Comprehensive Dilated Eye Exam (Optometry Protocol)

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Why CDEE?

- Road map for optometry practice
- Consistency and professionalism → quality of practice
- Better health and eye care and increase the quality of life
  - Early detection of sys Dx, silent Dx
- Expansion of the knowledge about eye conditions in KSA
- Research and big datasets
- Implementation of new techs
- Great business

Infection Control

- Wash your hands before anything
- Wipe your equipment with 70% methanol
- Wear gloves
- Wear mask
- DON’T wear your lab coat outside the hospital
- CA-MRSA
- HA-MRSA
- HbC, HSV, Adeno V

Demographic data

- Name
- Date of birth
- File number
- Sex and ethnicity
- Occupation
- Hobbies and avocations
- Active or sedentary person

Case History

- Chief complaint: Why are you here?
- Any particular symptoms?
- Use closed-ended questions: yes or no
  - Do you have tearing or discharge?
  - Do you notice changes in your vision?
  - Have you ever lost your vision?
  - Do you have double vision?
  - Do you have itching? pain? eyestrain? burning sensation?
  - Photophobia?
  - Flashes or floaters?
  - Headache?
  - Visual aura?
  - Fever?

Case History

- Onset: When did the symptoms start?
- Location: Where do you feel this?
- Quality: How would you describe your symptoms? Do they occur for far distance, near distance or both?
- Severity: How severe would you describe your symptoms: mild, moderate or severe?
- Duration: How long do the symptoms last?
- Timing: How often do they occur?
- Context: When do the symptoms occur? Can you recognise anything that is associated with the symptoms?
- Modifying factors: Is there anything that makes the symptoms go away or better?

Case History

- Opticals: Do you have and do you use eyeglasses and/or contact lenses?
- Eye injuries: Have you had any eye injuries?
- Eye surgeries: Have you had any eye surgeries done?
- Diplopia: Have you had an eye turn? Do you have a lazy eye?
- Eye Dx: Have you ever had an eye disease?
- Last exam: When did you last have your eyes checked?
- OD/Dr: Can you remember the doctor´s name?

Case History

General health history and health status.

Closed ended questions: No/Yes

- Diabetes: Do you have diabetes?
- Cardiovascular: Do you have any problems with your heart?
- Cholesterol: Do you have abnormal levels of cholesterol?
- Respiratory: Do you have any lung disease? TB? Sleep apnoea? Asthma?
- Gastrointestinal: Do you have any GIT conditions? IBS?
- Genitourinary: Do you have any kidney disease? CKD?
- Musculoskeletal: Do you have any problems with your muscles? RA?
- Dermatologic: Do you have any skin conditions?
- Ear, Nose, Mouth or Throat: Do you have any problems with your ears, nose, mouth or throat? SJS?

Case History

General health history and health status.

Closed ended questions: No/Yes

- Neurological: Have you ever had a stroke?
- Psychiatric: Do you have mental diseases? / Do you have emotional stress?
- Haematologic / Lymphatic: Do you have anaemia, leukaemia or sickle cell anaemia?
- Endocrine: Do you have thyroid disease?
- Immunologic: Do you have allergies and can you specify what they are?
- Infectious: Do you have any acute infectious diseases, such as flu? Do you have any chronic infectious diseases, such as HIV or hepatitis?
- Cancer: Do you have cancer?
- Smoking/Alcohol/Drugs: Do you smoke, use alcohol or use drugs? If yes, how often?

Case History

General health history and health status.

Closed ended questions: No/Yes

- When was your last physical examination?

Family history

Does anyone in your family have or had:

- Glaucoma? ARMD?
- Cancer?
- Diabetes?
- Hypertension?
- Heart problems?
- Has anyone gone blind?

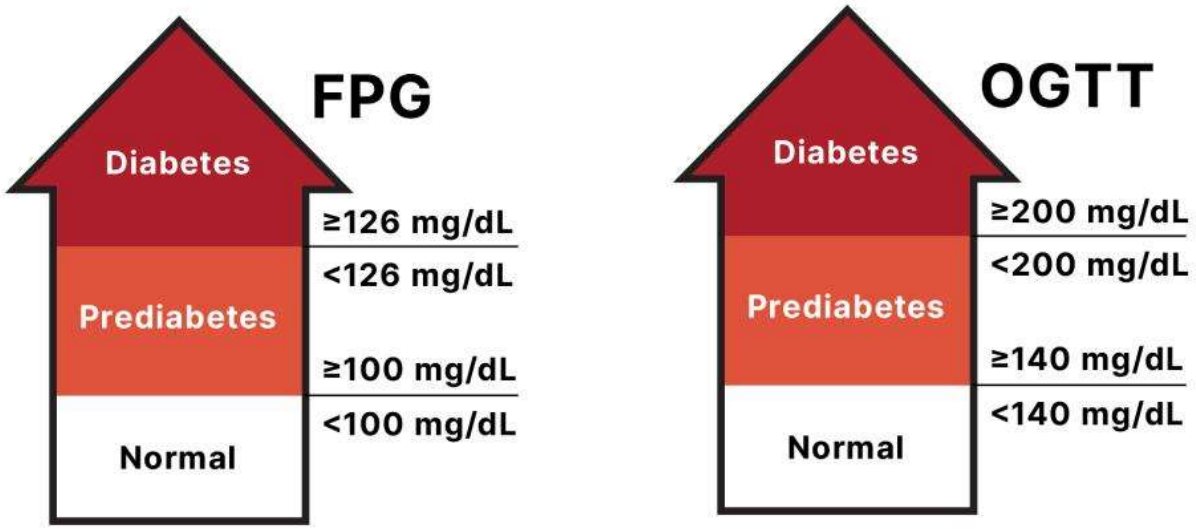
Blood Pressure Measurement

Why should we measure BP?

