

## Visual Field Testing and Common Visual Field Defects for the Beginning Paraoptometric

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1 hour

### Description:

This introductory course is designed to equip beginning paraoptometric with a foundational understanding of visual field testing and its role in clinical eye care. Participants will explore the various methods of visual field testing—including confrontation testing, automated perimetry, kinetic perimetry, and specialized tools like Amsler grids and SWAP—and learn how each method contributes to diagnosing and managing ocular and neurological conditions.

### Learning Objectives:

- Identify and describe the various types of visual field testing, including confrontation testing, automated perimetry, kinetic perimetry, and supplemental methods such as the Amsler grid and SWAP
- Interpret basic visual field test results by recognizing key components such as grayscale plots, pattern deviation, total deviation, and reliability indices
- Differentiate common visual field defects—such as scotomas, hemianopias, quadrantanopias, and altitudinal defects—and associate them with their underlying ocular or neurological pathologies
- Apply knowledge of visual field testing to real-world case scenarios involving glaucoma, pituitary adenoma, and stroke, enhancing clinical decision-making and patient care support

### I. Overview (2 minutes)

#### 1. Opening Statement

- Importance of visual field testing in clinical practice
- Overview of visual field testing types and common defects

#### 2. Lecture Overview

- Types of visual field testing.
- Interpretation of visual field results
- Common visual field defects and their associated pathologies
- Case studies and practical examples

### II. Types of Visual Field Testing (15 minutes)

#### A. Confrontation Visual Field Testing

##### 1. Procedure

- Basic technique: wiggling fingers, counting fingers, and detecting hand movements
- Advantages: quick and easy, no special equipment required
- Limitations: less sensitive, relies on patient cooperation and examiner skill

##### 2. Clinical Use

- Initial screening in clinical settings.
- Complementary to more detailed testing methods

## B. Automated Perimetry

### 1. Types of Automated Perimetry

- Static Automated Perimetry (SAP): Humphrey Field Analyzer
- Kinetic Automated Perimetry: Goldmann Visual Field
- Frequency Doubling Technology (FDT) Perimetry

### 2. Procedure

- Explanation of how each type works and patient instructions.
- Test patterns (e.g., 24-2, 30-2, 10-2) and their significance

### 3. Advantages and Limitations

- High sensitivity and specificity
- Requires specialized equipment and patient cooperation

## C. Kinetic Perimetry

### 1. Procedure

- Using moving stimuli to map visual field boundaries
- Typically performed with the Goldmann perimeter

### 2. Advantages and Limitations

- Useful for detecting peripheral field defects
- More time-consuming and requires skilled personnel

## D. Other Methods

### 1. Amsler Grid Testing

- Simple, grid-based test for central visual field defects
- Commonly used for detecting macular degeneration

### 2. Microperimetry

- Combines visual field testing with retinal imaging
- Useful for macular diseases.

### 3. Short-Wavelength Automated Perimetry (SWAP)

- Utilizes blue-yellow stimuli to detect early glaucomatous damage

## III. Interpretation of Visual Field Results (8 minutes)

### 1. Understanding Visual Field Plots

- Overview of visual field charts and key components
- Reading grayscale plots and numerical data.

### 2. Pattern Deviation and Total Deviation

- Explanation of these metrics and their significance

### 3. Common Artifacts and Errors

- Recognizing and correcting common testing artifacts

### 4. Reliability Indices

- False positives, false negatives, and fixation losses

#### **IV. Common Visual Field Defects and Associated Pathologies (15 minutes)**

##### **A. Central and Paracentral Scotomas**

###### **1. Pathology**

- Macular degeneration, optic neuritis, and glaucoma

###### **2. Visual Field Presentation**

- Central or paracentral areas of reduced sensitivity or blindness.

##### **B. Arcuate Scotomas and Nasal Steps**

###### **1. Pathology**

- Characteristic of glaucomatous optic neuropathy

###### **2. Visual Field Presentation**

- Arcuate defects following the nerve fiber layer, nasal steps respecting the horizontal meridian.

##### **C. Hemianopias**

###### **1. Bitemporal Hemianopia**

- Pathology: Pituitary adenoma compressing the optic chiasm.
- Visual Field Presentation: Loss of vision in the outer (temporal) halves of both visual fields.

###### **2. Homonymous Hemianopia**

- Pathology: Stroke, brain tumor affecting the optic tract, LGN, or occipital lobe
- Visual Field Presentation: Loss of vision in the same (left or right) half of the visual field in both eyes

##### **D. Quadrantanopias**

###### **1. Superior and Inferior Quadrantanopias**

- Pathology: Lesions in the temporal (Meyer's loop) or parietal lobes
- Visual Field Presentation: Loss of vision in the upper or lower quadrant of the visual field

##### **E. Altitudinal Defects**

###### **1. Pathology**

- Anterior ischemic optic neuropathy (AION), retinal artery occlusion

###### **2. Visual Field Presentation**

- Loss of vision in the upper or lower half of the visual field, respecting the horizontal midline

#### **V. Case Studies and Practical Examples (15 minutes)**

##### **1. Case Study 1: Glaucoma**

- Presentation: Patient with progressive peripheral vision loss
- Visual Field Findings: Arcuate scotomas and nasal steps
- Discussion: Diagnostic process and treatment options

##### **2. Case Study 2: Pituitary Adenoma**

- Presentation: Patient with headaches and bitemporal hemianopia

- Visual Field Findings: Loss of outer visual fields bilaterally
- Discussion: Diagnostic imaging and surgical intervention

### 3. Case Study 3: Stroke

- Presentation: Sudden onset of homonymous hemianopia
- Visual Field Findings: Loss of vision in the same half of the visual field in both eyes
- Discussion: Neuroimaging and rehabilitation strategies

## **VI. Conclusion and Q&A (5 minutes)**

### 1. Summary of Key Points

- Recap of types of visual field testing, interpretation of results, and common defects with pathologies

### 2. Q&A Session

- Open the floor to questions from the audience to clarify any doubts or explore topics in more detail

### 3. Closing Remarks

- Emphasize the importance of accurate visual field testing and interpretation in clinical practice
- Encourage continuous learning and practice to master visual field examination skills