKE: If the photo(s) of one or both eyes is not high quality, take the necessary corrective action such as cleaning the lens or repositioning the participant. Retake selection icons appear at the top, outside corner of each photo. These icons look like small circles with backward arrows. You may select right eye, left eye or both eyes for retaking. Press the RETAKE key on the keyboard. The camera will RETAKE the selected photo(s).

   a. If it is absolutely necessary to delete a photo this can be done by moving the photo to the Trash Can located at the top of the screen. Do not delete when RETAKE can be used.
3. If photos of both eyes are high quality, press the "SEND FOR GRADING" key. If one photo is acceptable but it is not possible to take a quality photo of the other eye, the photos may be sent for grading.

DO NOT SEND LOW QUALITY PHOTOS FOR GRADING. This is a waste of money.

a. What if a clear photo cannot be taken?
   1. If you can get a clear photo of one eye but it is impossible to get a clear photo of the second eye, this may indicate a problem with the second eye. Send the good photo and the best photo you can obtain of the second eye for grading.
   2. If you cannot get a clear photo of either eye, sending the photos for grading is a waste of time and money. Advise the participant that you are unable to get clear photos and that he/she needs to see an eye doctor as soon as possible. NOTE THIS ON THE FORM.

COMMUNICATING RESULTS

1. Thank the participant for allowing Lions to test his/her eyes.

2. Remind the participant he/she will hear results in 7 to 10 days. Normal and abnormal screenings will receive a post card.

SENDING IN THE FORMS

1. Ensure that your Team Leader has all the forms as he/she is responsible for getting the data back to data collector: Lion Norma Callahan PDG at PO Box 1407, Deland FL 32721.

2. The forms must be sent as soon as possible as the transmitted photos will sometimes be read immediately. Without paperwork to match with the screened photo(s) the process to communicate results to the participant cannot continue. Tip: Prepare an envelope to mail the forms and take it with you to the screening site to mail the forms on your way home! (Postage: For each five (5) sheets of regular printer paper one stamp is required. Remember to add enough postage to cover the envelope/packaging as well.)

VERIZON WIRELESS JETPACK®

_First Time Use - After a camera and Jetpack have been used together simply turn on the Jetpack® and the camera will find the network._

1. Turn on the Verizon Wireless Jetpack®.

2. The camera must be turned on and warmed up.

3. Go to Administration Mode Signal (In the middle of the keyboard)

4. Go to Wi-Fi and find Verizon Wireless Network. A password may or may not be required. If a password is required the password will be displayed on the Jetpack screen. Each Jetpack has a unique password. (See photo below.)

5. Return to Home Page and continue as normal. The camera will use the Verizon Wireless Jetpack® network to send photos for grading when the SEND FOR GRADING key is depressed.
MASS UPLOAD - ALTERNATIVE TO SENDING PHOTOS FOR GRADING

If you do not have Wi-Fi available or do not wish to upload photos for another reason from the screening site, follow the shut down process when you are finished screening. Photos that were tagged "Send for Grading" will be stored on the camera to be retrieved and transmitted at a later time.

1. When a network is available, turn on the camera and warm it up. Go to "Administration Mode Signal" found in the middle of the keyboard.

2. Go to Wi-Fi and check that the Wi-Fi you wish to use is available and then connect. Note: This may take a few minutes.

3. When ready, the camera will transmit all photos that were tagged "Send for Grading". Depending on the Wi-Fi connection and the number of images, it may take a short while for the upload to complete.

4. Go to EKN to ensure photo upload completed.

5. To shut down the system click on the power off button. Wait for the progress bar to completely roll back. A message on the screen will inform you when it is safe to turn off the main switch. Always put the cap back on the front lens. Do not leave the front lens uncovered when not in use.
SYSTEM SHUTDOWN

1. To shut down the system go to the startup screen, participant list or participant record screen and click on the power off button. Wait for the progress bar to completely roll back. A message on the screen will inform you when it is safe to turn off the main switch. *Some cameras will go to a black screen and can be shut down from the black screen.*

2. Always put the cap back on the front lens. Do not leave the front lens uncovered when camera is not in use.

STORING THE CAMERA & MISCELLANEOUS NOTES

1. Remember to replace the lens cap.

2. Secure cords carefully.

3. Do not store the camera or supplies in direct sunlight or in a hot area.

4. Do not attach stickers, etc. to the camera or camera table.

5. The head / forehead rest can be glued to the mount to prevent loss. (Use a clear glue)

6. When transporting camera in back seat of a vehicle, please strap the camera in with seat belt.

7. Occasionally check the feet on the camera. Moving the camera around works the feet loose and if not tightened they may be lost. (7/64th Allen Wrench can be used to tighten)

8. Make note of supplies that have been used from the camera pack. If anything is not working correctly please let Lion Norma Callahan PDG know immediately. If you need supplies replaced now is the time to place an order.

9. Always ensure all waste material is secured and put in the proper places for disposal.

<END>