- Normal BP 120/80
- HTN urgency >180/120 without organ damage
- HTN emergency >180/120 with progressive orga

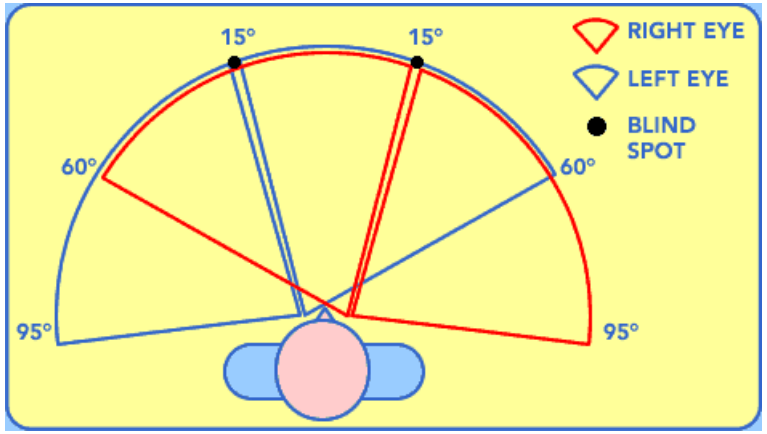
Category	Systolic	Diastolic	Reco. F/U
Normal	90 - 120	60 - 80	Recheck in 2 years
High-normal	120 - 139	80 - 89	Recheck in one year
Stage 1	140 - 159	90 - 99	Confirm within two weeks
Stage 2	160 - 179	100 - 109	Evaluate or refer for additional care
Stage 3	>180	>110	Evaluate or refer for additional care immediately

Glucose Level Measurement



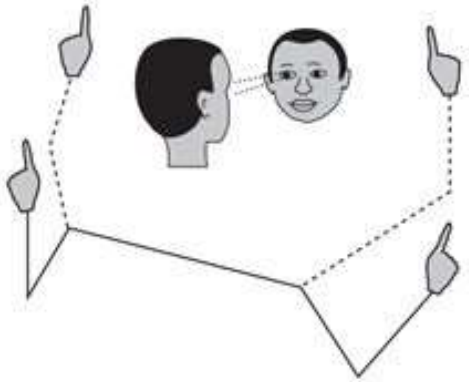
- Blood sugar > 250 mg/dL + ketones pH < 7.3 = Diabetic ketoacidosis (Emergency)
- Blood sugar > 600 mg/dL + dehydration = Hyperosmolar hyperglycaemic state (Emergency)
- Blood sugar < 40 mg/dL = Severe Hypoglycaemia (Emergency)

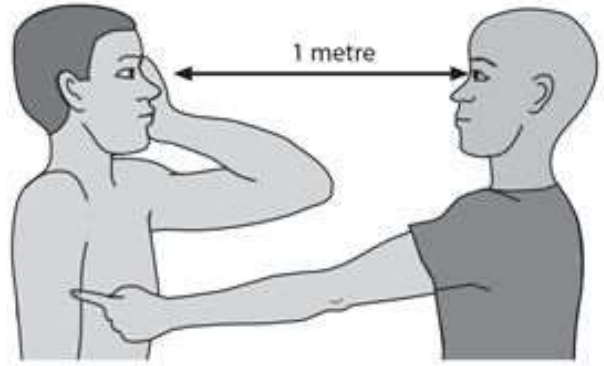
Visual Function



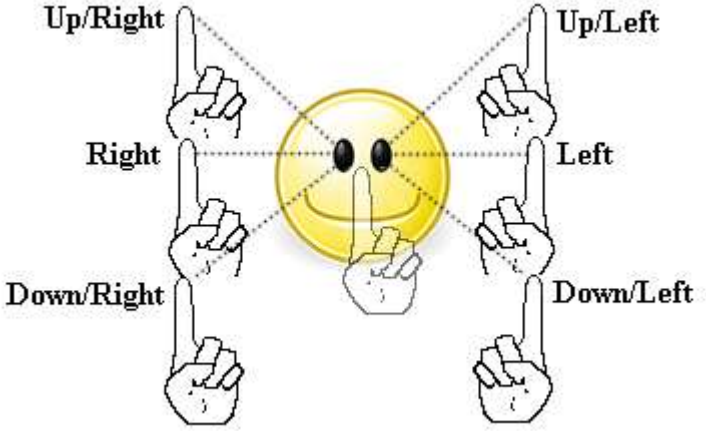
Visual acuity?
- Unaided /aided ➔ PH
- Distance/ near

