Congratulations

- You’re creating a career move!

Office Operations - 13%

- Office Procedural Manual
  - Official rule book of the practice
  - Used to clarify the policies of the practice
  - ________
  - ________
  - ________
  - Critical in today’s employment marketplace
  - Have an attorney review this document

Office Operations

- Records Management – Paper records
  - Filing Systems
    - ________
      - Simplest and most common
      - Misfiling of record due to spelling error possible
    - ________
      - Decreased chance of misfiling
      - Cross index card required
      - More time consuming
    - Electronic records covered later...

Where do place your efforts

CPOA Examination Content

- Office Operations – 13%
- Ophthalmic Optics and Dispensing – 20%
- Testing and Procedures – 20%
- Special Procedures – 17%
- Refractive Status of the Eye and Binocularity – 13%
- Basic Ocular Anatomy and Physiology – 17%

QUIZ

1.
2.
3.
4.
5.
6.
7.
8.
Office Operations

- Good recall systems allow for good patient retention
- Recall Systems
  - Type of Patient Recall
    - Pre-appoint
      - Patient scheduled a year in advance and confirmed at that time.
    - Postcard or letter
    - Computerized
      - Recall list generated by practice software or 3rd party
      - Email
      - Text

Office Operations

- Record Corrections
  - Mistakes happen – now what do you do?
    - Draw a line through the error
    - Initial it
    - Example:
      - Wednesday, January 3, 2017 – 2018
    - Never erase, whiteout or black out information
      - Charts are legal documents

Office Operations

- Confidentiality - Legal and Ethical Issues
  - HIPAA – enacted in 1990
    - Health Insurance Portability and Accountability Act
    - NOT HIPPA
    - Minimum Necessary Principle

Office Operations – 13%

- HIPAA Regulations – Medical records
  - Confidentiality
  - Safeguards
  - Release of records
  - Legal ownership of records - patient
  - Safeguarding Computer use
    - Resource for materials and info: AOA website: www.AOA.org

Office Operations

- Patient Handling – Customer Service
  - Telephone Techniques – Answer by 3rd ring
    - Greeting
      - Politeness, considerations, kindness, respect
    - Taking messages
      - Date, time, reason for call
    - Handling requests for information

Office Operations

- Patient Handling – Customer Service
  - Telephone Techniques
    - Handling complaints – “let me get my manager”
      - Respectful and professional
    - Making appointments
      - You’re in charge
    - Confirming appointments
      - Critical to schedule
Office Operations

- Patient Flow
  - Control the appointment schedule
  - Understand your:
    - Appointment types
    - Time required by each
    - Doctor/Patient requirements

Office Operations

- Public Relations
  - Types of correspondence and brochures
    - Welcome to the practice – all new patients
    - Referral letters – any doctor to whom you refer a patient
    - Consultation letters – to every doctor referring a patient
    - School reports – if requested by school nurse
    - Legal reports – if requested by attorney or government agency. Confirm you have permission from patient if necessary
    - Patient information pamphlet – for patient education – often provided by vendors or available through the AOA

Office Operations

- Patient Handling
  - Triage Categories
    - _____ – immediate
      - Sudden loss of vision, pain, injury
    - _____ – 12 – 24 hours
      - Red eye with itching, broken glasses (no backup), swollen eyelids
    - _____ – next available appointment
      - Dry eyes, gradual decrease in vision over a long period of time

    Ask good questions to discern need

Office Operations

- Bookkeeping Procedures
  - Account receivable
    - Patient balances
  - Accounts payable
    - Bills we owe
  - Petty cash
    - Document well - receipts

Office Operations

- Office Finances – crucial to success of practice
  - Presentation of fees
    - Don't apologize – understand and explain
  - Collection of fees
    - Credit card, cash, check

    No products should leave without being paid for

Office Operations

- Professional Issues
  - Role and function of the eyecare professional
    - Delegation by the doctor
    - Certification and licensure Optometric versus Paraoptometric
Office Operations

- Liability and Malpractice
  - Paraoptometrics are:
    - Responsible to provide the highest level of service possible
    - Protected under the doctor of optometry's malpractice insurance

Office Operations

- Conduct, Confidentiality and Ethics
  - You are the patients advocate – their visual welfare is your duty
  - To strive to see that no one lacks for visual care
  - To conduct yourself as exemplary citizens
  - To promote and maintain cordial and unselfish relationships with members of our profession


Office Operations

- Hygiene and Infection Control
  - Handwashing – between patient contact
  - Instrument disinfection – between all patient contact
  - Contact lens disinfection –
    - Hydrogen peroxide
    - Multi purpose solutions (most common)

Office Operations

- Hygiene and Infection Control
  - Cross contamination – Transfer between patients and/or objects – such as a dropper tip
  - Sterilization – Most common
  - Heat
    - Autoclave- Heat steam 250-273 degrees F for at least 15 minutes
  - Chemical
    - Ethylene oxide and hydrogen peroxide are common chemicals

Office Operations

- Health Information Technology (HIT)
  - Exchange of information in an electronic environment
    - Interoperability –
      - Computer and devices having the ability to exchange information
    - E-prescribing
      - The ability to send an accurate, error free and understandable prescription directly to a pharmacy
Office Operation

- Health Information Technology (HIT)
  - The transmission of health information electronically across different providers of care
  - Quality Measures
    - The mechanisms for assessing observations, treatment, processes, experience and/or outcomes of patient care.

Office Operations

- Health Information Technology (HIT)
  - PQRI - Physician Quality Reporting Initiative
  - PQRS - Physician Quality Reporting System
    - This is a reporting program that uses a combination of incentive payments, and payment adjustments to promote quality reporting of information by eligible professionals
  - Meaningful Use
    - Term for using certified electronic technology to improve quality, safety and efficiency

Office Operations

- Health Information Technology (HIT)
  - Computer Applications
    - EMR - Electronic Medical Records
    - EHR - Electronic Health Records
    - Interface - Two separate Electronic applications to share information
    - Security Measures - Must be taken when using HIT
    - Storing information - Storing information is critical and there are specific requirements

Office Operations

- Computer Applications
  - Electronic Claim Submission - Claim submission from computer to clearinghouse
  - Network - Two or more linked computers
  - Operating System - Most important software, manages the computer memory processes and all of it's software and hardware. It also allows us to communicate with the computer without knowing computer code

Office Operations

- Basic Business Terminology
  - B2B or B2C
  - Fixed Costs:
  - Variable Costs:
  - Cash Flow Statement:
  - Profit Margin:
  - Liability:
  - Revenue minus expenses:
  - ROI:

Quiz - Answers

What does acronym HIPAA stand for?

