Eye Examination

Statement of Goals

Understand and perform a complete examination of the eye.

Learning Objectives

A. Describe the anatomy of the eye and surrounding structures. Describe the appearance of the normal fundus.
B. Describe the neural pathways by which an image is seen. Diagram the visual fields, and the overlapping area of binocular vision.
C. Describe the innervation for the light reaction and the near reaction of the pupils.
D. List the cranial nerve and extraocular muscle associated with each of the six cardinal directions of gaze.
E. Describe and demonstrate the use of the ophthalmoscope.
F. Describe and perform a complete eye examination, including:
   - visual acuity
   - visual fields
   - orbits, eyelids, and eyebrows
   - sclera and conjunctiva
   - cornea and iris
   - pupils, light reaction and near reaction
   - extraocular movements
   - ophthalmoscopic exam of the optic disc, retina and anterior structures.
G. List usual biological changes of the aging process and how they affect physical findings for the eye examination.
H. Describe and perform aspects of an eye exam specific to young children.
I. Record the findings from the eye examination in the format of a medical record.

Student’s Preparation for the Unit

Eye Examination

Required:

Bates: pp 154-159; 171-172; 177-188 (including shaded areas); 203 (documentation of eye exam-another example on p. 19);
216 (corneal arcus); 219 (physiologic cupping); 220 (normal eye); 223 (normal fundi);
706-708; 751-752; 842-843(1st paragraph)
(changes with aging); 862-863(eye exam in the elderly); optional: 212-225 (abnormal eye findings)
Note 1:
(diagram, page 186) The labels are misleading. The physiological cup is inside the optic disc. The cup should be approximately 1/2 the diameter of the disc (or less) making the cup to disc ratio: ≤ 1:2.

Note 2:
The Bates’ text book is incorrect with regards to the function of the superior oblique muscle. The information covered in the anatomy course is correct.

Optional:
Bates: pp. 144-155 (examples of abnormalities); pp. 167-169 (special techniques); pp. 176-182; 184-191 (abnormalities)

(Bates: pages 19 and 203)

Cranial Nerve Examination

Required:
Bates: Edition

pp. 598-599 (the cranial nerves); pp. 611-616, 771-772

Optional:
Bates: 9th Edition

pp. 611-616 (examples of abnormalities); pp. 655-659; p. 666

B. Special Instructions:

Bring ophthalmoscope and penlight if you own them. Equipment will be available in class as well.

It will take time and practice to develop the skills needed for a complete eye exam. There will be additional opportunities to practice. FCM session #14 includes an opportunity to integrate the various components of the head and neck exam.
Curriculum Comments

Objective G:

In older adults the eyes may appear more sunken due to loss of periorbital fat. Lax eyelids cause “senile ptosis.” Eyes may be dry from decreased tears. The cornea may have the whitish ring of “arcus senilis” or corneal arcus. Pupils will be smaller. There is sometimes mild impairment of upward gaze. Visual acuity is decreased, especially near vision (presbyopia.)

Objective H:

Eye - Red reflex should be observed with an ophthalmoscope on all infants. In early childhood check for exotropia (eye deviating outward) or esotropia (eye deviating inward).

Objective I:

Examples of documentation of an eye exam can be found in Bates pages 19 and 203. Your documentation will vary based on the patient’s physical exam findings.

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### Eye Examination Checklist

**Equipment:** Visual acuity chart, penlight, ophthalmoscope

- Appropriate guidance given to the patient throughout the examination
- Test visual acuity using Snellen chart at 20 feet, or hand-held card at 14 inches.
- Visual fields: Using bilateral confrontation, assess the lateral, upper temporal and lower temporal aspects of the visual fields in both eyes.
- Test all quadrants of the visual field, and the size of the blind spot in each eye separately
- Inspect the position of the eyes in the orbits, the eyebrows and eyelids.
- Depress the lower lids (or spread both lids) to observe the sclera and conjunctiva.
- Using a penlight for oblique lighting, inspect the cornea and iris.
- Inspect the size, shape and symmetry of the pupils.
- Dim the lights and ask the patient to look at a distance. Test the direct reaction of each pupil to a bright light. Test the consensual reaction of each pupil to light in the opposite pupil.
- Test the near reaction of each pupil by asking the patient to shift gaze from a distance to a near object
- Using a penlight, inspect the symmetry of its reflection in the corneas.
- Assess extraocular movements in the six cardinal positions of gaze.
- Assess convergence as the patient follows an object moving toward the nose.
- Using the ophthalmoscope, identify the red reflex.
- Using the ophthalmoscope, examine the optic disc, retina and anterior structures.
- Perform the ophthalmoscopic examination of the other eye.
Study Questions:

1. Do you know the anatomy of the eye that you are examining?

2. Can you describe the visual pathways that create binocular vision and visual fields?

3. What is the enervation of the eye that causes the papillary light reaction and accommodation?

4. Which cranial nerves are responsible for each of the six cardinal directions of gaze?

5. Do you know how to check all the aspects of eye exam?

6. What is the cover-uncover test?

7. When do children develop 20/20 vision?

8. What does 20/20 vision mean with regards to testing visual acuity with the Snellen chart?

9. What is presbyopia?

10. What is a corneal arcus?