Confrontation field
- Quick evaluation for VF
- Fingers, pen
- Normal = Full to fingers count

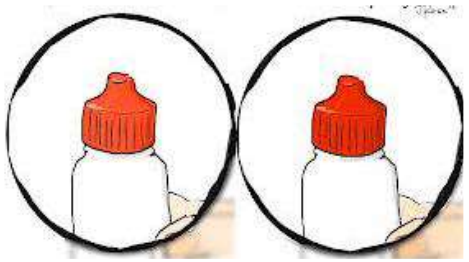




Ocular motility
- H pattern
- Normal = Full range of motion FROM



Color vision test
- The optic nerve is very sensitive to red color
- Red cap test

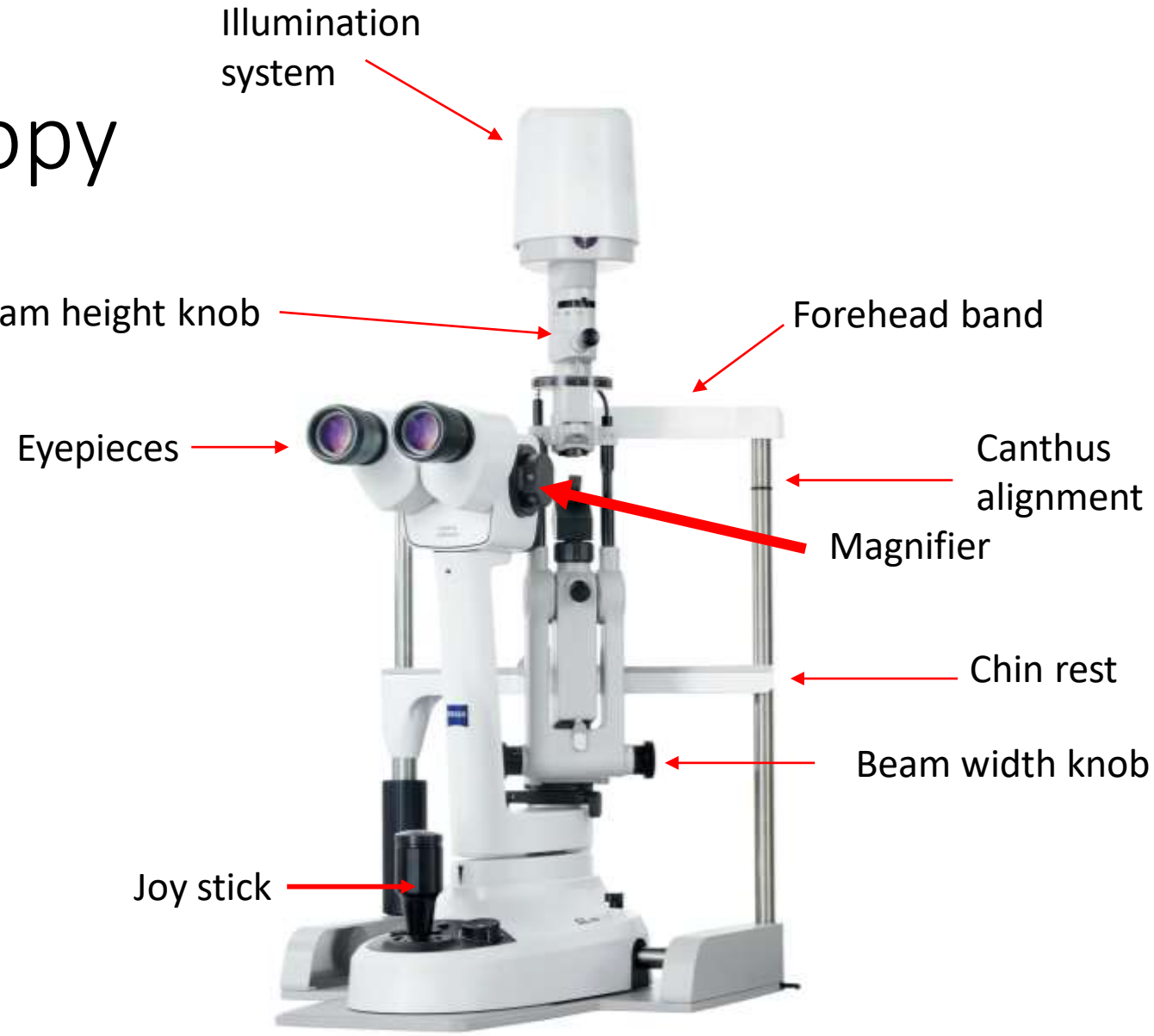


Pupil evaluation
- Size, shape, reaction to light
- Pupillary light reflex

Slit-Lamp Biomicroscopy

- Fundamental instrument consists of illumination and observation systems used to examine ocular tissue with and without complementary parts.