Who owns the medical record?

Which category would non-painful swollen eyelids fall into?
Quiz - Answers

An account that we expect to receive money on, such as a payment form a vision plan or patient balance after insurance payments is called?

What is the difference between disinfection and sterilization?

What allows two separate electronic applications to share information?

HIT stands for?

A cost that does not change with an increase or decrease in the amount of goods or services produced is known as a?

Ophthalmic Optics & Dispensing – 20%

- Prescriptions
  - Components
  - Sphere - Diopter power, corrects for Myopia or Hyperopia
  - Cylinder - Diopter power corrects for astigmatism
  - Axis - Only present in RX’s with cylinder correct, denotes position
  - Add power - Power needed for the bifocal portion of the glasses
  - Prism - Only present when eye alignment is an issue.
  - Prism base direction – Up, Down, In and Out

- Ordering should include: (paper or electronic)
  - Prescription
  - Pupillary Distance (PD)
  - Optical Center (OC)
  - Seg Height
  - Frame A and B measurements
  - Distance Between Lenses (DBL)
  - Vertex Distance (if higher RX)
  - Multifocal Style (FT, TF, PAL)

- Orders might include:
  - Tints
  - Coatings
  - Special processes

Ophthalmic Optics & Dispensing

Certified Paraoptometric Assistant

Ophthalmic Optics and Dispensing Review Course

www.EyeSystems.info Mary E. Schmidt, ABOC, CFO Mary@EyeSystems.info

No video or audio recording of presentation allowed
Optical Crosses

- **MINUS CYL** +5.00 – 2.00 x 180
- **PLUS CYL** +3.00 +2.00 x 090

Remember: The sphere power comes first and the axis tells us where to start.

Lens Clock Readings

- Example
  - Front Lens Surface
    - +8.00
    - +5.00
  - Back Lens Surface
    - +3.00 +2.00 x 090
    - +5.00 – 2.00 x 180

Remember "combine" the numbers. Think money and debt.

- Transposing
  - COMBINE the sphere and cylinder powers.
  - Change the sign of the cylinder power.
  - Rotate the axis by 90 degrees.

Remember: Think about the power wheel on your lensometer!
Ophthalmic Optics & Dispensing

• Examples
  -1.00 +2.00 x 090
  +2.00 – 4.50 x 045
  Plano – 3.50 x 020

Remember: Axis MUST be within 1 – 180 degrees

Ophthalmic Optics & Dispensing

• Decentration Formula
  - Eye size plus Distance between lenses minus patient’s PD divided by 2
    - Patient PD versus Frame PD
    - Patient PD: Distance between patient pupil
    - Frame PD: Eye size PLUS DBL
    - Decentration formula

Ophthalmic Optics & Dispensing

• Decentration
  ✓ Insures the OC is directly over the patients pupil
  ✓ Frame PD is smaller – Decentration is outward
  ✓ Frame PD is larger – Decentration is inward

Ophthalmic Optics & Dispensing

• Vertex distance
  - The distance from the front of the patient’s eye to the back of the ophthalmic lens
  - Effective Power – change is the prescription when the distance varies from the normally refracted 13.5 mm.
  - Vertex Distance is measured by a Distometer
    Remember this is only a concern with higher RX’s (+/- 4.00 diopters)

Ophthalmic Optics & Dispensing

• Vertex distance and Effective Power
  - Instruments used for verification
    – Calipers
      • Lens thickness
    – Lensometer – Neutralizes lens power
      • Lens power and axis location
      • Prism presence, direction and amount

• Plus lenses increase in power when vertex distance is increased
• Minus lenses decrease in power when vertex distance is increased
Ophthalmic Optics & Dispensing

• Instruments used for verification
  – __________
    • Progressive add marking
  – __________
    • Base Curves

What Does Prism Do?

• Displaces light
• Light bends toward the ______

Prism allows us to bend light to correct vision problems.

Ophthalmic Optics & Dispensing

• Lenses: Concave and Convex
  – Minus lenses – Con____
    • Thicker on the edge
    • Thinner in the middle
  – Plus lenses – Con____
    • Thicker in the middle
    • Thinner on the edge

Lenses are made up of prisms

• Minus lenses – “______” light
• Plus lenses – “______” light
  apex to apex
  minus lens
  base to base
  plus lens

Spherical Lens Forms

• A spherical surface has the same roundness over the entire surface
• Spherical lenses are sections cut from a sphere

Cylindrical Lens Forms

• A cylindrical surface is that of a torus, a section from a tire or a donut
  – The two different curves are 90º from each other
• Toric surfaces are used in lenses to create two different powers – one meridian is steeper than the other.
Ophthalmic Optics & Dispensing

- Major Reference Point (_____) or Prism Reference Point (_____
  - The optical center of each lens
  - Intersection of the sphere and cylinder indicators

Prentice’s Rule $P=cf$

- Prentice’s rule is a formula used to determine the amount of induced prism in a lens: $P = cf$
  - where $P$ is the amount of prism correction (in prism diopters)
  - $c$ is decenteration (the distance between the pupil centre and the lens’s optical centre, in centimetres)
  - $f$ is lens power (in dioptres)

Examples

- $-4.00$ PD is 3mm away from OC
- $+7.50$ PD is 6 mm away from OC

Prentice’s Rule $P=cf$

- The primary use of Prentice’s rule is that under certain circumstances, the prescribed prism can be obtained without grinding prism into the lenses, by decentering the lenses as worn by the patient.

Prentice Rule

- Determine the power of the lens
- Calculate PD
- Convert mm to cm
- Multiply

Verification of Prism

- Determine the patient’s PD
- Determine the Optical Center (OC) of the lens
  - Compare with patient’s PD for horizontal prism
    - Base in or Base out
  - Compare with patient’s Line of Sight (LOS) for vertical prism
    - Base up or Base down
PRISM Direction
- PLUS Lens
  - Patient PD OUTSIDE of OC = Base OUT
  - Patient PD INSIDE of OC = Base IN
- MINUS Lens
  - Patient PD OUTSIDE of OC = Base IN
  - Patient PD INSIDE of OC – Base OUT

Ophthalmic Optics & Dispensing
- Induced prism – when a patient is NOT looking the optical center of the lens

Wanted vs Unwanted Prism

Ophthalmic Optics & Dispensing
- Prescription Forms
  - Minus Cylinder
    - Cylinder is ground on the back of the lens
      - -3.00 – 2.00 x 045
      - Most common form used in Optometry
  - Plus Cylinder
    - Cylinder is ground on the front of the lens
      - -2.00 +1.50 x 090

