Khulna BNSB Eye Hospital

Shiromoni, Khulna

STANDARDIZED CLINICAL PROTOCOLS

Outpatient Department (OPD)

&

Refraction

STANDARDIZED PROTOCOLS FOR OUTPATIENT EXAMINATION

Registration:

- ✓ The first contact point for the patient visiting the hospital is reception/registration.
- ✓ Registration is must for all new and follow-up patients who visit the hospital to have an eye health care through HMIS.
- ✓ The patients are offered a waiting space with chairs to sit on if there is queue in registration.
- ✓ After registration, patients are called for Visual Acuity test in the V/A room.
- ✓ Old, seriously injured, children or disabled patients are given priority.

Measurement of visual equity

- ✓ The patient is to be seated at 6 M distance from Snellen chart
- ✓ One eye is to be covered and the other eye tested (preferably the Right eye is tested first)
- ✓ Patients reads the letters of the chart
- ✓ The last line the patients able to read is his /her VA of that eye. (top letter is 6/60 , second line is 6/36, third line is 6/24, and fourth line is 6/18, then 6/12, 6/9 , 6/6 accordingly)
- ✓ If the patients is unable to read the first line – VA is <6/60 ,
- ✓ Then the patients is brought nearer to the chart at distance of 5m, 4m, 3m and so on until the patients can read the top letter.
- ✓ The vision is then recorded as 5/60, 4/60, 3/60 respectably.
- ✓ If the patient is unable to read the top letter at 1m distance – the patient is then asked to count the examiner's finger.
- ✓ The rough distance at which he can count the examiner's finger is recorded.
- ✓ If vision is still less, the examiner will move his hand in front of the patient's eye.
- ✓ If he can appreciate the movement of the hand then the vision is recorded as Hand Movement(HM)
- ✓ If the patient cannot perceive hand movement, he is then taken to a dark room and asked to close one eye firmly with the palm.
- ✓ A light is thrown on the open eye from all directions.
- ✓ If the patient can recognize the light and can indicate its direction, his VA is perception of light (PL) and perception of ray (PR). The vision is then recorded as PL+, PR+.
- ✓ The other eye is tested in a similar manner.
- ✓ VA is recorded as numerator divided by denominator. Numerator is the distance of the patient from the chart. Denominator is the distance at which a normal person can able to read, e.g., 6/36 means – the patient reads from a distance of 6m what a normal person can read from a distance of 36m.

Complaints regarding:

- ✓ Vision-onset & Duration
- ✓ Pain in and around the eye
- ✓ Redness
- ✓ Diplopia
- ✓ Epiphora
- ✓ Deformity

History:

- ✓ Past illness (Ocular History)
- ✓ Medical History
- ✓ Surgical history
- ✓ Drug History
- ✓ Personal history
- ✓ Family history

Ocular history:

- ✓ Eye trauma
- ✓ Other ocular diseases
- ✓ Ocular surgery of fellow eye
- ✓ Refractive error

Medical History:

- ✓ Diabetes, Mellitus and other Metabolic disease
- ✓ Ischemic heart disease**/** Hypertension
- ✓ Chronic obstructive pulmonary disease
- ✓ Bleeding disorders
- ✓ Musculoskeletal disorders
- ✓ Prostatic disorders

Drug history:

- ✓ Drug sensitivity
- ✓ Anticoagulant drugs
- ✓ Steroids
- ✓ Hypoglycemic drugs

Personal history:

- ✓ Occupation
- ✓ Life style
- ✓ Socio-economic condition
- ✓ Personal hygiene
- ✓ H/O smoking

Clinical examination:

- ✓ General examination
- ✓ Ocular examination

General Examination:

Anemia	Jaundice	Cyanosis
Pulse	Blood Pressure	Temperature
Heart	Respiratory rate	Kidney
Thyroid	Lungs	Kyphosis
Lymp node	Scoliosis	

Ocular Examination:

- ✓ Measurement of Visual Acuity (VA) and Refraction
- ✓ External Examination (Inspection)
- ✓ Examination with focal illumination (pen torch light)
- ✓ Ocular motility
- ✓ Pupil
- ✓ Slit Lamp Examination
- ✓ Fundus Examination
- ✓ Field of Vision (confrontation)

External ocular examination:

- ✓ Proptosis, ptosis.
- ✓ Lagophthalmos, Facial asymmetry.
- ✓ Strabismus.
- ✓ Trichiasis, Distichiasis, Entropion.
- ✓ Neurofibromatosis.
- ✓ Examination of lacrimal drainage system.

