How to examine an eye

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Rationale and key points
This article aims to assist nurses to perform a systematic external examination of the eye with the minimum of equipment. The eyes form a complex anatomical system, about which nurses often lack confidence.

- Eye problems are a relatively common reason for presentation to emergency departments and primary care.
- The nurse requires a knowledge of the underlying anatomy and physiology to perform an eye examination.
- Nurses in non-specialist settings should be able to assess the integrity of the eye and decide whether specialist referral and examination is required.
- Eye examination requires few elements of equipment and should be systematic.

Preparation and equipment
- The nurse should have an understanding of the anatomy of the eye to be able to recognise abnormal or disordered structure or anatomy (Figure 1).
- The nurse should ensure that appropriate hand cleansing takes place before the examination, since eye examination involves touching the structures around the eye. Hand washing is preferable to the use of alcohol hand gel. The hands should be cleansed in between each eye examination so that any infection is not transmitted between the eyes by the nurse. Gloves may be worn for eye examination to protect the nurse from blood, discharge or tear secretions.
- The nurse should ensure that all equipment is available before commencing the examination, including:
  - A source of bright light, such as a bright pen torch or lamp or a bright ophthalmoscope on a setting with the largest spot possible. A slit lamp biomicroscope provides the best magnification and examination possibilities. However, it is not usually available in general nursing settings, and so is not considered here.
  - A cobalt blue light (available on most ophthalmoscopes) is useful, but is not essential for showing staining.
  - A hand-held magnifier, head loupe or ring light.
  - A cotton bud or cotton-tipped applicator.
  - Tissues for the patient or nurse to wipe away excess drops or tears.
  - Fluorescein eye drops or fluorescein-impregnated strip to stain tissues.
  - Topical anaesthetic drops (tetracaine 1%, oxybuprocaine 0.4% or proxymetacaine 0.5%, which appears to cause less stinging) prescribed for the patient, or used under a patient group directive. Topical anaesthetic drops are available as a mixed anaesthetic and fluorescein drop. However, single ingredient drops are preferable, since using both components can confuse the findings of examination and the patient does not always need both components (British National Formulary 2014).
  - Gloves.
**Procedure**

1. Explain the procedure and obtain informed consent.
2. Examine the eye from the ‘outside’ inwards, looking at the patient’s face first before concentrating on the eyes. This examination begins at the moment the nurse first sees the patient. It is useful to compare one eye with the other, and the nurse should never examine only one eye.
3. Ensure the patient is sitting comfortably. Inform the patient that a bright light will be shone in their eyes and that this may be painful. Topical anaesthetic drops may be required to alleviate pain before examination.
4. Remove contact lenses, if present, and retain the lenses in case they are required for microscopy, culture and sensitivity testing because of corneal infection.

**Eyes**

5. Look at the eyes in the context of the patient’s face. Are they symmetrical? Are they in the ‘normal’ position for the patient?
6. Ask the patient to follow the light with their eyes. Move the bright light source (head loupe or ring light) up, down, to both sides and into all four corners and observe how the patient’s eyes are moving. Ask the patient whether they can see one light at all times, or if there are any points where they can see two. Cranial nerves 3, 4 and 6 control the extraocular muscles. Double vision may be a result of cranial nerve problems, or orbital trauma.

**Eyelids**

7. Check that the distance from the eyebrow to the horizontal crease in the eyelid is the same on both sides. Similarly, check that the distance from the lid crease to the lid margin is the same on both eyes. Note any asymmetry. Damage to cranial nerves 3 and 7 and swelling as a result of inflammation or infection may cause asymmetry.
8. Inspect the position of the eyelids. For example, is the lower lid turning inwards (entropion) or outwards (ectropion)? Does the lower punctum (the drainage hole at the medial area of the lid) rest on the globe, or is there any focal or generalised swelling?
9. Inspect the integrity of the eyelid margins. Are they smooth and approximated to the globe or are there any lacerations?
10. Examine whether there are any lumps or structures that are not part of the normal anatomy of the eyelid. Malignancy should be suspected if the normal structures of the lid, such as lashes, the lid margin structures, and/or meibomian gland openings, are missing where the new lump is present.
11. Examine the eyelash line. Are the eyelid margins smooth? Are the lashes pointing in the right direction and is there any crusting or discharge on the lashes?
12. Ask the patient to close their eyes and open them again. Is closure symmetrical? Is any of the eye still visible when the eye closes?

**Conjunctiva**

13. Examine the conjunctiva. What colour is it? A ‘red eye’ or a ‘white eye’? Are there any focal red patches of blood where blood vessels cannot be seen (subconjunctival haemorrhage) or of extra redness (hyperaemia)? Is the conjunctiva smooth or bumpy? Does this occur in one place, or everywhere? Is there any discharge? If so, what colour and type is the discharge?
14. Inspect the conjunctiva for the presence of any foreign bodies. Often, these may be wiped off the conjunctiva with a wet cotton bud, after the instillation of a drop of topical anaesthetic. (The bud can be wetted with the residual anaesthetic drop from the minim.) Wipe in the direction away from the cornea.
15. Evert the eyelid and have another look at the conjunctiva taking into account previous observations. To evert the eyelid, ask the patient to gaze down, pull eye lid down and out, place cotton bud in the first lid crease and press firmly with the cotton bud (Figure 2).
This procedure causes the edge of the tarsal plate to evert, and the eyelid will stay in place as long as the patient keeps their gaze downwards. If there is a foreign body on the conjunctiva, does it wipe off easily and painlessly?