Vergence, Distance and Diopeters
- A Diopeter is the reciprocal of the focal length in meters
- The formula looks like this:
  \[ \frac{1}{f (m)} = D \quad \text{or} \quad 1 / f (m) = D \]
Ophthalmic Optics & Dispensing

- Basic Lens Types and Styles
  - Single Vision (SV)
    - Spherical: -2.00 sph
    - Plano-cylinder: Plano -2.00 x 145
    - Sphero-cylinder: +4.00 – 1.75 x 020
    - Aspheric: Higher Rx’s – More complicated design

- Multi-focal – Used for Presbyopic patients
  - Bifocal: Two lens powers
  - Trifocal: Three lens power
  - Progressive (PAL): Gradually change power

- Power of the lens
  - Segments are ADDED to the power of a lens
    - Bifocal:
      - Example: -4.00 -0.50 x 012 +2.00 ADD
      - Bifocal power in the lens: -2.00 – 0.50 x 012
    - Trifocal: Half the power of the bifocal add (usually)
      - Example above the trifocal power is +1.00
    - Progressive: gradual change in power

- Lens Materials – Index of Refraction
  - Index of Refraction is a comparison, or ratio, of the speed of light in air to the speed of light in another medium.
  - Values
    - Speed of light in air = 186,000 miles per second (mps)
    - Air = 1.00
    - Water = 1.33

- Index of Refraction
  - Formula
    - Index of refraction (n) = Speed of light in air/speed of light in material
    - 186,000 mps divided by the speed of light in the material
Ophthalmic Optics & Dispensing

**Lens materials - Glass**
- Crown Glass \( n: 1.52 \)
- Flint Glass \( n: 1.65 \)
- Hi Index Glass \( n: 1.9 \)

- Pros: Most scratch resistant, great optics
- Cons: Heavy, less impact resistant

**Lens Materials: Plastic**
- CR-39 \( n: 1.49 \)
- Hi index Plastics \( n: 1.54 - 1.74 \)

- Pros: Light and thinner (high index only), more impact resistant compared to glass, tints easily.
- Cons: Scratches more easily, less ultra-violet (UV) protection if untreated.

**Lens Materials: Impact Resistant**
- Trivex/Phoenix \( n: 1.53 \)
- Polycarbonate \( n: 1.59 \) (high index)

- Pros: Lighter in weight, more impact resistant when compared to plastic. Naturally filters UV. Trivex great for drilling.
- Cons: Scratches more easily than other materials, chromatic aberration ABBE value (in Poly).

**Hardening (Tempering) Methods**
- Heat tempering
  - Lens is placed in a vacuum and brought close to the melting point, then cooled rapidly.
- Chemical tempering
  - Lens is placed in a hot chemical bath for 15 – 17 hours

**ANSI – American National Standards Institute**
- Regulates the standard of tolerances for ophthalmic lenses
  - Keep a copy near your lensometer

**Z80.1 Standard**
- Impact resistance of lenses subject to individual test shall be measured with a 15.9 mm (5/8 inch) diameter steel ball weighing not less than 16 grams (0.56 oz) dropped from a height of not less than 127 cm (50 inches) or an equivalent impact
Ophthalmic Optics & Dispensing

• ANSI Z87.1 Basic
  — Impact resistance of lenses subject to individual test shall be measured with a 1 inch diameter steel ball dropped from a height of not less than 127 cm (50 inches) or an equivalent impact.

Ophthalmic Optics & Dispensing

• High Impact Lens Standard
  — Impact resistance of lenses subject to individual test shall be measured with a ¼ inch BB fired at a rate of 150 feet per second.

Ophthalmic Optics & Dispensing

• FDA Standards
  — Food and Drug Administration
    • Regulates pharmaceuticals
    • Approves methods for sterilization

Ophthalmic Optics & Dispensing

• Special Considerations
  — High Minus/Myodisc —
    • Small concave disc ground on back surface of a lens — low vision aid
  — Aphakia (post cataract surgery)/Lenticular
    • Plus power contained in a small circle zone in the center of the lens
  — Aspheric
    • Complex front surface of lens — curve changes gradually toward edge — thinner and lighter lens

Ophthalmic Optics & Dispensing

• Special Considerations
  — Fresnel Prisms
    • Temporary prism, a thin flexible plastic sheet, trimmed and attached to the lens
  — Industrial/Occupational

Ophthalmic Optics & Dispensing

• Tints and Coatings — Numerical System
  — Colors
    • Tint #1 65 – 80% light transmission
    • Tint #2 45-60 % light transmission
    • Tint #3 15 – 40% light transmission
  — Mirror coating
  — Edge coating
Ophthalmic Optics & Dispensing

• Sun and Glare Protections
  — Polarized lenses
  — Photochromatic

• Frame Styles
  — Full rim frames
  — Semi rimless (grooved or rimlon)
  — Rimless (drill mounted)

• Parts of a Frame
  • Eye wire
  • Bridge
  • Hinge
  • Pad Arm
  • End piece
  • Nose pad
  • Temples
  • Temple tips

Ophthalmic Optics & Dispensing

• Ophthalmic Lens Treatments (coatings)
  — Scratch resistant
    • Should be applied to all non glass lenses to help minimize scratching. Quality matters!
  — Anti-reflective
    • Applied to the surface of the lens to reduced reflections. Phoropter lenses are AR treated. Quality REALLY matters!
  — Ultra-violet
    • Block the damaging uv rays. Think sunscreen for eyes.

• Frame Materials
  — Two Categories
    • Plastic
      — Zyl – cellulose acetate and zylonite is the most common
    • Metal
      — Monel is the most common
      — Titanium
      — Stainless steel
      — Memory metal

• Frame Verification
  — Frames should be stamped with info
    • Don’t assume accurate – always verify by measuring
      — Eye size
      — Bridge size
      — Temple length
Ophthalmic Optics & Dispensing

- Standard Frame Alignment
  - Evaluate
    - Frame front even
    - Bridge check for X-ing
    - Eyewire check for x-ing
    - Temples aligned with frame front
    - End pieces
    - Hinges
    - Temples for proper closure

- Eyewear Dispensing
  - 4 - Point touch
    - The frame eye wire should touch at four points

- Tools for Frame Adjusting
  - Frame Warmer (Hot Air/Salt or Glass beads)
    - Heat plastics to make them pliable and decrease chance of breaking – every plastic material has a different heat tolerance.
    - You've gotta do it to know it!

