BrienHoldenVisionInstitute

# THE NORMAL EYE

## THINK

Somebody in your community has a problem with a sore eyelid and asks you for help. How will you know what is wrong if you don't know what a normal eyelid should look like?

## WHAT YOU WILL LEARN

When you have worked through this unit you should be able to:

- Name the parts of the external eye and internal eye
- Recognise the difference between a healthy eye and an unhealthy eye.


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# EYELIDS

- The eyelids are the cover of the eye
- They protect our eyes from things like:
  - The sun
  - Wind
  - Dust
- To examine the eyelids you need to look at the skin of the eyelids and the lid margin.

*Figure 2-1: The eyelids protect the eyes*

**Normal eyelids:**

- Open and close properly
- Look clean
  - No white scales
  - No pus
  - No debris or crust
- Look smooth
  - No lumps
  - No ulcers
- Have lashes that turn away from the eyeball
- Do not look red, puffy or swollen
- Right and left upper lids are symmetrical
- No drooping lid

*Figure 2-2: Eyelashes turning away from the eyeball*

*Figure 2-3: This person's right eye has a drooping eyelid*


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# EYELID CONJUNCTIVA

- The conjunctiva helps to protect the eye from infection
- The palperbral conjunctiva covers the inside of the top and bottom lid
  - To see it, we need to evert the eyelid.

**Normal eyelid conjunctiva**

- Looks pink, not red
- Is clear with a few small blood vessels
- Has no lumps or growths
- Has no foreign bodies (like sand or grit)
- Has no pus.

***Figure 2-4: Palpebral conjunctiva of the upper eyelid (photo courtesy of the Brien Holden Vision Institute)***

***Figure 2-5: Palpebral conjunctiva of the lower eyelid (photo courtesy of the Brien Holden Vision Institute)***


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## SCLERA AND BULBAR CONJUNCTIVA

- The sclera gives the eye shape
- The bulbar conjunctiva helps to protect the eye from infection
- To look at the sclera and bulbar conjunctiva:
  - Gently hold the eyelids open using your thumb and first finger
  - Use your thumb to hold the bottom eyelid against their cheek and your first finger to hold the upper eyelid against the brow.

***Figure 2-6: The bulbar conjunctiva and the underlying sclera***

**A healthy bulbar conjunctiva**

- Should be clear and smooth
- No lumps or growths
- Has no foreign bodies
- Allows a clear view of the white sclera
- Has only a few small blood vessels, no red parts
- No pus, watering or bleeding.


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## CORNEA

- The cornea is clear, like glass
- The cornea is the window to the eye, it lets light into the eye and helps to focus the eye
- The cornea is strong and helps to protect the eye.

***Figure 2-7: The cornea is transparent and lets light into the eye (photo courtesy of the Brien Holden Vision Institute)***

**A healthy cornea:**

- Should be clear and smooth
- No lumps or growths
- No scars
- Has no foreign bodies
- Allows a clear view of the iris
- No blood vessels and no red parts.


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## PUPILS

- The pupil is the black hole in the middle of the iris
- It controls the amount of light getting to the back of the eye
- Pupils should be equal in size and reactive to light.

***Figure 2-8: The pupils are the black holes in the middle of the iris***

**Examining the pupils:**

- Look at the size of both pupils
- Look at the colour of both pupils
- Shine a light into the person's right eye
  - Both the right and left pupils should get smaller
- Take the light away
  - Both the right and left pupils should get larger
- Shine a light into the person's left eye
  - Both the left and right pupils should get smaller
- Take the light away
  - Both the left and right pupils should get smaller.

**Normal pupils:**

- Are black, not grey or white
- Are the same size
- Are round
- Get smaller when a light is shone into either eye
- Get bigger when the light is taken away.


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## CRYSTALLINE LENS

- The lens looks like clear glass
- The lens changes hsape to focus the eye, so that we can see things at different distances.