- Type of light:
  - Diffuse wide beam
  - Direct focal illumination
  - Cobalt filter illumination
  - Retro-illumination
  - Sclerotic scatter
  - Specular reflection

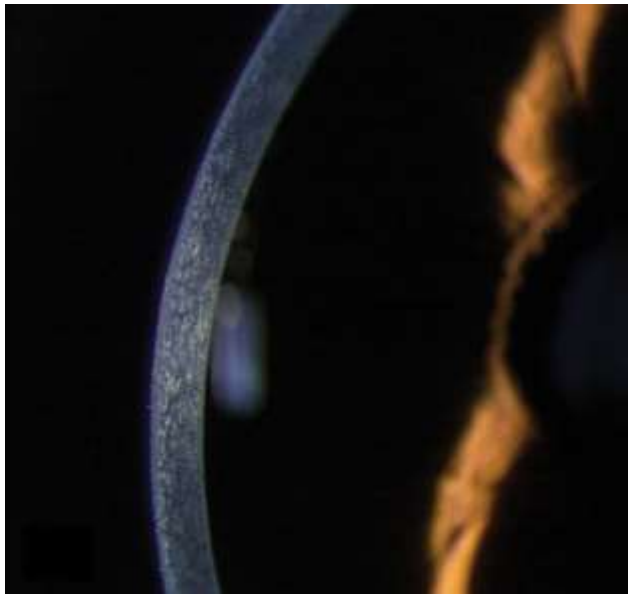


Slit-Lamp Biomicroscopy

- Diffuse wide beam (eye structure)
  - Eyelashes (blepharitis, demodex, trichiasis, madarosis, etc)
  - Eyelids (lid chemosis, stye, MGD)
  - Papillary or follicular reaction
  - Corneal appearance
    - White light staining
    - Scars or infiltrates

Slit-Lamp Biomicroscopy

- Optical section
  - Corneal layers
    - Narrow beam, angled illu sys
  - Van Herrick angle
    - Narrow beam + 60º from temporal side



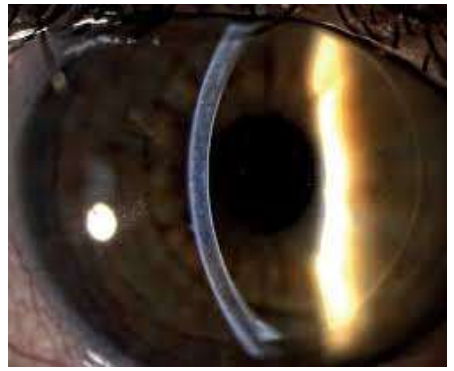
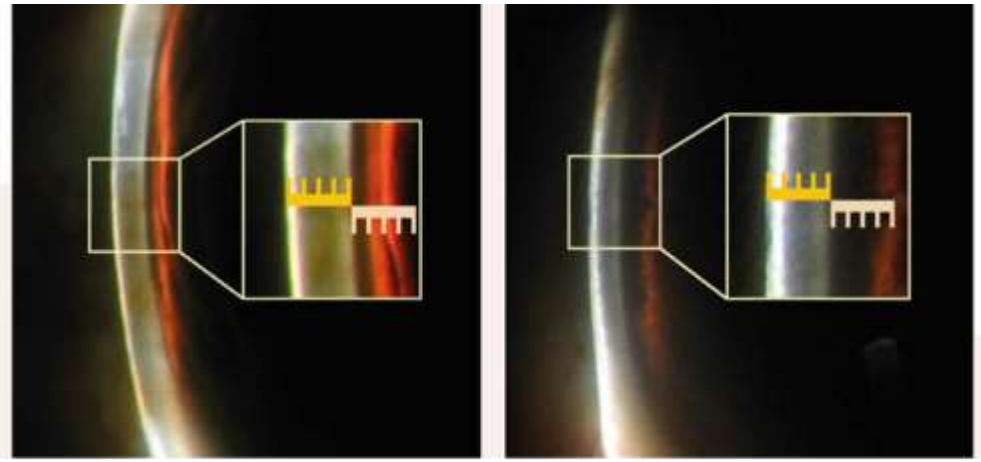


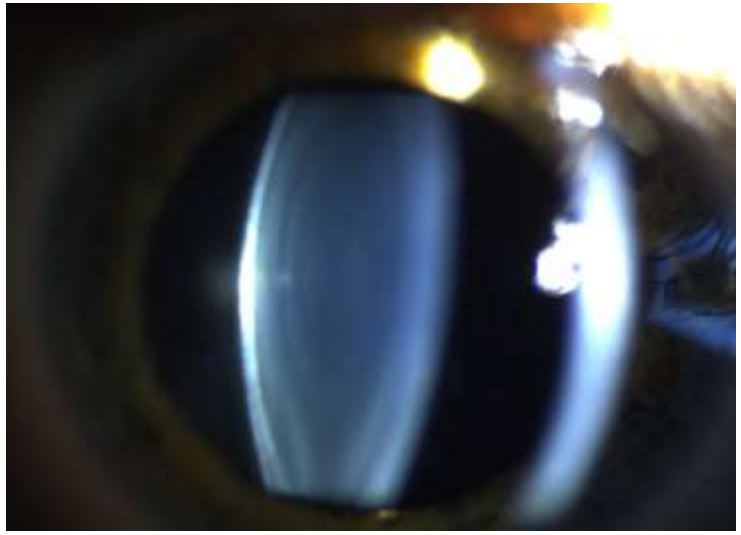
TABLE 1
Original van Herick grading scale