- Dispensing – Frame Alignment
  - Front X-ing
    - Skewed in one direction
  - Coplanar
    - Lenses parallel
  - Face form
    - Positive versus Negative

- Adjusting Pliers
  - Nose pad
  - Needle nose
  - Half round
  - Flat jaw
  - Pantoscopic angling
  - Human (Bionic) thumb

- Nose pad angles
  - Frontal angle
  - Splay angle
  - Vertical angle
Ophthalmic Optics & Dispensing

• Frame Tilt or Angle
  — Pantoscopic tilt
    • Preferred fit
  — Retroscopic tilt

• Common Frame Adjusting
  — Increase vertex distance —
    • Bend down or in at the end piece
    • Change pad arm position
  — Decrease vertex distance —
    • Bend up or out at the end piece
    • Change pad arm position

TIP: Changing vertex distance changes things:
    Eyelash touch, Cheek touch, Seg height

Ophthalmic Optics & Dispensing

• Common Frame Adjusting
  — Eyewire not level
    • Bend UP at the end piece on the UP side
    • Bend DOWN at the end piece on the DOWN side
  — Eyewire face touch on one side
    • Bend IN at the end piece on the IN side
    • Bend OUT at the end piece on the OUT side
  — Check temple tip bend for unequal temple tension
    • 30 mm from top of ear to temple tip end

Ophthalmic Optics & Dispensing

• Points to remember when adjusting

Ophthalmic Optics & Dispensing

• Patient Care and Instruction
  — Two hands on and two hands off
  — Temples folded and glasses stored in case
  — Clean ENTIRE frame daily with mild soap and water
  — Clean lenses multiple times per day if needed.

  — Explain the Don’ts too!

Ophthalmic Optics & Dispensing

• Common Frame Repairs
  — Realignments
  — Eyewire and temple screw replacements
  — Nylon string replacements
QUIZ

Light bends prism toward the ____?

A convex lens causes light rays to ______, while a concave lens causes light rays to ____?

A Polycarbonate lens is a mid or high index?

Quiz

What instrument is used to measure the base curve of a lens?

What are the two methods for hardening/tempering lenses?

Moving pad arms up will move the frame?

Quiz

What does ANSI stand for?

Which tint number allows the least amount of light transmission?

The desired frame tilt is?

QUIZ

A lens that darkens when exposed to UV light is called a _________ lens?

Certified Paraoptometric Assistant

Testing and Procedures Review Course

Testing and Procedures 20%

• Case History – Gathering information
  – Chief Complaint (Reason for visit)
    • Reason for vision – record patient word choices
  – History of present illness
    • Detailed information on chief complaint
  – Past, family and social history
    • Past conditions, operations, family history and age appropriate social history
  – Review of Systems
    • Inventory of body systems, such as cardiovascular and endocrine
Testing and Procedures

• If the patient mentions ocular issues:
  – Ocular Symptoms
  – Ask “open ended” questions
    – Itching
    – Burning
    – Tearing
    – Redness
    – Discharge
    – Irritation
    – Blurred vision
    – Other symptom

Testing and Procedures

• Ocular History
  – Ask about specific ocular history, conditions or problems
    • Surgery
    • Injuries
    • Vision training
    • Eye medications
    • Refractive history

Testing and Procedures

• Ocular History
  – Ask about common ocular problems, such as:
    • Glaucoma
    • Cataracts

Testing and Procedures

• General Health History
  – Ask questions to “rule out” specific health problems
    • Current health status
      – Diabetes
      – High blood pressure
      – Heart disease
      – Other

Testing and Procedures

• Family Ocular History
  – Has anyone in the family had:
    • Cataracts
    • Glaucoma
    • Macular Degeneration
    • Retinal detachments
    • Other

Testing and Procedures

• Medications
  – Name
    • Prescribed or over the counter (OTC)
  – Reason for asking medication
  – Quantity
  – Frequency
  – Prescribed for
  – If the patient taking the medication as directed?

This is an important question, patients don’t always comply
Testing and Procedures

• Allergies
  – Medications
    • Distinguish between allergy and side effects
      Example: Aspirin upsets my stomach
      Allergy or side effect?
    • Aspirin causes rash or throat swelling
      Allergy or side effect?
  – Environmental
    • Pollen, dust, animals
  – How does the patient get relief?

Testing and Procedures

• Refractive History
  – Past History of corrective lenses
  – Current corrective wear
    • Age of RX
    • State of correction
    • Quality of vision

Testing and Procedures

• Visual Acuity: Snellen Fraction
  – Numerator
    • Represents the testing distance in feet or meters
      – 20/_____: 6/_____
  – Denominator
    • Represents the distance at which the letter subtends a
      5 minutes angle of arc in distance or meters.
      Also called the “letter size.”

Testing and Procedures

• Pinhole Acuity
  – 20/40 acuity or less
  – Decreased visual acuity due to refractive error or
    an organic issue
  – If VA improves most likely correctable
  – Is it magic?

Testing and Procedures

• Type of Acuity Charts
  – Snellen – _______20/20 ft.
  – Metric (Bailey-Lovie) 6/6 meters
  – Low vision charts
  – Illiterate charts
    • Landolt “C” or rings
    • Tumbling “E”
Testing and Procedures

- Vision Acuities – Testing Distances
  - Distance Testing
    - _____ feet or _____ meters in customary
    - Or “Mirror” method simulate 20 feet

Testing and Procedures

- Recording Results
  - The smallest line a patient care read
  - If patient can see all of 20/25 line and some of 20/20
    - Record as 20/25+ or 20/25+2
  - Or the converse:
    - Record 20/20- or 20/20-1

Testing and Procedures

- Interpupillary Distance Measurement - PD
  - Distance
  - Near
  - PD Ruler
  - Pupilometer
  - Monocular – Preferred especially progressives
  - Binocular

Testing and Procedures

- Near Point Convergence (NPC)
  - Measure the ability for both eyes to work together
    - Blur/Break/Recovery
    - Blur point – when the patient first notes blurring
    - Break point – when the patient see’s double or deviates
    - Recovery – when patient can fuse again

Measured in cm from the bridge of the nose to the point of blur/break

Testing and Procedures

- Near Point of Accommodation
  - Ability of the eyes to focus at near as material is moved in closer
    - Binocular measurement
    - Distance measured/recorded in cm

Testing and Procedures

- Extra-Ocular Muscle Testing
  - Pursuits
    - Movement of the eyes while following a target
  - Saccades
    - Jumping movements from one target to another
Testing and Procedures

- Cover Test
  - Assess heterophoria and heterotropia
  - Two separate tests
    - unilateral and alternate
    - Test at distance and near
    - Unilateral test first