*Figure 2-9: The clear crystalline lens is behind the iris*

**The normal lens:**

- Is clear, not cloudy or discoloured
- Has no dark areas in the fundus reflex
- Is located behind the iris, not in the anterior chamber.

## POSTERIOR CHAMBER

- Is the area between the iris and the retina
- It is filled with a jelly-like material called the vitreous
- The vitreous helps give shape to the eyeball.

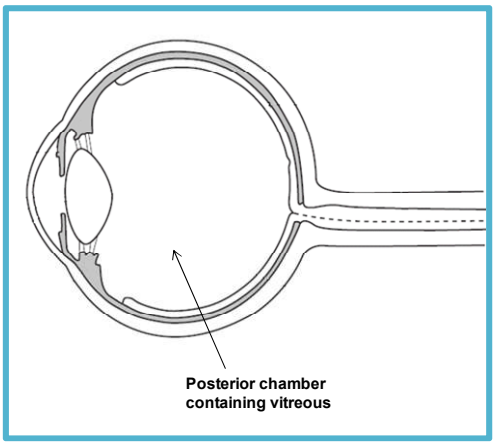


*Figure 2-10: Posterior chamber and vitreous*

**The normal posterior chamber:**

- Is clear
- Contains no blood (which could be a haemorrhage in the vitreous)
- Has no new blood vessels in it
- Contains no dark spots or shapes.


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## RETINA

- The retina is the inner layer of the eye
- The retina catches the light that comes into the eye and changes it into nerve messages that are sent to the brain
- The retina is covered with arteries and veins that supply the retina with blood and oxygen.

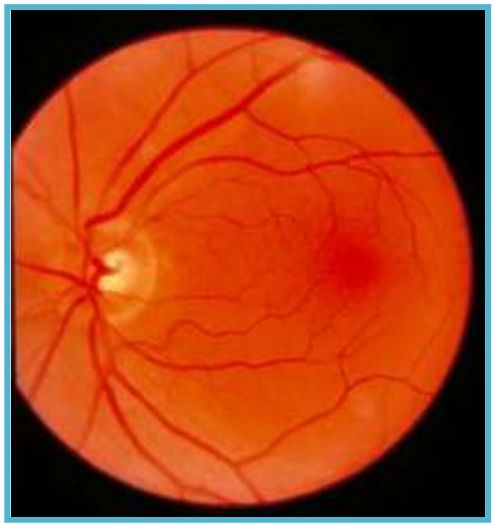

***Figure 2-11: A normal retina with no haemorrhages or leaky blood vessels (photo courtesy of Pak Sang Lee: Centre for Eye Health)***

**A normal retina:**

- Should be one solid shade of red
- Has blood vessels that are intact and not leaking
- Shows no signs of blood haemorrhages (dot, blot, flame)
- Has no areas of discolouration (yellow-white patches)
- Contains no new blood vessels (neovascularisation)
- Shows no signs of rips or tears or detachment.


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## MACULA

- The macula is the part of the retina we use when we look at fine detail (for example when we read)
- The centre of the macula, called the fovea, is what we use when we look directly at something
- There may be a pinpoint light reflection at its centre (called the foveal reflex) as seen with an ophthalmoscope.