Examination with focal illumination (pen-torch light) :

- ✓ Anterior Chamber (AC) depth
- ✓ Pupil
- ✓ Iris shadow
- ✓ Purkinjee- Sanson images

Ocular motility:

- ✓ Evaluation of ocular alignment and test the range of movement of the extra ocular muscles

Pupils:

- ✓ Size, Shape, Position, reaction, reflex.
- ✓ Pupillary response to light by swinging flash light test.

Slit lamp examination:

- ✓ Diffuse illumination should be used, slit illumination, retro illumination, and scleral. These four types of illumination are important for examination of cornea & crystalline lens.
- ✓ Eyelid- blepharitis, stye and other septic foci.
- ✓ Conjunctiva – scarring filtering bleb, syrnblepharon
- ✓ Cornea- thickness, presence of guttata, bullae, nevus, K.P.
- ✓ Ac- depth, regularity, any pathology, LACD
- ✓ Iris & pupil – appearance, color, any abnormalities e.g.-synechia neovascularization, pseudo-exfoliation, iridodonesis, coloboma, atrophy.

Crystalline lens :

- ✓ Examination of the crystalline lens both before and after dilatation of the pupil
- ✓ Before dilatation – location of the opacity
- ✓ After dilatation – nuclear density deposits on the lens capsule, position of the lens and zonular integrity, phacodonesis, location of the opacity, polychromatic lusture.
- ✓ Type (morphological pattern)
- ✓ Grading of nuclear cataract-
    - o Grade I – Grayish
    - o Grade II – Yellow
    - o Grade III – Amber
- ✓ Staging of white cataract – Incipient, Immature, Intumesent, Mature and Hypermature

Fundus evaluation:

- ✓ Aim – to see media, optic disc, macula and background of retina.
- ✓ By – slit lamp
    - o Biomicroscopy with condensing lens
- ✓ Ophthalmoscopy (indirect & direct)

Pre-operative Investigations:

- ✓ Tonometry
- ✓ Biometry
- ✓ B-scan USG
- ✓ Specular microscopy
- ✓ Corneal topography

Tonometric examination

Examination of IOP is necessary

- ✓ For all patients above 40 years
- ✓ Patients with large cup irrespective of age
- ✓ Patients with asymmetrical cupping
- ✓ Glaucoma suspects/family history of Glaucoma
- ✓ Uveitis cases
- ✓ All patients posted for intraocular surgery
- ✓ Known glaucoma patient
- ✓ Patients on long term use of steroids

Tonometry should be avoided in patients with

- ✓ Conjunctivitis
- ✓ Corneal ulcer
- ✓ Penetrating injuries
- ✓ Very uncooperative patients

Applanation tonometer

Preferred for

- ✓ Myopic patients
- ✓ All post operative cases whenever necessary

Procedure:

- ✓ An ophthalmic assistant or doctor measures the IOP of the patient by application tonometer.

Puff tonometer:

Procedure:

- ✓ CECRC generally use air-puff tonometer (non-contact) for every patient in OPD.
- ✓ Patients are examined by an ophthalmic assistant on the tonometer.
- ✓ Every patient is assisted by the ophthalmic assistant to sit on the examination chair and set chin on the tonometer chin rest properly.
- ✓ Patients are counseled that a mild puff will be felt on the eye.

Schiotz tonometer:

Procedure:

- ✓ Generally used where applanation or electric machines or desktop machines are not suitable, such as in PSP at remote areas.
- ✓ The patient is asked to lie on bed for the examination and asked to look straight ahead while lying supine.
- ✓ An ophthalmic assistant examine the patient with Schoitz tonometer.
- ✓ Since the Schiotz tonometer does not measure pressure directly, a conversion table, supplied with the instrument, is used to translate scale readings into estimates of IOP in mmHg unit.