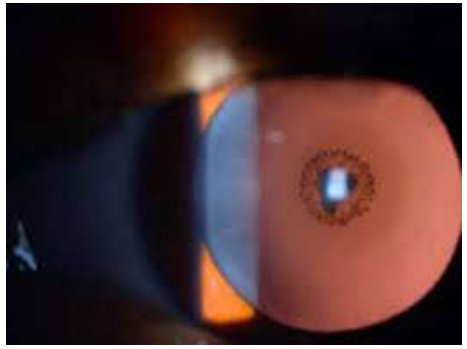
Van Herick's grading	Ratio of gap to limbal corneal section
Grade 1	<1:4
Grade 2	1:4
Grade 3	1:2
Grade 4	1:1 (or >1:1)



Slit-Lamp Biomicroscopy

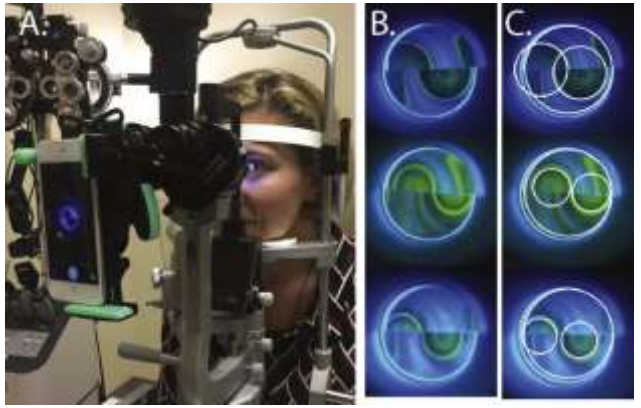
- Optical section
  - Crystalline lens (cataract)
    - Nuclear sclerosis
    - PSC
    - Cortical
    - Morgagnian cataract
    - Snowflake
- Retroillumination





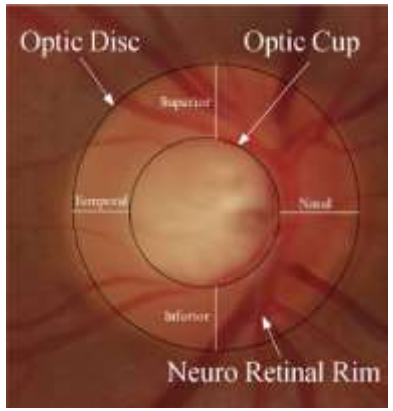
Slit-Lamp Biomicroscopy

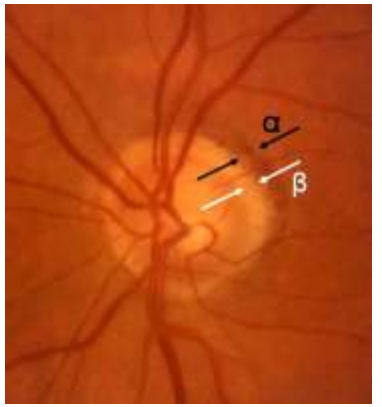
- Normal (10 – 21 mmHg)
- Corneal thickness
- 2.5% phenylephrine or 1%tropicamide
- 60 D and 90 D Volk condensing lenses standard lens for fundus exam.
- Wider field and highest resolution ➔ digital lenses

