

**1. HISTORY TAKING**

**A. Presenting Complaint/History of Presenting Illness**

- Signs and symptoms
- Triage
- Refractive status
- Injury
- Contact lenses
- Confidentiality

**B. Past Ocular History**

- Refractive status problems
- Injury
- Diseases and prescriptions
- Surgery and laser
- Contact lenses

**C. Family History**

- Diabetes
- Glaucoma
- Hypertension
- Ocular diseases and dystrophies
- Strabismus
- Other

**D. Systemic Illness, Past and Present**

- Hypertension
- Diabetes
- Cardiac problems
- Pulmonary problems
- Arthritis
- Sickle Cell disease
- Surgical procedures
- Major infections
- Other

**E. Medications**

- Aspirin-containing medications
- Diuretics
- Blood pressure medications
- Birth control pills
- Steroids
- Other

**F. Allergies and Drug Reactions**

- Penicillin
- Sulfa
- Local anesthesia
- Fluorescein
- Other

**G. Partially Sighted Patient**

- Onset of visual loss
- Use of low vision aids
- Problems/goals
- Home/family/community support

**2. BASIC SKILLS AND LENSOmetry**

**A. Method of Measuring/Recording Acuity**

- Distance acuity
- Near acuity
- Children
- Low vision
- Illumination of target and background
- Pinhole
- Artifacts
- Recording

**B. Color Vision Testing**

- Color plates
- D-15
- Farnsworth-Munsell
- Physiology
- Children

**C. Lensometry**

- Sphere
- Cylinder power/axis
- Prism

- Multifocal power
- Multifocal induced prism
- Base curve
- Lensometer
- Lens "clock"
- Estimation with loose lenses
- Aphakic lenses
- Recording prescription
- Transposition

**D. A-scan Biometry**

**E. Exophthalmometry**

**F. Amsler Grid**

**G. Schirmer Tests**

**H. Evaluation of Pupils**

**I. Estimation of Anterior Chamber Depth**

**3. Patient Services**

**A. Ocular Dressings and Shields**

- Indications
- Proper use

**B. Drug Delivery (Advantages/Disadvantages)**

- Drops
- Ointments
- Sustained release
- Injections
- Systemic
- Complications

**C. Spectacle Principles**

- Interpupillary distance
- Frames
- Multifocals
- "Safety" lenses and frames
- Adjustments and repair
- Care of spectacles
- Lens materials

**D. Assisting Patient**

- Physically disabled
- Visually disabled
- Pediatric/children

**E. Minor Surgery**

- Assisting surgeon
- Instructing patient

**4. BASIC TONOMETRY**

**A. Applanation**

- Principles
- Errors
- Cleaning and sterilizing
- Advantages/disadvantages
- Technique

**B. Non-Contact**

**C. Complications and Contraindications**

**D. Scleral Rigidity**

- General concepts
- Methods of assessing scleral rigidity

**E. Factors Altering Intraocular Pressure**

- Squeezing eyelids
- Heartbeat
- Breath holding
- Tight collar
- Body position
- Other

**5. INSTRUMENT MAINTENANCE**

**A. Acuity Projectors**

**B. Ophthalmoscopes**

- Direct
- Indirect

**C. Retinoscopes**

**D. Lensometers**

**E. Perimeters**

**F. Tangent Screen**

**G. Phoropters**

**H. Slit Lamps**

**I. Ultrasound**

**J. Keratometers**

**K. Lenses**

**L. Tonometers**

**M. Muscle Light**

**N. Special Instruments (Equipment)**

**O. Surgical Instruments**

**6. GENERAL MEDICAL KNOWLEDGE**

**A. Cardiopulmonary Resuscitation**

- Fainting
- Cardiac arrest
- Acute drug reaction

**B. Anatomy**

- Cardiovascular
- Respiratory
- Endocrine
- Nervous
- Ocular

**C. Physiology**

- Cardiovascular
- Respiratory
- Endocrine
- Nervous
- Ocular

**D. Systemic Diseases**

- Diabetes
- Hypertension
- Cancer
- Atherosclerosis
- Blood
- Infections
- Blood dyscrasia
- Infectious disease

**E. Ocular Diseases**

- Refractive errors
- Infection
- Injury
- Red eye
- Presbyopia
- Other common disorders

**F. Ocular Emergencies**

- First aid
- Management in the absence of the physician

**G. Metric Conversions**

**H. Fundamentals of Microbial Control**

- Sanitation
- Disinfection
- Sterilization
- Contamination

**7. CLINICAL OPTICS**

**A. Optics**

- Geometric
- Clinical
- Physiologic

**B. Retinoscopy**

- Principles
- Techniques

**C. Refractometry**

- Fogging
- Astigmatic dials
- Cross cylinder
- Duochrome
- Accommodation
- General principles