For every patient Oxybuprocaine Hydrochloride 0.4% (Novocaine) must be used for 3 times with 5 minutes interval.

DUCT EXAMINATION (SPT)

- ✓ Duct examination has to be done for
    a. Patient's complain of watering
    b. Patient undergoing intraocular surgeries (suspected case)
    c. Patient with corneal ulcer (suspected case)
- ✓ Duct examination is contraindicated in-patients with acute dacryocystitis and perforated globe.
- ✓ Duct examination should not be repeated at every visit.
- ✓ Partially free and not free (clear fluids) ducts should be taken up for conjunctival cultures before surgery.

Procedure:

- ✓ For duct examination the patient verbal consent is taken.
- ✓ The patient is laid on a bed in a room with adequate light.
- ✓ An ophthalmic assistant wash hands, apply sterilizer and use hand gloves.
- ✓ Patients eyes and surrounding areas are cleaned with sterilizer.
- ✓ Before examination, apply Oxibuprocaine Hydrochloride 0.4% in the eye of patient for 3 times with 5 minutes interval.
- ✓ Use sterilized syringe, canola and punctum dilator to do the duct test.

Dilation for fundus examination:

- ✓ Ophthalmologist does the fundus examination by using an ophthalmoscope.
- ✓ Dilation is a must for all cataract, post segment disease, uveitis, VO patients visiting for the first time.
- ✓ Patients above 40 years, dilation can be done with 5% tropicamide plus. If they are hypertensive, plain tropicamide should be used.
- ✓ Pupillary dilation should not be advised initially when found disc pallor, glaucomatous cupping of disc or in any other conditions with RAPD, where field charting and colour vision testing will be required.
- ✓ Cases with shallow anterior chamber pupils should not be dilated unless the medical officer sees the patients and also in cases of squint and when contact lens work up has to be done.
- ✓ Check muscle balance for young patients with headache, eyestrain before dilation.
- ✓ All patients should be dilated for fundus examination before posting for cataract surgery. This will also help to decide about phaco in patients with mature cataract.
- ✓ Dilation may be avoided in patients with external ocular infections.

Blood Pressure:

Examination of BP is a must for all patients above the age of 40 and

- ✓ Patients posted for intraocular surgery
- ✓ Patients who are on oral steroids & those who need oral steroids.
- ✓ Patients with past history of Hypertension and also with family history.
- ✓ Patients whose fundus shows vascular changes.
- ✓ Patients who have renal problems and chronic headache.

Procedure:

- ✓ Patient sits on a chair (or laid on bed if too weak to sit on) in rest for 10 minutes.
- ✓ A nurse/assistant measures the blood pressure by using sphygmomanometer machine in mmHg unit following the procedure described in machine operating manual.

Counselling:

- ✓ When the medical officer sees the patient at the end, the patient has already been attended to a few people. Before dispensing glasses or medication etc, it is important to quickly review the case sheet and examine the patient to ensure that no vital detail is missed.
- ✓ S/he must confirm all findings in the case sheet fully and that there are no unexplained or unevaluated findings. If need be the entire history and clinical examination may be repeated.
- ✓ Counseling is possible only if the doctor reviews the case sheet. It is important to clearly and concisely explain to the patient the nature of his/her condition, what we can do for him/her, and also what we cannot do for him/her. For e.g. in hereditary macular conditions, medications are presented, but it is important and explain the prognosis and refer to Low Vision Assessment.
- ✓ In patients with hereditary disorders like RP and glaucoma counseling is very important. Affected parents should be aware that their children are at risk. Similarly glaucoma patients should have their family members examined at the earliest possible.
- ✓ All reference letters must be answered with a copy of the reply being placed in the case sheet.
- ✓ When the patients need referral to another hospital, the same must be explained to the patient and necessary guidance should be given to the patient.

