Introduction

- Anatomy
- Different types of refractive errors.
- Some apparent common prescriptions on patients whose lifestyles are not common, therefore requiring uncommon solutions.
- The importance of understanding common and uncommon prescriptions.

Anatomy

- Cornea
- Aqueous humor
- Crystalline lens
- Vitreous humor
- Retina
- Tear film

Four Refractive Mediums of the Eye

- The cornea
- The aqueous humor
- The crystalline lens
- The vitreous humor
Index of Refraction

Lacrima Apparatus

Dioptic Power

Tear Layer

Cornea

- Five distinct layers
  - Epithelium
  - Bowman’s layer
  - Stroma
  - Descemets membrane
  - Endothelium

Emmetropia

- Normal Eye
- Standard Emmetropia
- Nonstandard Emmetropia
**Normal Eye**
- Emmetropia
  - Standard
  - Non-Standard
  - No refractive error

**Refractive Errors Ammetropias**
- Myopia
- Hyperopia
- Astigmatism
  - Types
  - Location

**Keratometry**
- With the Rule Astigmatism
- Against the Rule Astigmatism
- Oblique Astigmatism

**Astigmatism**
- Refractive Astigmatism
- Corneal Astigmatism

**Keratometry**
- Spherical
- Toricity
  - Corneal
  - Refractive
  - Location
  - Left over

**Spherical Equivalents**
- Calculations
Anisometropia

Antimetropia

Aniseikonia

Iseikonic lenses
  - A lens or pair of lenses used to correct aniseikonia
  - Variables:

Vertex Distance
  - When to compensate?

Power of Tear Film
  - SAM
    - Steeper add minus
  - FAP
    - Flatter add plus
Soft Contact Lenses

- When will they work
- When won't they work
- The emotions of Contact Lens Patients

Rigid Contact Lenses

- When to fit
- When not to fit
- The emotions of Contact Lens Patients

Spectacles

- Advantages
- Disadvantages
- Combination of spectacles and contact lenses

Case Histories

- Examples

Contact Lenses

Spectacles

Prentice’s Rule

Prentice’s Rule

\[ \text{Rx} = -2.00 \times 045 \]

Simple formula

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<th>Angle</th>
<th>Percentage of Cylinder Present in the Meridian</th>
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Finding the power in of a lens in any meridian

Rx: -2.00 @ 135

Vertical Imbalance At The Reading Level

- Using Prentice’s Rule, let’s determine if there is imbalance at the reading level in the following Rx.

Reading level is 10mm.

-0.25 +3.00 X 180
-1.00 +1.00 X 090
ADD OD +1.50

- First you need to determine the total power in the vertical meridian of both lenses.

Unequal Refractive Errors

- Why do you need to know
- Unequal powers

  - Isometropia
  - Anisometropia
  - Antimetropia

Vertical Imbalance At The Reading Level

OD: -0.25 +3.00 X 180
ADD +1.50

For the right lens, we want to find the power in the 90° degree meridian. Based on Prentice’s Rule, the axis is 90 degrees away from that meridian, so we will use 100% of the cylinder power and add it to the sphere power. That makes our distant power +2.75. Then we must add the ADD power which gives us a total power at the reading level of +4.25.

Vertical Imbalance At The Reading Level

OS: -1.00 +1.00 X 090
ADD +1.50

For the left lens, we want to find the power in the 90° degree meridian as well. Based on Prentice’s Rule, the axis is 0 degrees away from that meridian, so we will use 0% of the cylinder power. That makes our distant power 1.00. Then we must add the ADD power which gives us a total power at the reading level of +1.50.

Vertical Imbalance At The Reading Level

Let’s go back and discuss the vertical imbalance at the reading level.

- Eye moves down through lens
  - Plus lens creates base up prism as the eye moves down
  - Minus lens creates down prism as the eye moves down

31 32 33 34 35 36
**Vertical Imbalance At The Reading Level**

OD = -0.25 +3.00 X 180  
OS = -1.00 +1.00 X 090  
ADD OU +1.50

OD total power at the reading level is +4.25  
OS total power at the reading level is + 0.50  
Reading level is 10 mm therefore,...

- \( P \Delta = 10 \times +4.25 \) must convert to CM  
- \( P \Delta = 1.0 \times +4.25 \)  
- \( P \Delta = 4.25 \)  

- \( P \Delta = 10 \times +0.50 \) must convert to CM  
- \( P \Delta = 1.0 \times +0.50 \)  
- \( P \Delta = 0.50 \)  

Therefore, there is 3.75 diopters of prism imbalance at the reading level of 10 mm.

**Cosmetic Concerns**

- \( -2.00 \) – \( -2.00 \) X 180  
- \( -2.00 \) – \( -2.00 \) X 090  
Add OU +2.50

**Visual Concerns or Cosmetic Concerns?**

OD -2.00 – 2.00 X 180  
OS -2.00 – 2.00 X 090  
Add OU + 2.50

**Ophthalmic prescription**

- OD -2.00 – 2.00 X 180  
- OS -2.00 – 2.00 X 090  
- Add OU + 2.50
Case History
You make the call
Create a patient

Group comes up with patient
patient history
chief complaint
solution or solutions

Lifestyles
• Visual Tasks

• Lifestyle Tasks

• Emotions

Conclusion
• You make the call

• Remember there is not always a clear cut “one” solution for every situation

• Thank you