Testing and Procedures

- Unilateral Cover Test
  - Heterophoria or Heterotropia
    - Tendency versus Permanent
      - Phoria versus Tropia
    - Test determines
      - Constant or Intermittent
      - Unilateral or alternating

Testing and Procedures

- Alternating Cover Test
  - Determines the direction and magnitude of the tropia or phoria
    - Hyper
    - Hypo
    - Exo
    - Eso

Testing and Procedures

- Eye Dominancy
  - Eye preference
  - Eye used for monocular viewing or sighting
  - Testing methods
  - Reason for recording
    - Monovision contact lenses

Testing and Procedures

- Fusion and Suppression
  - Fusion
    - Blending of 2 images, one from each eye
  - Suppression
    - Subconscious inhibition of an eye's retinal image
      - Think Strabismus

Testing and Procedures

- Worth 4 Dot
  - Patient wear red/green lens glasses
  - Looks at target
    - 2 green dots
    - 1 red dot
    - 1 white dot
  - Number of color dots seen by patient will determine fusion or suppression
Testing and Procedures

- Maddox Rod
  - Cylindrical grooves ground into a piece of glass and mounted in a rim.
  - Grooves will convert a image of a light perpendicular to the axis
  - Detect latent manifest horizontal or vertical strabismus
  - Dissociating test
    - One eye sees a red line the other sees a white light - restricted fusion

Testing and Procedures

- Pupillary Responses
  - Assures that sensory pathway is working
    - Whew, you’re not brain dead.
  - _________ – Constricts with light
  - _________ – One eye constricts the other does too
  - _________ – Pupils constrict when reading or accommodating

Testing and Procedures

- Pupillary Response Recording
  - Option 1
    - P - Pupils are: Option 2
    - E = ______ 5mm/4mm
    - R = ______ R and R
    - R = ______ 2+
    - L = ______ -/+ RAPD
    - A = __________

Testing and Procedures

- Color Vision
  - Color deficiency is usually an inherited trait one or more sets of cones
  - Types of color vision test
    - Pseudoisochromatic plates (PIP)
    - Farnsworth D-15
    - Farnsworth 100 hue
    - Nagel Anomaloscope

Testing and Procedures

- Color Vision: Methods for Testing
  - Monocular - acquired
  - Binocular – inherited
  - Test distance 75 cm = 30 inches
  - Illumination - Macbeth daylight lamp
  - Illuminant C lamp
Testing and Procedures

• Pseudoisochromatic Plates
  – Most common color dots
  – Numbers and shapes
  – Ishihara
  – 14, 24 or 38 plates
  – Plate 1 is universal – everyone can read it

• Hardy-Rand-Ritter (HHR)
  – Screening test to separate those with defective color vision from those with normal color vision
  – Classifies the type of defect
  – Indicates the extent – Mild, Medium, Strong

• Farnsworth Dichotomous (D15)
  – Used to separate medium and strong color defects
  – 15 Discs are mixed up and the patient matches “like” discs colors – results are noted.

• Farnsworth Dichotomous 100 Hue Test
  – 93 full color discs – specialty/research
  – Calculates are numerical score

• Anomaloscope
  – Most comprehensive test
  – Not common in Optometry offices

• Color Vision Classifications
  – Normal color vision
  – Red deficiency
  – Green deficiency
  – Blue-yellow deficiency
Testing and Procedures

- **Stereo Testing**: Methods for Testing
  - Illumination – well lit room
  - Testing distance 40 cm or 16 inches
  - Patient wear their near RX under stereo polarized glasses
  - Recording – in seconds of arc
    - Cat = 400 seconds of arc
    - Rabbit = 200 seconds of arc
    - Monkey = 100 seconds of arc
    - Normal is 40 seconds of arc

Testing and Procedures

- **Exam Instruments**
  - Phoropter – Provides prescription
  - Retinascope – Determines refractive error
  - Keratometer – Measures corneal curvature
  - Biomicroscope (Slit lamp) – Determines health of the anterior structure of the eye

Testing and Procedures

- **Exam Instruments**
  - Optical Coherence Tomographer – OCT
    - Uses light to capture micro meter resolution three dimensional images of the retina
QUIZ
What does the numerator represent in the Snellen acuity fraction?
True or False? If the pinhole occluder improves the acuity, the patient can generally be corrected to at least that same line with lenses.

A ______ PD is required when a patient is getting progressive lenses?

QUIZ
The blending of 2 images, one from each eye is called ______.
Constriction of the pupil in one eye when the other is exposed to a light source is __________ __________.

What is the term for normal color vision?

QUIZ
What is the term for a red color deficiency?
Which type of ophthalmoscope provides a smaller image but a larger field of vision?

SPECIAL PROCEDURES 17%
- Contact Lenses
- Tonometry
- Visual Field Testing
- Blood Pressure

SPECIAL PROCEDURES
- Hard Contact Lenses
  - Materials
    - 1940 – 60’s
      - Polymethylmethacrylate ______
    - 1970’s
      - Rigid Gas-Permeable ______
        - Silicone Acrylate
        - Fluoro-Silicone Acrylate
SPECIAL PROCEDURES

• Gas Permeable Lenses
  — Parameters
  • Overall Diameter
  • Optical Zone Diameter
  • Back Vertex Power
  • Base Curve Radius
  • Peripheral Curves
  • Edge and Center Thickness

SPECIAL PROCEDURES

• Soft Contact Lens
  — Materials 1970's
  • Soft Hydrogel (water absorbing)
  • Silicon Hydrogels

SPECIAL PROCEDURES

• COMPARISON – SOFT vs RGP
  — Soft Lens
  • Initial comfort
  • Variable wearing time
  • Occasional wear
  • Ability to enhance or change eye color
  • Stability in sports

SPECIAL PROCEDURES

• COMPARISON – SOFT vs RGP
  — Gas Permeable
  • Clear, sharp vision
  • Long-term comfort
  • Stability/durability
  • Ease of care
  • Good ocular health
  • Corrects for astigmatism

SPECIAL PROCEDURES

• Care and handling
  — Hygiene
  • Hands
  • Case
  — Evaluate lens
  • Tears (soft)
  • Inverted (soft)
  • Debris (lint)

SPECIAL PROCEDURES

• Solution
  — Soft contact lens
  • Don’t be stingy
  — Rigid contact lens
  • Say NO to spit
SPECIAL PROCEDURES

• Soft Contact Lens Insertion
  – Place lens on tip of finger
  – Verify lens is right side out
    • Taco test
  – Manipulate lid for aperture
    • Orbital bone
  – Place lens gently on cornea
  – Release lower lid, then upper lid

• Soft Contact Lens Removal
  – Pull lower lid down
  – Look up
  – Gently slide contact lens onto sclera
  – Pinch lens off sclera
  – Use right hand for right eye and visa versa

SPECIAL PROCEDURES

• Rigid Contact Lens Insertion
  – Place lens on the tip of your index finger of your
    dominant hand
  – Place your middle finger of dominant hand at the lash
    margin of the lower lid
  – Grasp the upper lid, at the lash margin, with the middle
    finger of the opposite hand pressing against the orbital
    bone
  – Looking straight ahead, place the lens gently on the
    cornea.