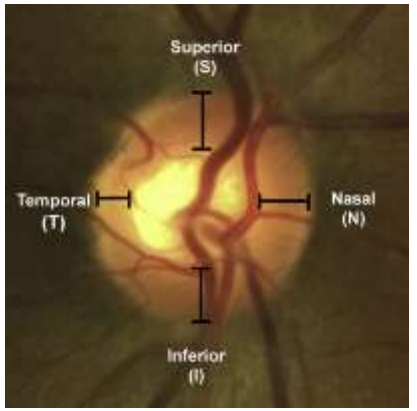


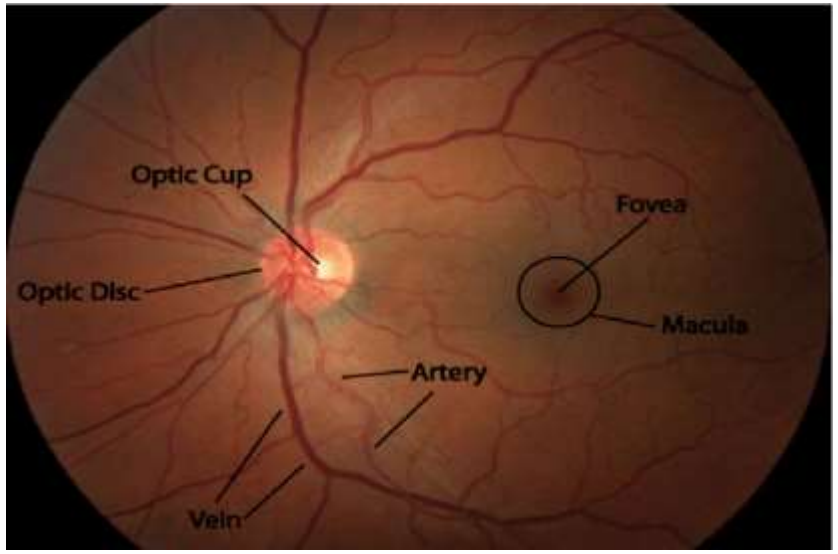
Slit-Lamp Biomicroscopy

- Fundus exam
  - Retinal colour
  - Veins
  - Arterioles
  - Macula (darker than surrounded area and bright foveal reflex)
  - ONH
    - Shape
    - Margin
    - CD cup ratio < 0.5
    - Colour









Feature	BIO (Binocular Indirect Ophthalmoscopy)	Slit Lamp with Condensing Lenses
Instrument Used	Head-mounted BIO + Handheld Condensing Lens (20D, 28D, 30D, etc.)	Slit Lamp + High-power Condensing Lens (78D, 90D, Superfield)
Magnification	Low (2-5x)	Higher (10-16x)
Field of View (FOV)	Wide (40-60° per view, up to 8 disc diameters)	Narrower (30-45° per view, ~2-3 disc diameters)
Depth Perception (Stereopsis)	Excellent (True Binocular View)	Good but less depth than BIO
Image Orientation	Inverted & Reversed	Inverted but NOT reversed
Best for Examining	Peripheral retina, retinal detachment, tumors, breaks, tears	Optic nerve, macula, central retina, vascular details
Patient Position	Supine or Seated (Head tilted back)	Seated at the slit lamp
Light Intensity	Bright (May cause discomfort, but required for a wide FOV)	Moderate (More comfortable for the patient)
Pupil Dilation	Required	Usually required (Can be done with a small pupil but limited view)
Technique	Examiner uses a headset with a bright light and holds a lens in front of the patient's eye	Examiner uses a condensing lens at the slit lamp while adjusting the beam
Clinical Uses	Peripheral retinal pathology (retinal tears, detachments, tumors, ROP)	Detailed central retina & optic nerve examination (glaucoma, macular diseases, diabetic retinopathy, hypertensive retinopathy)
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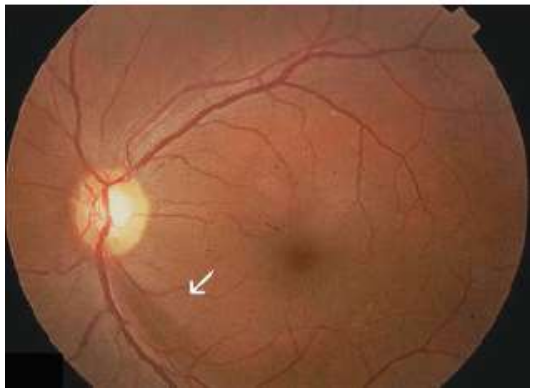
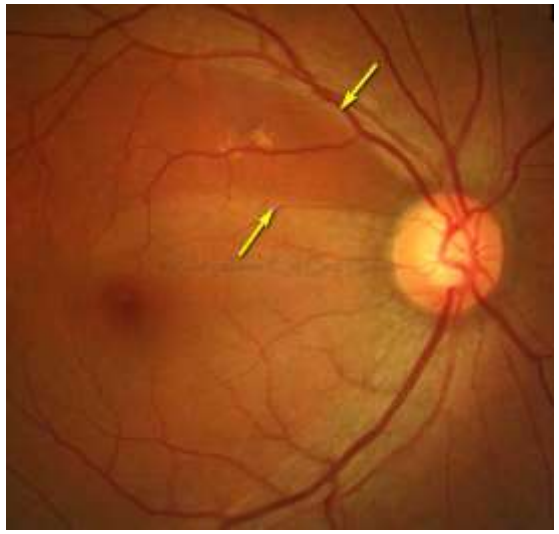
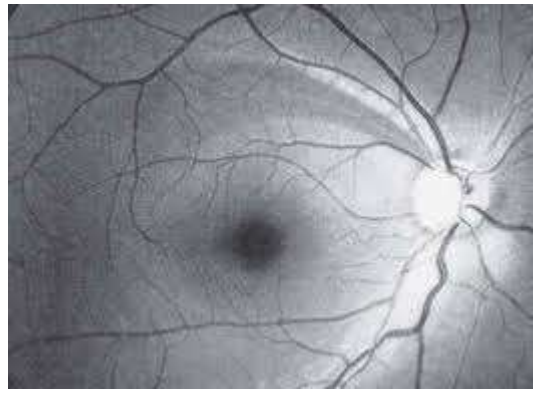
Patient Position	Supine or Seated (Head tilted back)	Seated at the slit lamp

Slit-Lamp Biomicroscopy

- RNFL assessment
  - Assess the superior inferior arcuate, nasal and temporal cuneate and papillomacular bundles.





