

The Eye Examination

Visual Acuity

VA	visual acuity
OD	right eye
OS	left eye
OU	both eyes

The standard test of ocular function is visual acuity. In adults, distance acuity is commonly tested with a Snellen chart read at 6 metres or 20 feet which is considered to be optical infinity. Going down the chart the size of the letters and their parts decreases from line to line. Increasing acuity implies that the subject is able to resolve the smallest separations. Near vision is tested with a reading test type. The Snellen visual acuity should be tested with the patient wearing distance glasses. If glasses have been forgotten, the patient may view the chart through a pinhole, which will overcome moderate degrees of refractive error. A visual acuity of 20/80 indicates that the patient can recognize a symbol at 20 feet that a normal individual can recognize at 80 feet. A visual acuity of 20/20 represents normal visual acuity while many people may have 20/15 or 20/12 vision.

If the patient cannot read any of the letters on the Snellen chart, proceed as follows:

- Reduce the distance between the patient and the chart (eg 5/70)
- If at 3 feet patient is still unable to read the chart, ask the patient to count fingers at 1 foot
- Determine whether hand movements may be visualized by the patient if unable to count fingers
- Use penlight to determine whether he/she can detect the direction of light movement as LP (light perception) or NLP (no light perception)

Near Visual Acuity Testing

Near visual acuity testing should only be performed if the patient has a specific complaint or if distance testing is not possible. Glasses should be worn during this examination also.

Pupillary Reaction Testing

Examination of the pupils begins with an assessment of the size of the pupils in a uniform light. If there is asymmetry (anisocoria) it must be decided whether the small or large pupil is abnormal. A pathologically small pupil will be more apparent in dim illumination while a large pupil will be more apparent in the light.

To test the direct pupillary reaction to light, first direct the light at the patients right eye and see if it constricts. Repeat for the left eye. The consensual response is done by shining the light into the right eye and looking at the left pupil for constriction.

In a patient in whom the pupil sizes are equal, the next step is to look for a defect in optic nerve function, using the swinging flashlight test. This is a sensitive index of an afferent conduction defect. The patient is seated in a dimly illuminated room and views a distant object. A light is directed at each eye in turn while the pupils are observed. A unilateral defect in optic nerve conduction will be demonstrated as a relative afferent pupil defect(RAPD).

Visual Impairment and Visual Disability

Visual acuity impairment describes a condition of the eyes while visual disability describes a condition of the individual. Two individuals with the same visual impairment may show very different levels of functional disability.

Additional Tests

Tonometry Should be performed whenever the diagnosis of glaucoma is suspected.
Normal intraocular pressure varies from 10 to 21.5 mmHg.

Anterior Chamber Depth Assessment Indicated when narrow-angle glaucoma is suspected prior to pupillary dilatation.

Visual Field Assessment When suggested by patients history or symptoms,

Colour Vision Testing Done in retinal and optic nerve disorders. Pseudoisochromatic plates (Ishihara plates) are used to detect defects in colour vision.

Fluorescein Staining To examine corneal epithelial defects or abnormalities

Upper Lid Eversion Necessary in the presence of a foreign body

Ocular Motility Testing

In this examination the patient is asked to follow an object in the six cardinal fields of gaze.

- | | |
|-------------------|---|
| 1. right and up | right superior rectus and left inferior oblique |
| 2. right | right lateral rectus and left medial rectus |
| 3. right and down | right inferior rectus and left superior oblique |
| 4. left and up | left superior rectus and right inferior oblique |
| 5. left | left lateral rectus and right medial rectus |
| 6. left and down | left inferior rectus and right superior oblique |

This examination allows assessment of each muscle in its primary field of action.

Ophthalmoscopy

Red Reflex The light reflected off the fundus of the patient produces a red reflex when viewed through the ophthalmoscope at a distance of 1 foot. A normal red reflex is evenly coloured and not interrupted by shadows.

Optic Disc The normal optic disc is slightly vertically oval and has a pink colour. The physiologic cup is the central depression in the disc. 1 disc diameter equals approximately 1.5mm. Normal optic disc colour varies with the individual as there may be areas of hyper or hypopigmentation. Occasionally, myelinated fibers from the optic nerve may extend onto the retina producing a white feathery pattern similar to papilledema.

Retinal Circulation

The ratio of normal vein-to-artery diameter is 3:2. Arteries are usually lighter than veins and typically have a more prominent light reflex from their surfaces than do veins. AV crossing changes may indicate eye disease.

Macula The macula is situated temporal to the optic disc and is darker than the surrounding retina because the retinal pigment epithelial cells of the macula are taller and more heavily pigmented. The fovea may produce a light reflection called the foveal reflex upon direct illumination.

Eye Examination Summary

1. Measure VA in each eye
2. Perform a confrontation field test for each eye
3. Inspect lids and surrounding tissues
4. Inspect conjunctiva and sclera
5. Test extraocular movements
6. Test pupils for direct and consensual movements
7. Inspect cornea and iris
8. Assess anterior chamber depth and clarity
9. Assess the lens for clarity through direct ophthalmoscopy
10. Perform Ophthalmoscopy to examine the fundus including the disc, vessels, and macula
11. Perform Tonometry if indicated