• Rigid Contact Lens Removal
  – Place a mirror flat on the table surface
  – Bend to look straight down into the mirror
    • Open your eye as wide as possible
  – Place the tip of your index finder at the outer
    corner of your eye
  – Pull the lid laterally, toward the ear, continue
    looking straight into the mirror, blink hard.
    • Over time you will no longer need the mirror and can
      blink the lens into your hand.

SPECIAL PROCEDURES

• Contact Lens Wearing Modalities
  – Daily wear
  – Flexible wear
  – Extended wear

• Contact Lens Wearing Schedules
  – Soft contact lenses
    • 4-6 hours plus 2 hours each day until full time wear
  – Rigid Contact Lenses
    • 4 hours plus 1-2 hours each day until full time wear
SPECIAL PROCEDURES
• What is “Normal” Adaptation
  — Appearance
  — Comfort
  — Vision

SPECIAL PROCEDURES
• Lens Care Regimens
  — Soft or Rigid Contact Lens Systems
    • Clean
    • Rinse
    • Disinfect & store.
    • Protein/buildup removal
  — Daily Disposable
    • Discard

SPECIAL PROCEDURES
• Blurred Vision – Soft Lenses
  — Residual astigmatism
  — Lenses switched
  — Inverted lens
  — Dirty or coated lens
  — Dry lens
  — Poor fit
  — Wrong prescription
  — Old

SPECIAL PROCEDURES
• Blurred Vision – Rigid Lenses
  — Non-wetting lens surface
  — Lenses switched
  — Warped lenses
  — Poor optical quality
  — Dirty or coated lens
  — Poor fit
  — Wrong prescription

SPECIAL PROCEDURES
• Poor Lens Comfort
  — Soft Lenses
    • Tear
    • Poor Edge
    • Dryness
    • Poor fit
    • Dirty
  — Rigid Lenses
    » Poor wetting
    » Poor blend
    » Bad edge

SPECIAL PROCEDURES
• Redness with Contact Lenses
  — Adverse reaction to solutions
  — Uncomfortable edge
  — Wrong solution used on lenses
  — Foreign body
  — Excessive movement
  — Improper application

ALWAYS REMOVE THE LENS
SPECIAL PROCEDURES

• Contact Lens — Verification
  • Lensometer measures the back vertex power
    — Rigid lenses
    — Soft lenses are immersed in saline in a wet cell to measure the power with a lensometer

• Contact Lens — Verification
  • Hand Magnifier
    — Optic zone (OZ)
    — Peripheral curve widths (PCW, SCW)
  • V Gauge/Slot Gauge
    — Measures overall diameter (OAD)

• Contact Lens — Verification
  • Shadowgraph — magnifies and projects the contact lens for inspection

• Special Lens Designs and Uses
  • Toric Lens Designs
  • SPECIAL PROCEDURES

• Ordering Procedures
  — Documentation
  — Reorder system for patient
SPECIAL PROCEDURES

• Tonometry
  — The measurement of intraocular pressure (IOP)

  — Tonometer Types
    • Indentation
    • Applanation
    • Non Contact

  — Schiotz tonometer consists of a curved footplate which is placed on the cornea of a supine patient. A weighted plunger attached to the footplate sinks into the cornea. A scale then gives a reading depending on how much the plunger sinks into the cornea, and a conversion table converts the scale reading into IOP measured in mmHg.

  — Footplates have to be cool, dry and sterilized before use.

  — Goldmann tonometry is considered to be the gold standard IOP test and is the most widely accepted method. A special disinfected prism is mounted on the tonometer head, Fluorescein dye is then instilled and then the head is placed against the cornea. The examiner then uses a cobalt blue filter to view two green semi circles. The force applied to the tonometer head is then adjusted using a dial connected to a variable tension spring until the inner edges of the green semicircles in the viewfinder meet.

  — Dye is also used as an anesthetic.

• Tonopen
  — Handheld tonometer
    • Probe lightly taps on the anestisized cornea and provides a digital reading.

• Non Contact Tonometer
**SPECIAL PROCEDURES**

- **VISUAL FIELD DEFECT CLASSIFICATION**
  - Nerve Fiber Layer
    - Arcuate Scotoma, Paracentral Scotoma, Nasal Step
  - Optic Chiasm
    - Heteronymous Bi-temporal Hemianopsia
  - Optic Tract to Visual Cortex
    - Homonymous Hemianopsia
    - Congruent – same in each eye
    - Incongruent – different in each eye

- **Monocular Visual Field Boundaries**
  - 60 degrees superiorly
  - 75 degrees inferiorly
  - 105 degrees temporally
  - 60 degrees nasally
  The temporal field has a larger boundary to anatomical features, as there are no impediments, i.e., nose, cheek or browline.

- **Physiological Blind Spot**
  - 15 degrees temporal to fixation
  - Absolute scotoma
  - No photo receptors = blindness
  There are no photoreceptors at the optic disc, creating a blind spot.

- **Types of Visual Field Testing**
  - Amsler Grid
    - Test used to screen and monitor the 20 degrees of the field of vision.
    - Common uses:
      - Macular Degeneration
      - Other macular issues

- **Types of Visual Field Testing**
  - Utilizes object, fingers, pencil to screen for large visual field defects
  - Patient and Examiners fields compared in testing
  - If there are issues further testing will be done with additional instruments, such as the automatic perimeter.