**D. Advanced Spectacle Principles**

- Vertex distance
- Prism correction
- Bicentric grinding (slab off)
- Aphakic spectacles

**E. Low Vision Aids**

**8. BASIC OCULAR MOTILITY**

**A. Extraocular Muscle Actions**

**B. Strabismus**

- Phoria/tropia
- Horizontal deviations
- Vertical deviations
- Pseudostrabismus
- Paralytic (including primary and secondary deviations)

**C. Amblyopia Detection**

**D. Evaluation Assessment Methods**

- Cover/uncover, alternate cover tests
- Krimsky/Hirschberg
- Diagnostic positions of gaze
- Maddox rod
- Worth 4-dot
- Stereopsis
- Near point of convergence and accommodation
- Ductions and versions, head tilt
- Vergences
- Risley prism
- Diplopia (e.g., Red glass)
- Fusion (e.g., Bagolini lens)

**9. VISUAL FIELDS**

**A. Visual Pathways**

- Retina
- Retinal nerve fiber layer
- Optic nerve
- Chiasm
- Optic tract
- Lateral geniculate body
- Optic radiation
- Occipital cortex

**B. Visual Fields**

- Visual field terminology (isopters, threshold, apostilb, decibel)
- Definition of the visual field
- The "island of vision" analogy

**C. Methods of Measuring the Visual Field**

- Screening (single stimulus, multiple stimuli, Harrington-Flocks screener, others)
- Threshold perimetry

**D. Techniques**

- Manual (confrontation, tangent screen, autoplot, arc perimeter, Goldmann)
- Automated (Humphrey, Octopus, Dicon, others)
- Kinetic perimetry
- Static perimetry

**E. Errors in Visual Field Testing**

- Machine calibration
- Recording and printing results
- Correcting lens (power and positioning)
- Stimulus selection
- Patient preparation (instructions, positioning, comfort, special situations, e.g., low vision, wheelchairs)
- Test selection
- Catch trials, fixation losses, and fluctuation
- Artfactual loss

**F. Visual Field Defects from Disease**

- Retinal disease
- Optic nerve disease (glaucoma, drusen, optic neuritis)
- Neurological
- Non-organic

**10. CONTACT LENSES**

**A. Basic Principles**

- Hard lenses

- Soft lenses
- Toric lenses
- Astigmatism
- Bifocal
- Aphakic
- Extended wear
- Gas permeable
- Truncated
- Bandage lenses
- Oxygen permeability
- Lens characteristics
- Rigid lenses

**B. Fitting Procedures**

- Keratometry
- Corneal diameter
- Pupil diameter
- Tear secretion
- Eyelid tightness and fissure size
- Fluorescein pattern
- Spectacle prescription conversion
- Over-refraction
- Pediatric
- Contraindications

**C. Patient Instruction**

- Insertion
- Removal
- Cleaning
- Storage
- Hygiene
- Solutions
- Wearing time

**D. Troubleshooting Problems**

- Tight
- Loose
- Vascularization
- Ulcers
- Spectacle blur
- Giant papillary conjunctivitis
- Deposits
- Pain
- Keratoconus
- Edema
- Solutions
- Modifications
- Vision

**E. Verification of Lenses**

- Power
- Base curve
- Diameter
- Central thickness
- Edge profile

**11. INTERMEDIATE TONOMOMETRY**

**A. Aqueous Humor Dynamics**

**B. Glaucoma**

- Basic mechanisms
- Angle closure
- Open angle
- Cupping
- Basic medical management
- Basic surgical management

**C. Indentation**

- Principles
- Errors
- Cleaning and sterilizing
- Advantages/disadvantages
- Technique

**12. OCULAR PHARMACOLOGY — Types, Strengths, Actions, and Complications**

**A. Anesthetics**

**B. Mydriatics and Cycloplegics**

**C. Epinephrine**

**D. Beta-Blockers**

**E. Miotics**

**F. Steroids**

**G. Antibiotics**

**H. Carbonic Anhydrase Inhibitors**

**I. Vasoconstrictors**

**J. Antihistamines**

**K. Osmotic Agents**

**L. Nonsteroidal Anti-Inflammatories**

**M. Others**

**13. PHOTOGRAPHY**

**A. Basics of Photography**

- Film
- Exposure
- Focal length
- Depth of field
- Synchronization
- Beam splitters
- Reticles
- Ocular
- Focus
- Video
- Astigmatic correction

