# Troubleshooting

What do you do when a patient comes into your office saying she does not see well with her new glasses? This will be a frequent part of your job, occurring often, so this is not a topic to be taken lightly. Your job is to do all you can to find the source of the problem before sending the patient back to the doctor for an Rx re-check. This scenario is embarrassing for the patient and time-consuming for the doctor. There are times when it is necessary, but the better goalie you can be in preventing unnecessary doctor visits for Rx checks, the happier both the doctor and the patient will be.

Patients' complaints that they are not seeing well through their new glasses may arise from one or several sources:

**1. Prescription error:** The doctor arrived at an incorrect prescription for the patient.
**2. Lab error:** The lab made an error in lens fabrication that was not caught.
**3. Optician error:** The ordering optician made incorrect measurements, incorrect assumptions, or made transposing errors from the doctor's prescription.
**4. Patient perception error:** The patients either have an incorrect perception about their visual potential or about how long it may take to become adjusted to their new glasses prescription.
**5. A visual/perceptual problem:** New prescriptions may not always permit adaptation, regardless of the amount of time given to wearing the new glasses, if there is too large of a change from the patient's previous glasses.

Let us discuss each one in more detail.

***Prescription error***

Do doctors make errors? Sometimes. The doctor uses many sources of information when arriving at a prescription for a patient. The primary source is from the *subjective refraction*. This is the infamous "What is better, 1 or 2" test. What is maddening for doctors about this test is the very *subjective* nature of it; the doctor cannot see what the patients are seeing and tell them which choice to make. The patients must decide for themselves. Doctors much prefer cut-and-dry, *objective*, decision making.

Doctor: "Where does it hurt?"
Patient: "My toe."
Doctor: "This one?"
Patient: "Ouch!"
Doctor: "OK then, let's do an X-ray of it."

Doctor: “Hey, look here! It’s broken; see the crack in your bone? This is proof it’s broken and explains your pain. Let me wrap it and get you a prescription for a pain killer.”

This is the type of conversation doctors like to have. It is very *objective,* meaning evidence-based. In comparison, here is a typical conversation that leads a doctor to write a prescription for glasses:

Doctor: I am going to show you a series of two lenses; you tell me which one makes the letters *more* clear. OK?
Patient: OK.
Doctor: This is lens number one … or lens number two?
Patient: They are both kinda blurry.
Doctor: Again, just tell me which one is *more* clear. Lens number one … or two?
Patient: Two. I guess.
Doctor: Please don’t guess. If they both look the same, it is OK to say they look the same. Let’s look at the next two lenses now. This is number three … or four?
Patient: That number two was better than either of these!
Doctor: We have moved beyond those. Again, which lens is *more* clear?
Patient: Well, number four is, if I have to guess!

This illustrates the *subjective* nature of arriving at a glasses prescription. Accurate patient feedback is essential at arriving at a good endpoint. Fortunately for the doctor, he or she is able to rely on additional sources of information. These other sources include:

1. The patient’s current prescription.
2. Any complaints the patient is having about his current glasses.
3. Any medical conditions that may adversely alter the patient’s responses.
4. The confidence the doctor has in the patient’s responses.

For example, if a patient has no complaints with his current glasses, but the doctor finds a large change in their prescription, the doctor is not likely to prescribe the entire change even if it significantly improves the patient’s vision. Another example of a scenario that happens frequently is in a patient with cataracts. Cataracts will cause a patient to enter the doctor’s office with a complaint of decreased vision. During the subjective refraction, the patient will usually like additional minus-power added to their prescription. Often this can lead to a significant improvement in their tested visual acuity in the exam room. Unfortunately for the patient, if the doctor prescribes this cataract-induced minus-power shift, the patient will complain of eyestrain. It is therefore up to the doctor to realize that the power change is caused by the cataracts and know that, for whatever the reason, cataract patients do not respond well to new glasses with this change.

### *Lab error*

Do labs make errors? Sometimes. Labs are busy places where lenses are made quickly by a machine. However, wherever there are machines, there is always the human element. Lab technicians must input data into the equipment and check the work that is completed. Data can be missed and flawed lenses can be passed.

### *Optician error*

Do opticians make errors? Despite the best efforts of this book, sometimes. Optician errors can arise from any number of situations: erroneous PD measurements; incorrectly assuming the patient wanted a trifocal when they wanted a bifocal; transposition errors when copying the doctor's prescription; or not matching the best progressive lens design for the patient's lifestyle.

### *Patient perception error*

Do patients make mistakes? Sometimes, but we can never let them know it. What we can do, though, is make them aware of what may be causing their erroneous perceptions. For a new prescription that has had anything but a very mild change, reassure patients that it may take a week to get completely used to their new glasses. Always review the patients' chart to be sure there aren't cataracts or macular degeneration that the patients have forgotten about, which may explain the patients feeling as if their glasses still don't help them see well. Patients often have an erroneous perception of their visual potential.