- **Types of Visual Field Testing**
  - Evaluates the central 30 degrees visual field at 1 meter with targets being moved from non-seeing to seeing areas. Results are then transcribed onto a paper visual screen map.
  - No longer commonly performed. Better testing is now available but on occasion this test is performed.
SPECIAL PROCEDURES

• Types of Visual Field Testing
  — Autoplot
    • No longer utilized in practice today

SPECIAL PROCEDURES

• Types of Visual Field Testing
  — Goldmann bowl perimeter
    • Used for Kinetic or Static perimetry
    • Consists of 30 cm radius hemispheric bowl. Target of various intensity and size are projected onto the inside surface of the bowl. The background luminance of the bowl is also controlled.
    • There is also a telescope off the back of the bowl so the practitioner can verify the patient is maintaining fixation

SPECIAL PROCEDURES

• Type of Visual Field Testing
  — Automated
    • Most commonly used today
      — Easy
      — Quick
      — Easily reproduced

SPECIAL PROCEDURES

• Patient Positioning in Automated Perimetry
  — Forehead touching bar
  — Trial lens __________ to the eye to avoid

SPECIAL PROCEDURES

• Visual Field Procedures
  — Test Distance
    • Automated – set
    • Tangent Screen – 1 – 2 meters
    • Goldmann bowl – set
    • Amsler Grid – 28 – 30 cm
    • Confrontational fields 2 feet (< 1 meter)

SPECIAL PROCEDURES

• __________
  — Area of decreased or no visual acuity
    • Classified by patient responses
      — Absolute
        • Brightest and largest target is unseen
      — Relative
        • Target is seen based on size and brightness
SPECIAL PROCEDURES

• Sphygmomanometry
  – Blood Pressure Measurement
    • Incidence of hypertension
    • Patient position
    • Time factors critical in measurement

How is the Test Performed?
– Wrap the cuff around the upper arm about 1 inch above the bend in the elbow
– Place the earpiece of the stethoscope into your ears
– Place the head of the stethoscope over the brachial artery
– Make sure the valve in closed on the cuff
– Inflated the cuff to approximately 20-30 mmHg (milligrams of mercury), higher than the systolic pressure
– Open the valve slowly

How is the Test Performed?
– Record the number from the sphygmomanometer when the pulse is first heard
  • This is the SYSTOLIC pressure
– Continue releasing the valve
  • The pulse will disappear
– Record this number
  • This is the DIASTOLIC pressure
– Release the remaining air and remove the cuff

Readings

<table>
<thead>
<tr>
<th>Blood Pressure Category</th>
<th>Systolic mm Hg (upper #)</th>
<th>Diastolic mm Hg (lower #)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>less than 120</td>
<td>less than 80</td>
</tr>
<tr>
<td>Prehypertension</td>
<td>120-139</td>
<td>80-89</td>
</tr>
<tr>
<td>High Blood Pressure</td>
<td>140-159</td>
<td>90-99</td>
</tr>
<tr>
<td>(Hypertension) Stage 1</td>
<td>160 or higher</td>
<td>100 or higher</td>
</tr>
<tr>
<td>Hypertensive Crisis</td>
<td>High Blood Pressure</td>
<td></td>
</tr>
<tr>
<td>(Hypertension) Stage 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Blood Pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Hypertension) Stage 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypertensive Crisis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

First Aid/CPR Emergencies
– Non-ocular involvement
  • Fainting, seizures, CPR
– Ocular involvement
  • Triage

Certification of Health Care Providers
SPECIAL PROCEDURES

• Low Vision
  — Define legally blind
    • Best corrected acuity 20/200 or worse
    • Or less than 20 degree field of vision
  — Magnifiers and microscopes
  — Large Print Materials
  — Training – Lions Center
  — Psychological impact –
    • Eyesight more important than friendships

SPECIAL PROCEDURES

• Surgery
  — Cataract (phacoemulsification)
    — define surgery
  — Yag Laser
    • Posterior capsulotomy – post cataract
    • Iridotomy – Glaucoma treatment
  — Refractive
    • LASIK
    • PRK
    • LASEK

QUIZ

True or False? Soft contact lenses correct for large amounts of astigmatism.

A radiuscope is used to measure the _______ _______ of a contact lens.

Which type of tonometer is known as the “Gold Standard”?

QUIZ

The normal range for adult blood pressure is 120mmHg/between 70-80mmHg

Certified Paraoptometric Assistant
Basic Anatomy, Refractive Status and Physiology Review Course

www.EyeSystems.info  Mary E. Schmidt, ABOC, CPO  Mary@EyeSystems.info
No video or audio recording of presentation allowed
Refractive Status of the Eye and Binocularity – 13%

- A “normal” eye visually.
- Ametropia – not emmetropia

Refractive Status of the Eye and Binocularity

- Myopia – __________
  - Axial – The eye is too long, causing light rays to fall short, or come to a point of focus BEFORE hitting the retina.

Refractive Status of the Eye and Binocularity

- Hyperopia – __________
  - Axial – The eye is too short, causing the rays of light to come to a point of focus after hitting the retina.

Refractive Status of the Eye and Binocularity

- Astigmatism
  - Light rays focus at two different points.
  - Cornea is not equal in all meridians
    - Football vs basketball

Refractive Status of the Eye and Binocularity

- Simple – one point on the retina, the other off
  - Hyperopic or Myopic
- Compound – neither focuses on the retina
  - Hyperopic or Myopic
- Mixed – one point in front, one behind

_______ Astigmatism
  - The axis is not in the 90° vertical or 180° horizontal position.

_______ Astigmatism
  - Cannot be corrected with ophthalmic lenses.
Refractive Status of the Eye and Binocularity

- **Presbyopia**
  - “Old eye” in Greek
  - Loss of accommodation, the ability of the eye to focus at near
  - Due to loss of elasticity of the lens
  - Reduced strength in the ciliary muscle

- **Aphakia**
  - Absence of the
  - Absent most common cause of surgical removal
  - Treatments:
    - Intracocular Lens Implant (IOL):
    - Psuedophakia
    - Contact Lens
    - Ophthalmic Lenses

- **Anisometropia**
  - Unequal refractive status of two eyes
  - \( \text{An} = \text{Not} \)
  - \( \text{Iso} = \text{Same} \)
  - \( \text{Metric} = \text{Measure} \)

- **Aniseikonia**
  - Differences in the size of the two retinal images
  - Inherent and acquired

- **Amblyopia**
  - Reduced visual acuity
  - No apparent cause
  - Not correctable with ophthalmic lenses
  - **Amblyopia Ex Anopsia**
  - Abnormal binocularity – suppression of one eye
  - Refractive
  - Uncorrected refractive error that remains uncorrected for long periods of time

- **Motility**
  - Versions
    - Parallel movement of both eyes
  - Ductions
    - Range of movement in one eye, independent of the other
Refractive Status of the Eye and Binocularity

- Motility
  - Slow movement of both eyes that allow for following an object
  - Rapid movement of both eyes in the same direction

- Binocularity
  - Teaming of the two eyes
    - Convergence
    - Divergence
  - Ability of the two eyes to create an image
  - Unconscious mechanism to avoid double vision

- Phorias
  - Latent tendency of the eye to deviate
  - Prevented by fusion
  - Occurs when fusion is broken
  - Tropias (______)
    - Constant deviation of the eye

- Accommodation

Quick Quiz

What is the term when the axial length of the eye is too short?