**B. Fundus Photography**

**C. Defects/Artifacts**

**14. MICROBIOLOGY**

**A. Inflammatory Response**

- Infectious
- Non-infectious
- Cell types
- Cell function

**B. Microscopy**

- Bacteria identification
- Viral inclusions
- Disease correlation with microscopic findings

**C. Staining**

- Gram
- Giemsa
- Wright
- Special

**D. Culture Media**

- Bacterial
- Viral
- Fungal
- Other

**E. Specimen Collection and Processing**

- Collecting
- Labeling
- Fixing
- Staining
- Culturing

**15. ADVANCED TONOMOMETRY**

**A. Pathophysiology of Glaucoma**

- Structural changes
- Deterioration of function
- Secondary glaucoma
- Ocular hypertension
- Congenital glaucoma

**B. Tonometry Theory**

- Applanation
- Indentation

**C. Managing Tonometry Problems**

- Corneal irregularity and scarring
- High astigmatism
- Orbital disease

**16. ADVANCED VISUAL FIELDS**

**A. Advanced Principles of Visual Field Testing**

- Dynamic-kinetic field testing
- Static field testing
- Binocular field testing

*Continued*

- B. Etiology and Description of Less Common Defects**
    - Toxic
    - Steep vs. sloping margins
    - Absolute vs. relative
    - Nasal steps
    - Altitudinal
    - Scotomata
- 17. ADVANCED COLOR VISION**
- A. Physiology/Theory**
  - B. Defects**
    - Anomalous trichromats
    - Dichromats
    - Monochromats and achromatopsia
  - C. Advanced Testing Techniques**
    - Anomaloscope
    - Other
- 18. ADVANCED CLINICAL OPTICS**
- A. Advanced Refractometry**
    - Stenopeic slit
    - Automated refractometers
    - Merits of subjective vs. objective
    - Low vision patients
  - B. Advanced Optics**
    - Simple lens systems
    - Compound lens systems
    - Plane mirrors
    - Curved mirrors
    - Accommodative range
    - Accommodative amplitude
    - Presbyopia
    - Low vision aids
    - Induced prism
    - Safety lenses
    - Schematic eye
    - Conoid of Sturm
- 19. ADVANCED OCULAR MOTILITY**
- A. Amblyopia**
    - Classification
    - Treatment
    - Cause
  - B. Anatomy and Physiology of the Extraocular Muscles**
    - Location
    - Innervation
  - C. Binocular Function**
    - Hering's Law
    - Sherrington's Law
    - AC/A ratio
    - Angle kappa
    - Fusional amplitude
    - Stereopsis
    - Nystagmus
    - Convergence and divergence
    - Panum's area
    - Retinal correspondence
- 20. ADVANCED PHOTOGRAPHY**
- A. Fluorescein Angiography**
    - Principle
    - Filters (exciter, barrier)
    - Fluorescein administration
    - Photography technique and sequence
    - Fluorescence
  - B. Slit Lamp**
  - C. External**
  - D. Specular Micrography**
  - E. Film Processing**
- 21. ADVANCED PHARMACOLOGY**
- A. Basic Concepts of Topical Medications**
    - Stability
    - pH
    - Tonicity
    - Sterility
    - Adverse effects
  - B. Mechanism of Action and Desired Effects**
    - Sympathomimetics
    - Sympatholytics
    - Parasympathomimetics
    - Parasympatholytics
    - Cholinesterase inhibitors
- 22. SPECIAL INSTRUMENTS AND TECHNIQUES**
- A. Ophthalmic Lasers**
    - Argon
    - Krypton
    - Excimer
    - CO<sub>2</sub>
    - Other
- B. Imaging Techniques**
  - Computerized tomography (CT scans)
  - Magnetic resonance imaging (MRI)
  - Ultrasonography
- C. IOL Power Computation**
- D. Electrodiagnostics**
  - Electroretinography
  - Electrooculography
  - Visually evoked potential
- E. Dark Adaptometry**
- F. Macular Function Testing**
- G. Pupillography**
- H. Ophthalmoscope**
- I. Slit Lamp**
- J. Photokeratoscope**
- K. Pachymetry**
- L. Low Vision Equipment**
- M. Contrast Sensitivity**
- 23. ADVANCED GENERAL MEDICAL KNOWLEDGE**
- A. Ocular Manifestation of Systemic Diseases**
    - Diabetes mellitus
    - Hypertension
    - Atherosclerosis
    - Thyroid disease
    - Pituitary disease
    - Brain tumors
    - Other
  - B. Low Vision/Blindness**
    - Legal
    - Total
    - Functional
    - Psychological/social aspects
  - C. Ocular Disease**
    - Infectious
    - Immunologic
    - Congenital
    - Malignant
    - Other
  - D. Trauma**