### *Visual-perception problem*

Do the glasses themselves, even if the prescription is correct, cause problems? Sometimes. These are called visual-perception problems. These are the problems created by a different image size or shape projected onto the retina than was projected by the previous glasses, even if the new image is clearer. A large change in the prescription's sphere power will cause a change in image size and a large change in a prescription's cylinder correction will change the image shape. Examples of visual-perception problems include the following:

<u>The tilted table problem</u>: Patients may complain that a flat surface, like a table, looks tilted. What does this mean? If the flat surface is tilted right/left, then this is likely an astigmatism change. Recall that with astigmatism, one axis has a different power than the axis 90 degrees away. This creates varying magnifications around the lens from 1–180°. If this magnification is different from the previous glasses, the brain will take a step back and wonder what is wrong. As long as there has not been too large of a change, the brain will usually adapt over time.

What if the table is perceived as tilted toward or away from the patient? This is usually a result of a change in the vertex distance, base curve, or pantoscopic tilt from

their previous glasses. This is harder for the brain to adapt to since it is not the actual prescription causing the magnification difference, but rather a lens (external factor)-induced magnification difference. Finding a difference in one of these parameters from their previous glasses is likely the only way to solve the patients' symptoms. Fortunately, at the end of this chapter is a Troubleshooting Analysis Form that will help you do just that.

Wow, that's big! (Or small): Patients may complain that images appear bigger or smaller through their new glasses. Prescription changes that add plus power will likely yield images appearing larger than they should be. The additional plus power projects a more magnified image onto the retina than their previous glasses did. This is usually solved simply by having the patient continue wearing the lenses for a week. An easy way to help the patient adapt is to say, "Through your previous glasses, images were perceived as being smaller than they really were; now with the new glasses, images are the correct size, but the brain is seeing them as relatively larger. It may take a week, but the brain will adapt." It is best to place the adaptation blame onto some third party, like the brain, so the patient does not feel we are placing the blame directly on them!

A change in prescription that adds more minus-power will cause the opposite effect; images may seem slightly smaller than with the patient's old glasses. Like before, as long as the prescription is correct, the patient will adapt within about a week.

As you can see, most of these errors are just from people being people. People make mistakes. Taking care in checking your work will help, but people still make mistakes. This book cannot keep those from happening, but it can help you navigate the waters when you find the source of the patient's problems. How? The next page is the Troubleshooting Analysis Worksheet. Use it on all of your patients who have any complaints about their new glasses before sending them back to the doctor for an Rx re-check. Tear it out and make copies for yourself and your coworkers.

Not all fabrication errors require a remake of the glasses. *ANSI standards* specify how much off-prescription a lens can be and still be acceptable. ANSI standards are developed by a private, nonprofit organization that develops norms and guidelines for a wide range of industry-grade products, including prescription glasses. You will want to obtain a copy of these standards and post it where you perform your glasses analysis. A copy of these standards can be obtained at www.ansi.org. ANSI standards typically allow less than a 0.25D difference for low powers and less than a 2-percent difference in high powers. So these standards pretty much require the glasses to be spot-on to the prescription.

Here is a key for a few of the abbreviations on the Troubleshooting Worksheet:

Pano: The pantoscopic tilt. Recall that this is the angle the lenses make with the face. This should be about 10 degrees.

OC: The optical centers. This should be directly over the pupils. Recall the way to find the optical centers is to place the lens in a lensometer, center the mires, and use the ink marker in the lensometer to identify the location.

Seg Ht: This is the seg height—how high the bifocal is on the frame.

DBOC: The distance between the optical centers.

DBS: The distance between the bifocal segments.

Patient's PD. The distance between the patient's pupils, as measured with a pupilometer or PD ruler. Recall that this should be the same as the distance between optical centers in most cases.

# Troubleshooting Analysis Worksheet

Patient Name:_____ Date:_____

Chief complaint:_____

_____

Wearing time: _____

**Prior glasses**

Material:_____ Base Curve Horiz OD_____ OS_____ Check if OK
Vert OD_____ OS_____ Pano [ ] OC [ ]
Lens Style:_____ Vertex dist [ ]

| | Sphere | Cyl | Axis | Prism | |
|---|---|---|---|---|---|
| Rx | OD_____ | | | | Seg Ht _____ |
| | OS_____ | | | | Seg Ht _____ |
| | Add + | | | DBOC _____ | DBS _____ |

**Prescribed Rx**

| | Sphere | Cyl | Axis | Prism | |
|---|---|---|---|---|---|
| Rx | OD_____ | | | | |
| | OS_____ | | | | |
| | Add + | | | Patient's PD _____ | |

**New Glasses**

Material:_____ Base Curve Horiz OD_____ OS_____ Check if OK
Vert OD_____ OS_____ Pano [ ] OC [ ]
Lens Style:_____ Vertex dist [ ]

| | Sphere | Cyl | Axis | Prism | |
|---|---|---|---|---|---|
| Rx | OD_____ | | | | Seg Ht _____ |
| | OS_____ | | | | Seg Ht _____ |
| | Add + | | | DBOC _____ | DBS _____ |

Suggested action _____