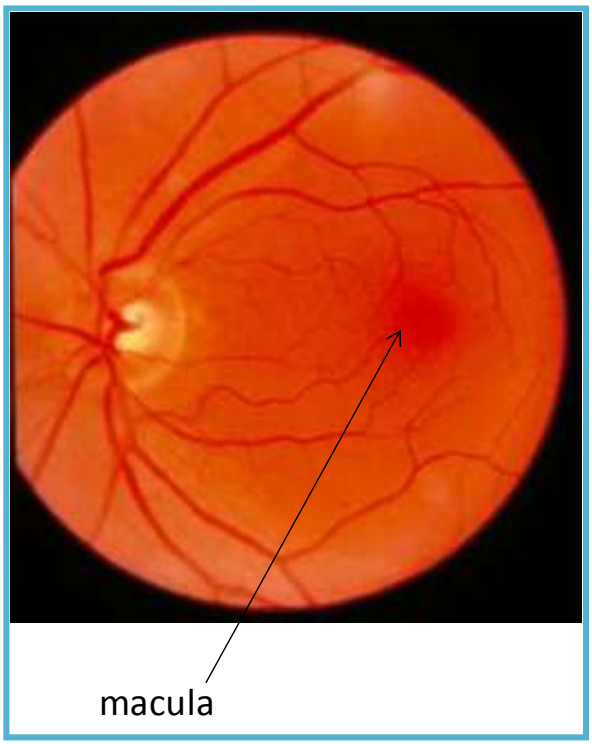


***Figure 2-12: The macula is located temporal to the optic disc (photo courtesy of Pak Sang Lee: Centre for Eye Health)***

**A normal macula:**

- Is clear and flat
- Has no blood leakage (haemorrhages)
- Has no new blood vessels in it (neovascularisation)
- Shows no areas of discolouration (green, yellow and/or white)
- Has no holes or tears
- Might see a foveal reflex in young people.


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## OPTIC NERVE

- The optic nerve sends the messages from the retina to the brain
- When looking at the fundus through the pupil, the part of the nerve you can see is called the optic nerve head or optic disc.

***Figure 2-13: The optic nerve head***

**A normal optic nerve head:**

- Is round
- Is flat, not swollen or elevated
- Has no new blood vessels (neovascularisation)
- Has a cup to disc ratio (CD ratio) of no larger than 0.5
- Is pink, not pale in colour
- Has well defined edges (no swollen disc)
- No haemorrhages.


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# SUMMARY – THE NORMAL EYE

## EYELIDS

Normal eyelids:

- Open and close properly
- Look clean – no scales or pus
- Have eyelashes that turn away from the eyeball
- Do not look red, puffy or swollen.

## EYELID CONJUCTIVA

Normal eyelid conjunctiva:

- Is pink, not red
- Does not have any foreign bodies
- Does not have any lumps, bumps or growths
- Has no pus.

## CONJUCTIVA AND SCLERA

A healthy bulbar conjunctiva:

- Is clear and lets the whiteness of the slcera shine through
- Has only a few, small blood vessels – no redness
- Has no pus, watering or bleeding.

## CORNEA

A healthy cornea:

- Is clear, with no white parts or cloudiness
- Allows a clear view of the iris and pupil
- No foreign bodies or new blood vessels.

## PUPILS

Healthy pupils:

- Are round
- Are black – not white or grey
- Are the same size as the pupil in the other eye
- Get smaller when a light is shone into either eye
- Get larger when the light is taken away.

## LENS

A normal lens:

- Is clear not cloudy or discoloured (white or grey)
- Is round
- Has no dark area in the fundus reflex.


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## POSTERIOR CHAMBER

Normal posterior chamber:

- Is clear
- Contains no blood (vitreous haemorrhage).

## RETINA

A healthy retina:

- Is one solid shade of red
- Has blood vessels that are intact and not leaking
- Has no blood haemorrhages (dot, blot, flame)
- No areas of discolouration (yellow-white patches)
- No new blood vessels (neovascularisation)
- Shows no rips or tears.

## MACULA

A normal macula:
Is clear and flat
Contains no new blood vessels (neovascularisation)
No areas of discolouration (green, yellow and/or white).

## OPTIC NERVE

A healthy optic nerve head:
Is round
Is flat, not swollen or elevated
Has a cup that is not bigger than the disc, and a CD ratio of more than 0.5
Is pink, not pale in colour
Has clearly defined edges (no swollen disc).


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## TEST YOURSELF QUESTIONS

1. **How should you examine the eyelid conjunctiva?**

2. **What should a healthy cornea look like?**

3. **You shine a light into somebody's right pupil. What should happen to the left pupil?**

4. **What should you be looking for when examining the macula?**

5. **When looking at the macula of a 10 year old girl, you notice a bright reflex shining back at you. What is this reflex, and is it normal?**

6. **What does a healthy optic nerve look like?**


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