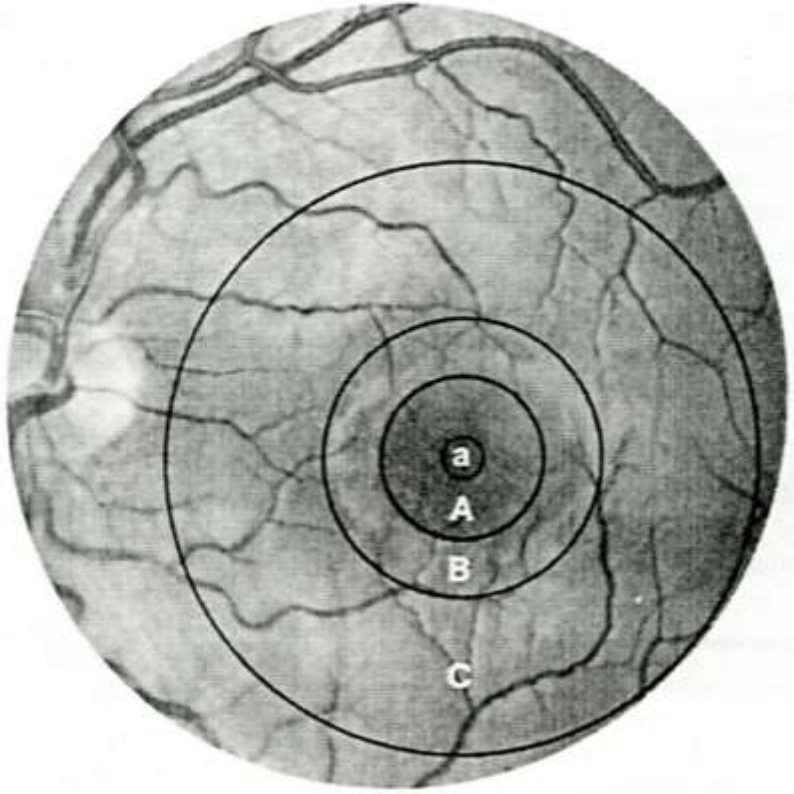


Slit-Lamp Biomicroscopy

Assessment of the macula (5.50 mm):

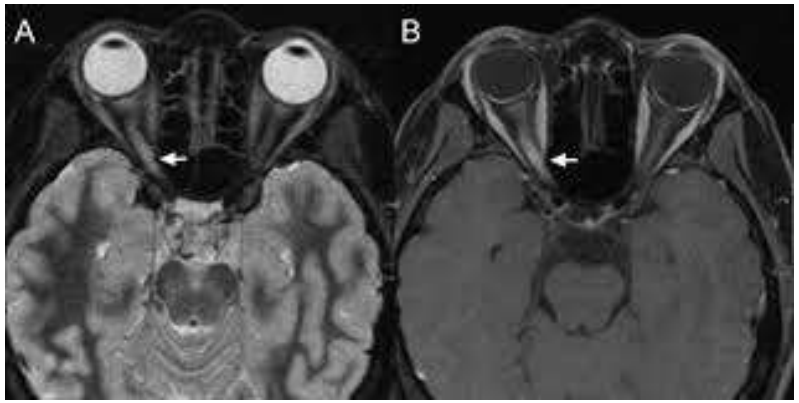
- C: perifovea
- B: parafovea
- A: fovea 2.00 mm, same diameter size of OND
- a: foveola
- Check the foveal reflex which is bright light from the foveal pit, absence of the foveal reflex suggests foveal abnormalities.

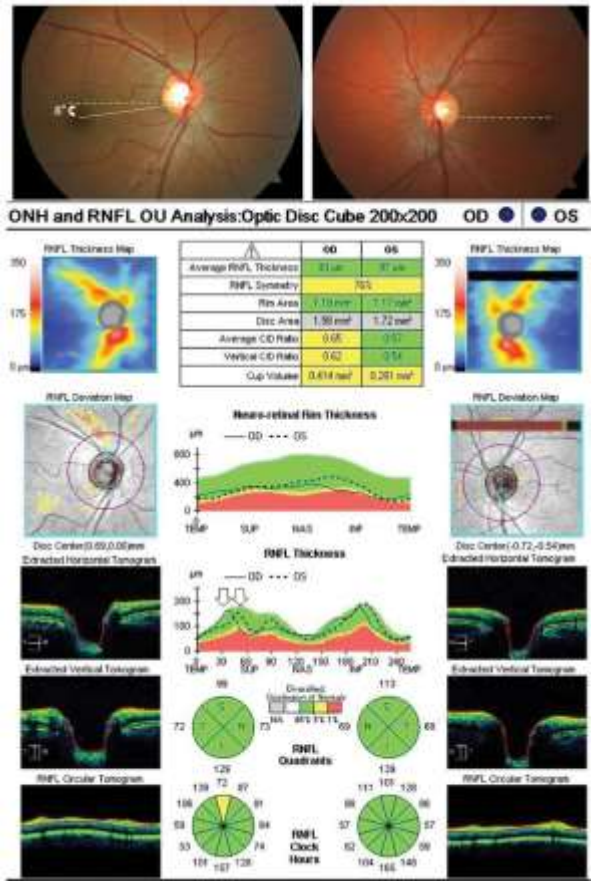
- Assessment of blood vessels
  - Normal AV ratio is 2/3
  - No nicking or tortuosity