Ocular Examination pro-forma

1. **Visual acuity** **Right Eye** **Left Eye**
   a) Unaided
   b) With pinhole
   c) After refraction

2. **Ocular Movement**

3. **Lids**
   a) Position of Eyelids
   b) Lid Margins
   c) Lid Surface
   d) LPS action
   e) Palpebral aperture

4. **Conjunctiva**
   a) Congestion (Location-Bulbar/ Palpebral/ fornix)
   b) Follicle/papilla (Location- Bulbar/ Palpebral/ fornix)

5. **Cornea**
    a) Transparency
    b) Sensation
    c) Evaluation of endothelium

6. **Anterior Chamber**
    a) Depth
    b) Content

7. **Iris**
    a) Pattern
    b) Color

8. **Pupil:**
    a) Position
    b) Size
    c) Shape
    d) Reflex
    e) Reaction to light (direct and consensual)

9. Lens

a. Position
b. Transparency
c. Morphology (If opaque)
d. Grading (If cataractous)

10. Lacrimal apparatus

a. Lacrimal gland
b. Lacrimal sac

11. Orbicularis Oculi Function

12. Lymph node

13. Fundus examination

a. Media
b. Optic disc
c. Background
d. Macula

14. Special examination related to particular case

REFRACTION OF AN EYE:

A. Objective refraction:
    - Done with the help of a retinoscope.
    - Retinoscope measures the far point of an eye

- The purpose of retinoscopy is to illuminate the retina through the pupil and bring the emerging rays to focus on the pupil of the observer.
- Once the far point of the patient's eye is brought to the pupil of the observer, the end point is reached.
- For convenience a working distance of arm's length is used, usually about 2/3 meter or 66 cm and a corresponding working lens of =1.5D is assigned to the patient. A working distance of 1 meter would require a working lens of +1.0D.

Steps of refraction:

- History
- Recording of VA – for distance and near unaided
  - With spectacle if in use
  - With PH
- Muscle balance –
  1. Hirschberg reflex
  2. Cover tests
     Cover test / cover-uncover test
     Alternate cover test / prism cover test
  3. Motility test

- Retinoscopy (with or without cycloplegia)
- Subjective evaluation
  1. Cross-cylinder
  2. Duochrome test
- Color vision
- Slit lamp bio microscopy
- Ophthalmoscopy
- Prescription and advice

B. **Objective refraction:**

Method of streak retinoscopy:

- The room Lights should be dim
- The patient sits in the examining chair and its instructed to gaze past a fixation light located at effective optical infinity
- The examiner sits with eyes on the same level as the patient. At a standard distance, usually about arm's length or two- third of a meter.
- The retinoscope is moved from side to side, and from above downward and note the movement of the pink glow. Observe if the glow moves.
  a. With the movement of the retinoscope?
  b. Against the movement?
  c. Stationary?
  d. The movement equal in all direction

- If it moves with the movements of the retinoscope – interpose a +1.5D in fron of the patient's eye and observe the movement of the glow
    a. If the glow stops moving, the patient has no error of refraction-i.e. emmetropia
    b. If the reflex still moves with the movement of the retinoscope, adding plus lenses is kept on till the movement is abolished. This means that the patient is hypermetropic.
    c. If the image starts moving against with - +1.5D in front of the eye – the eye has myopia less than 1.50D. Plus lenses are reduced gradually till the movement stops. This will give the myopic refraction.
- If the reflex moves against without putting any lens in fron of the eye, it means myopia more than 1.50D. Adding minus lenses is kept on till yhe movement stops. This will give the myopic refraction.
- If there is no movement without any lens in front – the eye has mypopia of 1.50D.
- If the movements are different in two meridians – the eye is astigmatic.

Subjective verification:
Subjective verification is commonly done with trial lenses and cross-cylinder.

Cross-cylinder:
- This is a lens mounted in a frame with handle.
- The lens consists of sphere and a cylinder
- The power of the sphere is half than that of cylinder but the signs are apposite, e.g. +5 Dsph with -1.0 Dcyl.
- In a cross-cylinder the axes are at 45 degree and 135 degree.
- The handle is in such a position that its long axis is in between axes of two cylinders in 90 degree.

