Fitting Progressive Addition Lenses
By Teresa Stokes, CPOT

Situation: The paraoptometric has been assigned to the frame room, with the duty of fitting progressive lenses. Is this “Mission Impossible”? Not if the optometric staff utilizes the wide variety of progressive lenses available today designed to promote better patient adaptation and natural vision.

Not only has eyewear fashion changed, ophthalmic lenses have also continued to evolve and improve. Now there are many options available for presbyopia patients. Previously, those patients who needed correction to see at near and intermediate distances had limited choices. They could wear bifocals or trifocals that had lines (e.g., flat top or executive lenses) or “Progressive Addition Lenses,” better known as PALs. PALs, also referred to as “no-line bifocals,” are the closest to how natural vision is, prior to the onset of presbyopia. This "natural vision" is achieved by providing a smooth transition from distant through intermediate to near. The first PALs were difficult to fit, as they required a larger size frame with greater depth to accommodate all areas of focus in the lens. Patients were unable to use these lenses with the smaller more fashionable frames, since the reading portion of the lens would be cut off. There are many different PALs available today and selection of the lens type is dependent on the visual needs of the presbyopic patient. Lens manufacturers now offer PALs that are more compact, so patients can wear the smaller, more fashionable frames and still get the full effect from the lens. The main difference between lenses is the width of the central corridor. Different areas are expanded, depending on the function the lens is designed to be used for, (such as a wider intermediate area being used for the patient who works on the computer), while a wider reading area would be the best choice for the patient who spends a significant amount of time reading. Progressive lenses have become the most popular style of lenses for those who need near correction, but don’t want the age-revealing lines in their glasses.

Once the patient has seen the optometrist and received his or her prescription the paraoptometric should review the patient’s chart and gather additional information that will assist in selecting the progressive lens that will provide the best possible vision. This information may include the following:

- **Patient’s prescription:** affects lens design and material.
- **Patient’s occupation:** how they use their eyes at work will determine the progressive design. The lens design for the patient who works as an
accountant will be different than that of a truck driver. Computer use for work and/or play will also determine the lens design.

- **Leisure time activities**: what are the patient’s hobbies (do they use near vision significantly), do they play sports?
- **How and when**: Will patients wear their glasses full-time? Are lenses to be used when the patient’s contacts are out? Are the progressive lenses to be worn over the patient’s contact lenses?

Recording this information will assist in selecting the proper design and may be an area for which the paraoptometric may suggest that more than one pair of glasses will be needed to meet all the patient’s visual needs. This can include recommending eyewear specifically designed for the way the patient uses his or her eyes, such as sunwear (photochromic lenses) for those whose occupation or leisure time activities require significant amounts of time outdoors; sports (polycarbonate) for those who play tennis, racketball, contact sports or those whose profession requires safety glasses, computer, or work-related eyewear; and back-up glasses for those who wear contact lenses. At this time the paraoptometric should discuss cost vs. benefits. Many patients do not realize there are other options available for them and they don’t have to stick with “plain vanilla” lenses and frames anymore.

All the information gathered will help determine if the patient needs a wider reading area or a shorter intermediate area. After discussing the patient’s wants and needs, the paraoptometric will be able to suggest the progressive lens that will provide the best vision for the patient. Many offices use a questionnaire completed by the patient before his or her exam, which can assist in the gathering of information for the four areas listed above, as well as gathering information regarding previous experiences wearing glasses. This information will include what they liked and disliked about their previous eyewear, were they wearing single vision or multifocals, or had they tried progressives in the past and been unable to wear them? Their previous experiences will dictate how the paraoptometric approaches the patient. Today’s PALs are available in many different materials, including glass, CR-39 plastic, high-index, and polycarbonate. Some manufacturers offer lenses that are photochromatic.

Frame selection is as important as the lens selection. Not only must frames accommodate the lenses, they should also fit comfortably, suit the patient’s face shape, and be stylish.

Once the frame and progressive lens type have been chosen, the fitting of the lens is very important. Proper fit will ensure a successful fit. Check the frame for proper alignment before taking any measurements. The frame will need to have the appropriate amount of vertex distance (12 – 14 mm), face form, and pantoscopic tilt (10 – 12 degrees). If the frame is properly adjusted, the patient will achieve the best vision.
Frame Measurements:

- Place properly adjusted frame on patient (30% of the vertical height should be above the pupil). If seated, the paraoptometric should adjust to the patient’s height to mark each lens or have the patient stand in front of a mirror, looking straight ahead.
- Mark each lens at the pupil center with a felt-tip marker.
- Draw a horizontal line on each lens.
- Check to see that the lines are at the center of each pupil.
- Have the patient close his or her eyes and lower his or her chin to the chest – instruct patient to slowly raise head and to open the eyes when the head is raised (this will help determine the patient’s natural head position). Check again for the position of the horizontal line. If it is on pupil center, it is correct; if not, repeat the procedure.
- Fitting height will vary depending on the type of progressive lens used. It is important for the paraoptometric to know and fit the progressive lens that is chosen with the correct measurements.
- Measure fitting height from the deepest point of the lenses to the pupil center.