**Cornea**

16. Examine the cornea. It should be smooth in all dimensions and completely clear. The iris and pupil should be visible in full detail through the cornea.

17. Compare the cornea to that of the other eye. Check for foreign bodies and ulcers. Foreign bodies are unlikely to wipe off and attempts to do so may remove corneal epithelium. Ulcers usually look like small white areas on the cornea.

**Staining**

18. Instill a drop of fluorescein into the eye. Examine the fluorescein-stained damaged epithelial tissue, using a cobalt blue light. Damaged areas will show up as areas stained fluorescent green. If a blue light is not available, instill a drop of saline into the eye to wash out any excess fluorescein. Any significant damage to areas of tissue will show up as areas stained yellow.

**Pupil responses**

19. Shine a light on the pupil. It should constrict (direct pupil response). Shine a light on the pupil again while looking at the pupil in the other eye. It should constrict as well (consensual response). Swing the light between one pupil and the other, pausing on each pupil for one or two seconds in turn and note what happens. The pupil on which the light shines should constrict; as the light is swung to the second eye, its pupil, having relaxed slightly, will constrict again. Any abnormality or difference should be noted.

**Tear film**

20. Examine the tear film, the adequacy of the lubrication of the eye by the tears, by putting a drop of fluorescein in the eye, asking the patient to stare without blinking, and using a blue light to visualise the front of the eye. The fluorescein in the tears will be observed as a blue film over the front of the eye. Counting second by second, note when black streaks appear in the film, as the tear film breaks up. This should take more than ten seconds. If the time taken is less than this, the eye may be said to be functionally dry (McQueen 2006).

**Visual field**

21. It may be useful to test the visual field of a patient with a non-traumatic presentation. This may be performed in a procedure known as ‘fields to confrontation’, which tests the patient’s visual field against the clinician’s. Sit in front of the patient, knees to knees, and compare the patient’s visual field with your own by moving your hand, from the extreme periphery of what you can see, along the midline between the patient and yourself, while both you and the patient look straight ahead, the patient concentrating on looking at your eyes, and you asking when the patient sees your hand. The most basic test is to ask the patient, while...
they are looking straight ahead, to tell you when they see your hand moving peripherally in all four quadrants. It is an insensitive test, but gives the nurse an indication that further investigation may be required. Any apparent deficit requires further assessment by referral to an ophthalmologist or optometrist for a formal visual field test (Simon et al 2009).

**Pain**

22. Ascertain the type, location and severity of pain. If there is any pain, determine if it is constant or intermittent. Ask the patient if the eye is more light sensitive than normal (photophobia) or is watering more than normal (lacrimation)?

**Documentation**

23. Note your findings throughout the examination, ensuring that you note which eye you are referring to. Draw diagrams to illustrate your findings. If anything is asymmetrical or appears abnormal, first ask the patient about what is usual for them and then, if you are concerned, refer the patient for expert evaluation.

**Evidence base**

The eye is complex, but fascinating. It is the only organ which may be internally visualised without invasive techniques. Blood vessels may be seen while intact and functioning, and the internal tissues making up a part of the body can be examined. A knowledge of the anatomy, particularly the external anatomy, of the eye is important to understand and what is normal and therefore what is not.

A comprehensive history is important in evaluating the eye problem and should include a history of the presenting problem, including concurrent systemic symptoms, ophthalmic history and relevant medical history. The patient’s medical history may be less relevant if they are complaining of a traumatic, rather than a non-traumatic problem. In addition, a diagnosis may be assumed from the history without undertaking a comprehensive examination, which may result in problems being missed (Marsden 2013).

Visual acuity should be ascertained before the eyes are examined, as a baseline for assessment and treatment. This should be undertaken before any other procedure unless the patient requires an irrigation for a chemical injury, where the priority is irrigation to remove the chemical from the eye. Visual acuity testing is an independent clinical skill and is described elsewhere (Simon et al 2009, Harper 2010, Shaw et al 2010).

Eye examination should be systematic, and requires minimal equipment. The nurse has another eye to compare with to enable them to establish what is normal and what is disordered in one eye. In addition, because the eyes are generally completely visible, patients can provide input to let the practitioner know what is usual for them. Using a systematic process for examination ensures that when the nurse internalises the process, it is used every time, no steps are left out, and no abnormalities are missed (Marsden 1998, 2013) NS

Disclaimer: please note that information provided by Nursing Standard is not sufficient to make the reader competent to perform the task. All clinical skills should be formally assessed at the bedside by a nurse educator or mentor. It is the nurse’s responsibility to ensure their practice remains up to date and reflects the latest evidence.

**USEFUL RESOURCES**


**References**