Procedure:
- The cross – cylinder is placed in such a way that the axis of the cross-cylinder is 45 away from the cylinder in the trial frame on each side .
- Now the cross –cylinder is rotated by 180 , e.g flipped , so that the axis that was at 45 was at 45 becomes 135 and vice versa.
- If the vision is blurred the cross –cylinder in either position, the axis of the cylinder in the trial frame is correct. If the vision is better in one position, then the axis of the cylinder in the trial frame is not correct.
- To correct the axis of the cylinder in the trial frame , the cross- cylinder is removed and the cylinder in the trial frame is moved , If the cylinder in the trial frame is plus , it is shifted towards plus side of the cross- cylinder. Next step is to straddle the cross-cylinder again and repeat the procedure .This is repeated till the vision is equally blurred in both position of the cross-cylinder.
- To correct the power, plus cylinder of the cross-cylinder is superimposed on the cylinder in the trial frame .Then the minus cylinder of the cross-cylinder is

superimposed in the same way and power of cylinder of the cross-cylinder in the trial frame is increased or decreased till vision is same in both position.

Duochrome Test:

- This test is based on the principle of chromatic aberration of optical system. Green rays are refracted more than red because they have a shorter wavelength.
- In a myopic eye all the rays come to focus in front of the retina. Thus, in a myopic eye red letters in background will look better than green letters in black background.
- In hypermetropic eye green letters in black background are seen clearer than red.
- In emmetropic eyes both green and red are seen clearly.
- The instrument for the duchrome test consists of two panels of equal size., one has red letters, the other has green letters. Letters corresponding to Snellen's 6/18 to 6/6 of black color are inscribed on these panels.
- One eye is examined at a time. The patient is asked to state which panel has clearer vision. If the red looks clearer – the eye is atill myopic and needs addition of more minus lenses. In hypermetropia, reverse is the rule.

Measuring near point:

- The patient is given a Standard near vision chart and asked to read at the usual reading distance for the patient's age.
- Note the line that the patient can read at 30cm. Plus lenses are added to the distance correctionto reinforce accommodation.

Interpupillary distance measurement (IPD):

- The simplest method is to use transparent scal. The distance between the nasal edge of one pupil and temporal edge of the other pupil is measured or from centre to centre , provided the pupils are of equal size.
- For distance IPD the patient is asked to look at a distance and for near IPD the patient is asked to look at the examiner's nose.
- Most accurate measurment is given by synoptophore. IPD for nera is shorter by 4 mm.

Cycloplegic refraction:

- Cycloplegic refraction can be useful as an adjunct to refraction for infants and children below 8 years.
- Cycloplegic includes Atropine 1 drop or ointment 2 times daily for 3 days or 1 cyclopentolate, 1 drops 5 minutes interval for 2 or 3 applications before

	R/E				L/E			
	Sph	Cyl	Axis	VA	Sph	Cyl	Axis	VA
Distance								
Near								

Color Vision Test:

- May be done with Ishihara pseudo-isochromatic plates.

Ophthalmoscopy:

- Done with direct or indirect ophthalmoscope.

Prescription and advice:

- Unifocal / Bifocal / Multifocal/ Antireflective / Constant wear/
- For near works only.
- IPD is to be mentioned.
- Prism if necessary.

Safety Measures:

- ✓ All patients are assisted by an assistant
- ✓ After every checkup, the tissue paper on chin rest of slit lamp is replaced with a new one.
- ✓ After every checkup, the contacted parts of the slit lamp are cleaned with sterilizer.
- ✓ The doctor cleans hands with sterilizer. Must clean hands if contacted with an infected eye during examination.
- ✓ The assistant cleans hands with sterilizer such as Hexisol. Must clean hands if contacted with an infected eye during medication.
- ✓ The instrument is cleaned with sterilizer for every use.
- ✓ Schiotz tonometer is calibrated regularly.
- ✓ The patient is counseled that the procedure may cause mild pinching pain in the duct.
- ✓ A stand light is used for focusing light on the eye if needed.

This policy has been reviewed and is recommended for approval by:

Name:_____Designation:_____Signature:_____

Name:_____Designation:_____Signature:_____

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Name:_____Designation:_____Signature:_____