Supplementary Examination

- Optical Coherence Tomography
- Visual field
- Amsler Grid
- MRI

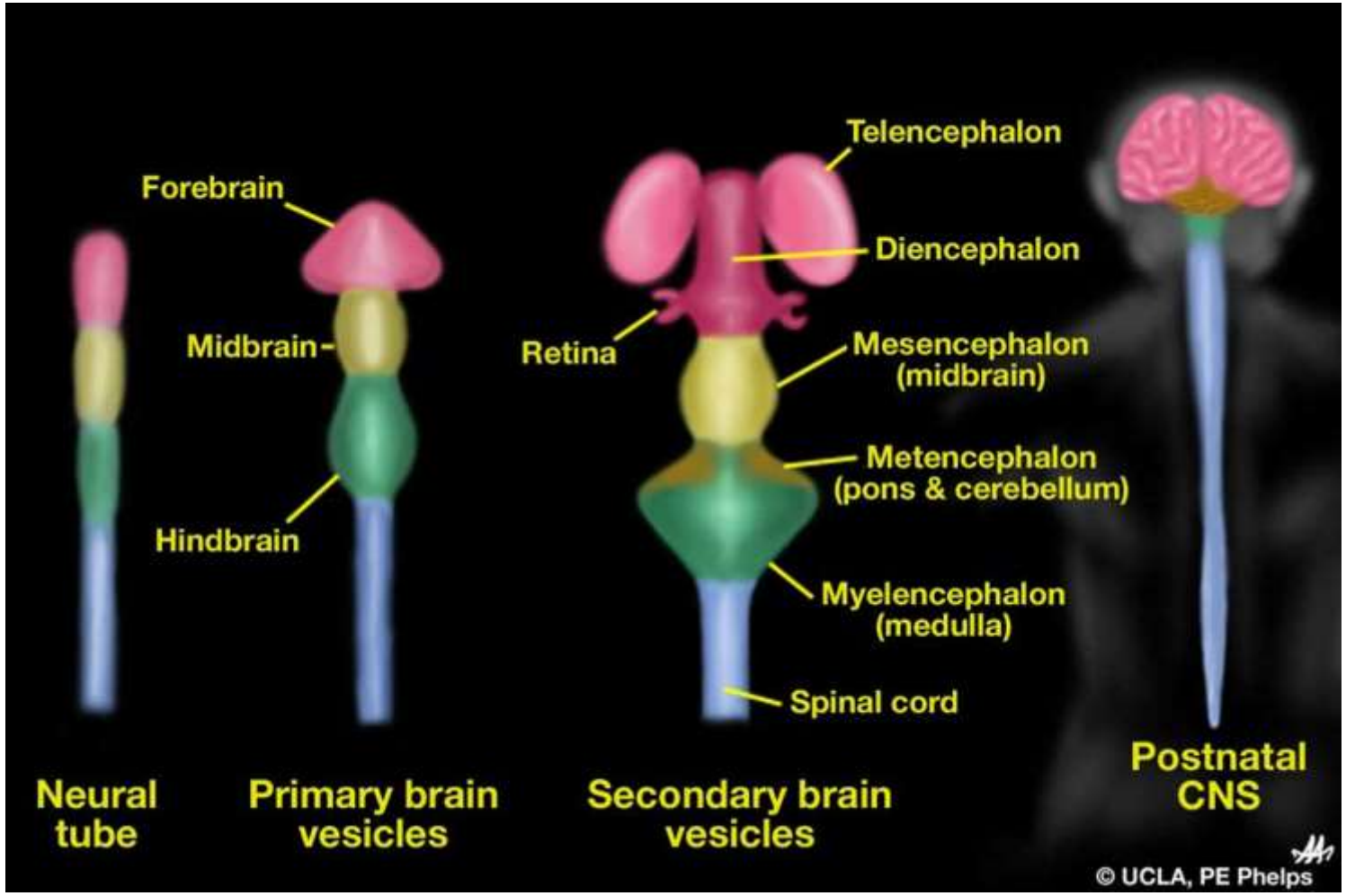




Diagnosis

- Write and draw the findings.
- Sort the findings (pathological, anatomical, refraction or others).
- Create your differential diagnosis.
- Include the positive findings and exclude the negative findings.
- Rule out uncertain diagnosis.
- Write your diagnosis, treatment plan and F/U.
- Diagnosis might be common, sight threatening or rare.

Questions!


Forebrain
Midbrain
Hindbrain
Telencephalon
Diencephalon
Retina
Mesencephalon
(midbrain)
Metencephalon
(pons & cerebellum)
Myelencephalon
(medulla)
Spinal cord
Neural tube
Primary brain vesicles
Secondary brain vesicles
Postnatal CNS
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