Unequal Refractive Errors and the Effects on Vision

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Course Description: Patients want to know what their glasses will look like and we spend time discussing that with them. But...how will they see with their glasses? That’s an even more important question. Unequal refractive errors not only have an effect on how glasses will look, but how a person sees or even “IF” they see WELL. This course will present answers to these questions presenting both spectacle and contact lens options in the discussion.

Learning Outcomes: At the completion of this course the participant should:

• Have a clearer understanding of the properties of spectacle lenses and their effect on image size on the retina.
• Identify spectacle characteristics that cause changes in magnification/minification
• Discuss how vertical imbalance affects patients vision at the reading level
• List ways to correct vertical imbalance at the reading level
• Be able to identify anisometropia/magnification/minification conditions.
• Discuss the complications including loss of vision that can occur resulting from unequal refractive errors.
• List ways of minimizing the visual complications of aniseikonia, using both spectacles and contact lenses.

Introduction

• A little bit of anatomy
• Different types of refractive errors
• Characteristics of spectacle lenses
• Prescriptions that create difficulties in magnification and minification
• Prism imbalance at the reading level
• The effects of vertex distance
• Managing aniseikonia

A little bit of anatomy

• Refractive mediums of the eye
  o Cornea
  o Aqueous humor
  o Crystalline lens
  o Vitreous humor

• Retina
  o Macula

Different types of refractive errors
• Emmetropia
• Ametropias

Characteristics of spectacle lenses
• Characteristics of plus lenses
• Characteristics of minus lenses
• Characteristics of contact lenses

Prescriptions that create difficulties in magnification and minification
• Isometropia
• Anisometropia
• Antimetropia
• Aniseikonia

Prism imbalance at the reading level
• What causes it?
  • Bicentric grinding/slab-off
  • Dissimilar segs
  • Others

The effects of vertex distance
• What happens when lenses move closer to or further away from the eye?
  • Vertex compensation

Managing aniseikonia
• Using spectacles
  ○ Variables used
• Using contact lenses

Conclusion/Questions Answers