NeuroTrace Academy Study Guide

Category: Medical Terminology
Topic: Ophthalmology
Style: Definition-based, exam-oriented, differentiation-focused

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1. Core Principles (Must Know)

Eye Anatomy & Function

- **Each structure has specific function**
- **Location determines function**
- **Field of vision affected helps identify disorders**
- **Distinguishing features prevent misdiagnosis**

Key Principle

- **Understanding eye anatomy and function enables accurate identification of disorders**

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2. Eye Anatomy

Retina

- **Definition:** A membrane lining the inside of the back of the eye that contains light-sensitive nerve cells (rods and cones) that convert focused light into nerve impulses making vision possible
- **Function:** Photoreception (light → neural signals)
- **Location:** Back of eye
- 🔑 **Key:** Light-sensitive + back of eye + vision = retina

Cornea

- **Definition:** A clear dome-shaped front portion of the eye's outer covering
- **Function:** Refracts light (first structure light passes through)
- **Location:** Anterior (front)
- **Characteristics:** Clear, dome-shaped
- 🔑 **Key:** Clear + dome + anterior + refracts = cornea

Iris

- **Definition:** The colored portion of the eye
- **Function:** Controls pupil size and regulates light entering the eye
- **Location:** Behind cornea
- 🔑 **Key:** Colored + pupil control + light regulation = iris

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Conjunctiva

- **Definition:** A clear membrane covering the white of the eye and the inside of the eyelid that produces a fluid that lubricates the cornea and eyelid
- **Inflammation:** Conjunctivitis (also called "Pinkeye")
- **Location:** Covers eye white and eyelid inner surface
- 🔑 **Key:** Membrane + lubrication + pinkeye = conjunctiva

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3. Vision Disorders

Retinitis Pigmentosa

- **Definition:** Gradual loss of the field of vision due to the degeneration of the light-sensitive nerve cells in the retina
- **Features:**
  - Affects **peripheral vision first**
  - Night blindness (nyctalopia)
  - Eventually causes tunnel vision
  - Central vision preserved until late
- **Fundoscopy:** Bone-spicule pigmentation
- 🔑 **Key:** Peripheral field loss FIRST + bone-spicule = retinitis pigmentosa

🔑 **Exam Trap:** Peripheral first (not central) distinguishes from macular degeneration

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Macular Degeneration

- **Definition:** Gradual loss of vision due to deterioration of nerve tissue in the retina in the area that allows for fine details to be observed at the center of vision
- **Features:**
  - Affects **central vision first**
  - Interferes with fine detail discrimination (reading, faces)
  - Peripheral vision usually preserved
- **Fundoscopy:** Drusen deposits
- 🔑 **Key:** Central vision loss FIRST + drusen = macular degeneration

🔑 **Exam Trap:** Central first (not peripheral) distinguishes from retinitis pigmentosa

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Retinal Artery Occlusion

- **Definition:** Obstruction of an artery that supplies blood to the retina, resulting in some degree of temporary or permanent blindness
- **Presentation:**
  - Sudden, painless, severe vision loss in one eye
  - Often described as "curtain coming down"
- **Type:** Ophthalmologic emergency
- 🔑 **Key:** Sudden + painless + severe = retinal artery occlusion

🔑 **Exam Trap:** Sudden onset distinguishes from gradual conditions (macular degeneration, retinitis pigmentosa)

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4. Eyelid Disorders

Blepharitis

- **Definition:** Inflammation limited to the eyelid margins
- **Features:**
  - Eyelid margin inflammation
  - Often associated with crusting and irritation
- **Location:** Eyelid margins (not the eye itself)
- 🔑 **Key:** Eyelid margins + inflammation = blepharitis

🔑 **Exam Trap:** Eyelid (not conjunctiva) distinguishes from conjunctivitis

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Ptosis

- **Definition:** Drooping of the upper eyelid
- **Causes:** Various (nerve, muscle, mechanical)
- 🔑 **Key:** Drooping eyelid = ptosis

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5. Eye Movement Disorders

Nystagmus

- **Definition:** Persistent, rapid, involuntary movement of the eye
- **Types:**
  - Horizontal
  - Vertical
  - Rotary
- **Causes:** Brainstem, cerebellar, vestibular disorders
- 🔑 **Key:** Involuntary eye movement = nystagmus

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6. Eye Procedures

Retinoscopy

- **Definition:** A method of determining focusing errors of the eye in which light is shined through the pupil and the reflected beam is measured
- **Type:** Objective refraction test (does not require patient responses)
- **Purpose:** Determine refractive error
- 🔑 **Key:** Objective + light reflection = retinoscopy

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7. Terminology Distinctions

Ocular vs Optic

Ocular

- **Definition:** General term related to the eye
- **Usage:** Broad term for anything eye-related
- 🔑 **Key:** General eye term

Optic

- **Definition:** Refers specifically to the optic nerve or vision pathways
- **Usage:** More specific (optic nerve, optic pathways)
- 🔑 **Key:** Specific to optic nerve/pathways

🔑 **Exam Trap:** Ocular is general; optic is specific to nerve/pathways

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8. High-Yield Exam Discrimination Table

Disorder	Field Affected	Onset	Key Feature
Retinitis pigmentosa	Peripheral first	Gradual	Bone-spicule, night blindness
Macular degeneration	Central first	Gradual	Drusen, fine detail loss

Retinal artery occlusion	Sudden vision loss	Sudden	Painless, "curtain"
Blepharitis	-	-	Eyelid margins
Conjunctivitis	-	-	Conjunctival membrane
Ptosis	-	-	Drooping eyelid

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9. ABRET Exam Pearls

Critical Distinctions

1. **Retinitis pigmentosa vs Macular degeneration:** Peripheral first vs central first
2. **Blepharitis vs Conjunctivitis:** Eyelid margins vs conjunctival membrane
3. **Ocular vs Optic:** General eye term vs specific to optic nerve
4. **Sudden vs Gradual vision loss:** Sudden = vascular emergency, gradual = degenerative

Common Exam Traps

- Mixing peripheral (retinitis pigmentosa) with central (macular degeneration) field loss
- Confusing blepharitis (eyelid) with conjunctivitis (membrane)
- Using "optic" for general eye conditions (should use "ocular")
- Missing sudden onset as emergency indicator (retinal artery occlusion)

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10. Quick Reference Summary

Must-Know Definitions

- **Retinitis pigmentosa:** Peripheral vision first, bone-spicule
- **Macular degeneration:** Central vision first, drusen
- **Retinal artery occlusion:** Sudden, painless, emergency
- **Blepharitis:** Eyelid margin inflammation
- **Conjunctivitis:** Conjunctival membrane inflammation
- **Ptosis:** Drooping eyelid
- **Nystagmus:** Involuntary eye movement
- **Ocular:** General eye term
- **Optic:** Optic nerve/pathways specific

Memory Anchors

- Peripheral first = retinitis pigmentosa (think "peripheral" = outside)
- Central first = macular degeneration (think "macula" = center)
- Sudden + painless = vascular emergency
- Eyelid = blepharitis, membrane = conjunctivitis

Next Steps:

- Memorize field of vision affected (peripheral vs central)
- Learn distinguishing features (bone-spicule vs drusen)
- Understand sudden vs gradual onset significance
- Practice discrimination between similar terms