What causes the light ray to focus at different point in astigmatism?

What is the term used to describe rapid movement of both eyes in the same direction?
Refractive Status of the Eye and Binocularity

What is the difference between phorias and tropias?
- Phorias are a latent tendency of the eye to deviate.
- Tropias are constant deviations.

What part of the eye is used to accommodate?
- The crystalline lens.

BASIC OCULAR ANATOMY

- The Globe
  - Three spheres or tunics
    - Fibrous
    - Vascular
    - Nervous

- Fibrous Tunic
  - Sclera
  - Episclera
  - Cornea

- ________ Tunic
  - Iris
  - Ciliary body
  - Choroid

- ________ Tunic
  - Retina
BASIC OCULAR ANATOMY

• Orbit
  — Bony structure that contains the eye and most of the accessory organs
  — __________
  — Sutures
  — Foramen
  — Sinuses

BASIC OCULAR ANATOMY

• Orbital Bones
  — Frontal
  — Ethmoid
  — Palatine
  — Zygomatic
  — Lacrimal
  — Maxillary
  — Sphenoid

BASIC OCULAR ANATOMY

• Anterior Eye
  — Upper lid
  — Lower lid
  — Lateral canthus
  — Medial canthus
  — Caruncle
  — Limbus
  — Iris
  — Pupil
  — Puncta
  — Sclera
  — Plica Semilunaris

BASIC OCULAR ANATOMY

• Adnexa
  — Eyelids
    • Allow for distribution of tear film
    • Protect the eye from light and debris
    • Reflex blinking (normal)
    • Blepharospasm
      — forced involuntary closing of the eyelids

BASIC OCULAR ANATOMY

• Lacrimal System
  — Lacrimal gland
    • Accessory lacrimal glands
      — Produces aqueous fluid
  — Punctum
  — Canaliculus
  — Naso-lacrimal sac
  — Naso-lacrimal duct

BASIC OCULAR ANATOMY

• Tear Film Layers - Three
  — __________
    • Meibomian glands
  — __________
    • Lacrimal glands
  — __________
    • Goblet cells of conjunctiva
BASIC OCULAR ANATOMY

• Cornea
  – Most powerful refracting portion of eye
  – 5 layers
    • Epithelium – anterior
    • Bowman’s membrane
    • Stroma – middle
    • Descemét’s membrane
    • Endothelium – posterior

• Crystalline Lens – _____ Layers
  – Nucleus
  – Cortex
  – Capsule
  – Accommodation
  – Cataract

• Vitreous Fluid
  – Gel-like substance in the eye
  – Helps keep the eyes shapes
  – Holds retina against choroid
  – Does not replenish

• Extraocular Muscles – 6 muscles
  – Rectus (4)
    • Medial – in- adduct
    • Lateral – out abduct
    • Superior – up elevation
    • Inferior – down depression
  – Oblique
    • Superior – in and up - intorsion
    • Inferior – out and down - extorsion

• Visual Pathway
  – Optic nerve
  – Optic chiasm
  – Optic tract
  – Lateral geniculate body
  – Optic radiations
  – Visual cortex

• Conjunctiva
  – Translucent membrane that lines the inner surface of the eyelids (palpebral) and the outer surface of the globe (bulbar)

  – Fornices –
    • Where the palpebral and the bulbar meet
**BASIC OCULAR ANATOMY**

- Retina
  - Light sensitive tunic – Photo receptors
  - Macular
    - Fovea – Center of macular – packed with cones
    - Cones – Color vision and central vision
  - Peripheral retina
    - Rods – Peripheral vision and night vision
  - Optic disc
    - Circular area in the back of the eye – Optic nerve connect to the retina. No rods or cones – “blind spot”
    - Center depressed area referred to a “cup”

**Common Pathological & Function Disorders**

- **Conjunctivitis**
  - Eye
  - Inflammation of the conjunctiva
    - Bacterial
    - Viral
    - Allergic
    - Vernal
    - Giant papillary – associated with contact lens wear

**Common Pathological & Function Disorders**

- **Glaucoma**
  - Increase in intraocular fluid pressure, increased size of optic cup and visual field defect
    - Chronic open-angle – most common
    - Acute open closure
    - Congenital
    - Narrow angle
    - Low tension
    - Secondary

**Common Pathological & Function Disorders**

- **Cataract**
  - Opacity of the crystalline lens
    - Nuclear sclerosis – incipient
    - Cortical – white streaks in cortex
    - Secondary – post surgery - YAG
    - Traumatic
    - Congenital
    - Posterior subcapsular
Common Pathological & Function Disorders

- Dry Eye
  - Keratitis Sicca or Keratoconjunctivitis sicca
  - Pathological condition of corneal and conjunctival dryness due to decrease in production of tears

Common Pathological & Function Disorders

- Retinal Disorders
  - Detachment - ER
  - Retinopathy
    - Diabetic - blood vessel
    - Hypertensive -
      - Degeneration
        - Lattice – atrophy peripherally
        - Macular – loss of central vision

Ocular Pharmacology

- Ocular Pharmacology
  - Diagnostic agents
    - Dilating drops
      - Cyclogyl
    - Therapeutic agents
      - Glaucoma medications

Ocular Pharmacology

- Mydriatic
  - ______ the pupil
    - Phenylephrine

- Miotic
  - ______ the pupil
    - Pilocarpine
  - ______
    - Paralyzes the ciliary and the ______ sphincter muscles
      - Cyclogyl
      - Tropicamide

Ocular Pharmacology

- Routes of delivery
  - Solutions – Most common
  - Suspensions – Shake before using
  - Ointments – Administered at bedtime

QUIZ

Name the extraocular muscles and their primary actions.

What is the inner most layer of the cornea?
QUIZ

Name the layer of the crystalline lens

________

Where is the lipid layer of the tear film produced?

How many bones are in the orbit?

________

QUIZ

What type of glaucoma can be caused by steroid use?

What is the ocular effect of Tropicamide?

What is the medical term for pink eye?

TIPS

• Prior to exam
  – Put it into perspective – not life or death
  – Visualizations – see yourself succeeding
  – Physical workout
  – Sleep
  – Eat
  – Arrive early
  – Breathe

FUTURE

• Certified Paraoptometric technician Test

• CPOA certification good for 3 years

• Keep CPC updated on your contact information

• AOA Paraoptometric Resource Center
  – 800-365-2219 or PRC@aoa.org

REVIEW COMPLETED

Celebration Time

Original Thinking EyeSystems Unique Solutions