Pupillary Distance (PD) Measurement:

- Take monocular PD measurements.
- Use a corneal reflex pupillometer to ensure exact measurement of center pupil (paraoptometric should inquire if the patient has had his or her eyes measured with this type of instrument previously; if not, the paraoptometric should explain what is being done and that this is the most accurate method to measure the patient’s PD).
- Take PD measurement with pupillometer set at infinity and record the measurement. Switch the pupillometer to the near setting, take the near PD, and record.

Check Lens Cut Out:

- Use the card provided by the progressive manufacture to check lenses.
- Use the patient’s fitting height and distance PD measurements (marked area on lenses will create a cross).
- Place lens cross over the layout chart to verify the lens will fit in the frame.
- If it does not fit, select another frame. (Note: Once the paraoptometric becomes familiar with the different lenses, the paraoptometric should be able to suggest frames that will accommodate the lenses, so improper fit should not occur often.)

Following the above steps will ensure a proper fit and the best possible vision for the patient. Fit with confidence, knowing you will provide the patient with the most natural vision available.
Once the lenses arrive from your lab, you will need to verify the measurements and prescription. Listed are the steps to verify your order:

- Using the centering chart – center the frame over the inverted “V”
- Confirm monocular PD
- Confirm seg height
- Confirm location of greatest add power
- Confirm lens prescription using a lensometer
- Typically, the add power and lens type are engraved into the lenses. Add power is on the temporal side and lens brand and type is on the nasal side of the lens.

The moment of truth has arrived – has the optometric staff successfully completed its mission and fit the progressive lens correctly? Dispensing will be the test. Dispense with the same confidence used to select and mark the correct progressive lens. Progressive lenses provide the patient with the latest in optical lens design. The patient’s vision should be clear and natural for viewing distance, up close and intermediate.

Lenses arrive from the lab with the fitting crosses marked. Do not remove the lab markings until the frame has been fit on the patient. Confirm the fit by verifying the fitting cross at the center of the patient’s pupils. The frame may need to be adjusted; if necessary, raise or lower to achieve the proper fit. Once the correct fit is ensured, remove the markings from the lenses.

The next step is to educate the patient in the proper use of the lenses. Providing usage instructions will save staff time and save the patient from frustration. Lenses can be marked and positioned correctly, but be unsuccessfully fit if the patient does not know how to wear the lenses.

Demonstrate how to use the lenses:
- Have the patient first look up at an object at least 20 feet away - vision should be clear.
- Next, ask the patient to read the reading card provided by the lens manufacturer.
- Follow the instructions on the card.
- Instruct the patient on the proper movement of the head.
- Point nose at desired object to view.
- Ask patients to drop their eyes, not head; raising or lowering the chin in slow movement until vision is clear.
- Have the patient stand and look at floor, tilting head down, in order to focus clearly on floor.

Explain to the patient that if he or she drives with the seat in a reclined position, the eyes will be focused in the intermediate or reading area and vision will be
blurry at distance. This also occurs while watching TV in a reclined position. The time educating the patient will be time well spent. By addressing all possible problems the patient may encounter, and offering suggestions as to the solutions for the problems, we will alleviate the patient’s fears and prepare the patient for excellent results with the new lenses. Finally, there are more than 150 progressive lens variations available, making it possible for your office to suggest and dispense PALs that are exactly right for each patient.

The paraoptometric who has taken the time to review the patient’s chart and who has discussed the options available will be able to recommend the latest in lens technology. The wide variety of progressive addition lenses available will ensure the paraoptometric a mission that will end in a successful fit. A well-fit progressive lens equals a satisfied patient.
“Fitting Progress Addition Lenses”

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Select the option that best answers the question.

1. Documenting the patient’s ______________ helps the paraoptometric choose the proper progressive lens.
   a. Medical history
   b. Family history
   c. Lifestyle
   d. Chief complaint

2. Which of the following would be a candidate for progressive lenses?
   a. Previous bifocal wearer
   b. New presbyopics
   c. Previous trifocal wearer
   d. All of the above

3. What is the first step in frame measurement?
   a. Mark lens at center pupil
   b. Properly adjust the frame
   c. Choose the progressive lens
   d. Measure seg height
4. ______________________ produces the most accurate pupillary
distance measurements.
   a. PD ruler
   b. Lensometer
   c. Corneal reflex pupillometer
d. Auto-refractor

5. Lenses have laser marks engraved in the lenses. The marks and location
   are:
   a. add power in upper right quadrant
   b. type of lens, temporal side – bifocal add, nasal side
   c. add power at temporal side – type of lens, nasal side
d. fitting cross at center

6. The desired pantoscopic tilt of a frame is:
   a. 12 – 14 degrees
   b. 10 – 12 degrees
   c. 8 – 10 degrees
   d. 14 – 16 degrees

7. Pupillary distance measurements for progressive lenses are taken:
   a. monocular
   b. binocular
   c. several times for accuracy
d. by the doctor

8. Before dispensing the progressive lenses, the frame technician should:
   a. Remove the lab markings
   b. Verify the lens order
c. Re-align the frame
d. Adjust nose pads

9. A centering chart provided by the lens manufacturer will show all but one of
   the following:
   a. PD measurements
   b. Seg height
c. Where greatest add power is
d. Prescription of lenses

10. Confirm prescription of the progressive lenses by:
    a. Lab invoice
    b. Lensometer
c. Have patient try glasses
d. Tonometer