

Advanced Lensometry Evaluation

I. Basics of proper technique for neutralization

- A. Focus the eyepiece to ensure accurate reading
 - 1. Relax accommodation
 - 2. Rotate eyepiece so that it moves toward operator's eye - usually counterclockwise
 - 3. Slowly turn eyepiece back toward instrument while looking at the crosshairs and concentric circles
 - 4. Stop when the target first focuses
- B. Center the target in the reticule
 - 1. Most instruments have a prism-compensating device
 - 2. Ensure that target is centered in the reticule
 - 3. Proper centration is imperative for accurate measurement of prism
- C. Ensure calibration of the target wheel
 - 1. Rotate power wheel until target is clear
 - 2. Check to see if power wheel reads "zero"
 - 3. Adjust final Rx to compensate for inaccurate calibration
- D. Determine and measure location of optical center
 - 1. Place Rx over aperture stop so that target is centered in the reticule
 - 2. Dot the optical center with marking device
 - 3. Measure from the dot to the center of the bridge OD and OS

II. Prism

- A. Prismatic Deviation across a lens - Prentice's rule
- B. Prentice's Rule
 - 1. amount of prism induced depends on the power of the lens and the distance of displacement: $\Delta = dF$
 - 2. d = distance in cm from optical center; F = power of lens in meridian
 - 3. Simply put: compare the location of the eye to the location of the optical center
 - 4. Implications of Prentice's rule: the higher the power and the greater the displacement - the more prism is induced
- C. Effect of prism on the wearer
 - 1. The image moves toward the apex
 - 2. Every plus and minus lens can be visualized as a pair of triangles
 - 3. BO, BI, BU or BD - depends on power of the lens in meridian in question

D. Why is prism prescribed?

1. To correct or train binocular dysfunctions
 - a. BO - moves image IN
 - b. BI - moves image OUT
 - c. BD - moves image UP
 - d. BU - moves images DOWN
2. Post-traumatic
 - a. Traumatic brain injury is common cause of double vision; often treated with both horizontal and vertical prism to align images
 - b. Vertical prism is usually split between the 2 eyes
3. Prescribed prism vs. "unwanted" induced prism
 - a. Need to be able to evaluate Rx to determine presence of prism
 - b. Back to basics: compare the location of the optical center to the location of the patient's eyes, OD and OS
4. Effect of unwanted induced prism
 - a. Unwanted induced prism deviates image away from patients line of sight
 - b. Patient must attempt to compensate for displaced image by deviating eye position
 - i. Most have ability to compensate for small horizontal discrepancies
 - ii. Vertical discrepancies generally more bothersome
 - c. Review implications of power in meridian in question and distance from optical center

III. Evaluation of horizontal prism in an Rx

- A. Review of boxing dimensions and measurements
 1. A, B, ED and DBL
 2. Interpupillary distance
 3. Binocular and monocular PDs
- B. General process of Rx construction
 1. Frame "PD"
 2. Prism Reference Point - the point on the lens that contains the prescribed prism
 3. Decentration - the process of putting the prescribed prism in front of the patient's pupils
 - a. For the majority of patients, the prism reference point is the optical center
 - b. Simple math or the lensometer can help you determine the location of the PRP when prism is prescribed

- 4. Sample decentration calculations (with and without prescribed prism)
- C. Basic technique for verification of prescribed horizontal prism
- D. Evaluation of an Rx for unwanted/induced prism
- E. Live demonstration

IV. Evaluation of vertical prism in an Rx

- A. General process for vertical placement of optical center
- B. Basic technique for determination/verification of vertical prism
- C. How to evaluate Rx for the presence of vertical prism with and without the patient
- D. Live demonstration

V. Determining resultant prism: Verification of Rxs with combined vertical and horizontal prism

- A. Prescriber's method
- B. Laboratory method
- C. Base-apex line and resultant prism
- D. Live demonstration