



# CROSSED EYES, NYSTAGMUS AND AMBLYOPIA

## THINK

A mother comes to see you because she is worried about her little boy. She has noticed that his right eye seems to be looking towards his nose, while his left eye is looking straight ahead. She wants to know what the problem is and if anything can be done for her son.

## WHAT YOU WILL LEARN

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

- Describe the signs and symptoms of strabismus (also known as “squint” and “tropia”)
- Identify some of the causes of strabismus
- Describe what amblyopia is
- Know the signs and symptoms of nystagmus
- Identify when to refer a person with strabismus, amblyopia or nystagmus.

## STRAIGHT EYES


- While most people's eyes both point in the same direction, some people will have one eye that points in a different direction with regards to the other
- People often call this a "crossed" eye
- The correct medical terms for a crossed eye are strabismus, squint or tropia.



**Figure 1:** Straight eyes

## CROSSED EYES

<b>WHAT IS IT?</b>	<ul style="list-style-type: none"> <li>• Crossed eyes are also called strabismus, squint or a tropia</li> <li>• A person with a squint will have one straight eye but the other eye will be turned</li> <li>• Often it is just one eye that turns all the time, but some squints change from one eye to the other</li> <li>• The squinting eye can turn in different directions: <ul style="list-style-type: none"> <li>– In: Esotropia</li> <li>– Out: Exotropia</li> <li>– Up: Hypertropia</li> <li>– Down: Hypotropia</li> </ul> </li> <li>• A person can develop a squint at any age but it is more common in young children</li> <li>• It is more serious if it appears suddenly in an adult – they will usually complain of double vision.</li> </ul>
<b>CAUSES:</b>	<ul style="list-style-type: none"> <li>• Eye squints can be caused by several things, such as: <ul style="list-style-type: none"> <li>– Weakness or damage of an extra-ocular muscle</li> <li>– Eye disease</li> <li>– Uncorrected refractive error</li> <li>– Trauma or injury to the eye</li> <li>– Brain tumour, trauma or injury to the head.</li> </ul> </li> </ul>
<b>WHAT DO I ASK?</b>	<p>When did you first notice the eye turn? (this may be directed to the parent if the patient is a young child.)</p> <ul style="list-style-type: none"> <li>• Did it happen recently or have you had it since you were a child?</li> <li>• Did you have any injury or trauma to your eye or your head?</li> <li>• Do you see double?</li> </ul>

<b>SYMPTOMS:</b>	<ul style="list-style-type: none"> <li>• May have double vision (especially if the squint developed recently)</li> <li>• Might not be able to see out of the turned eye (if it is an old squint)</li> <li>• May have blurred vision out of the turned eye</li> <li>• Headaches</li> <li>• Eyestrain.</li> </ul>
<b>WHAT DOES IT LOOK LIKE?</b>	 <p><b>Figure 2: Left Esotropia</b>  <i>Note how the right eye is looking straight ahead, but the left eye is pointed inwards.</i>  <i>[photo courtesy of Murray McGavin: ICEH]</i></p>
<b>SIGNS:</b>	<ul style="list-style-type: none"> <li>• Turned eye</li> <li>• The person may tilt their head when they look at you.</li> </ul>
<b>WHAT SHOULD I DO?</b>	<ul style="list-style-type: none"> <li>• Measure visual acuity in both right and left eye</li> <li>• Perform a cover test</li> <li>• Perform a Hirschberg test</li> <li>• Do a full eye exam</li> </ul>
<b>REFERRAL CRITERIA:</b>	<ul style="list-style-type: none"> <li>• Adults who suddenly get a squint need to be referred immediately – it could be a very serious condition</li> <li>• All babies and children with a squint should be referred to an eye care professional so that any refractive error can be corrected or any disease treated.</li> </ul>



#### **EYE TURNS IN ADULTS:**

- An adult who has had a squint since childhood does not need a referral
- If a squint suddenly develops in an adult this may be a sign of a serious disease
- If the squint is new, the person might tell you that everything looks double
- The person should be referred to a medical practitioner immediately.

## NYSTAGMUS

<b>WHAT IS IT?</b>	<p>A continuous, rhythmic movement of the eyes that a person cannot stop or control</p> <ul style="list-style-type: none"> <li>• It affects both eyes</li> <li>• The movement is usually from side to side, but can also be: <ul style="list-style-type: none"> <li>– up and down</li> <li>– circle in motion</li> </ul> </li> <li>• The eye movement is sometimes described as “dancing”</li> <li>• There are different kinds of nystagmus: <ul style="list-style-type: none"> <li>– Infantile: seen from early childhood and is more common</li> <li>– Acquired: develops later in life</li> </ul> </li> <li>• People with nystagmus will usually have poor vision.</li> </ul>
<b>CAUSES:</b>	<ul style="list-style-type: none"> <li>• Infantile nystagmus can be caused by: <ul style="list-style-type: none"> <li>– Problems that a child is born with (congenital) e.g. cataracts</li> <li>– Problems that affect the child’s whole body e.g. Down syndrome</li> <li>– Problems with the brain</li> <li>– Or sometimes, the cause is not known</li> </ul> </li> <li>• Acquired nystagmus can be caused by: <ul style="list-style-type: none"> <li>– Disease</li> <li>– Injury to the brain</li> <li>– Alcohol</li> <li>– Drugs.</li> </ul> </li> </ul>
<b>WHAT DO I ASK?</b>	<p>When did you first notice the eye movement?</p> <ul style="list-style-type: none"> <li>• Did it happen recently or were you born with it?</li> <li>• How is your vision?</li> </ul>
<b>SYMPTOMS:</b>	<ul style="list-style-type: none"> <li>• Poor vision</li> <li>• Blindness</li> </ul>
<b>SIGNS:</b>	<ul style="list-style-type: none"> <li>• Movement of the eyes</li> <li>• Movement will decrease when looking in a certain direction</li> <li>• May have a head turn or head tilt.</li> </ul>
<b>WHAT SHOULD I DO?</b>	<ul style="list-style-type: none"> <li>• Measure vision in both right and left eye</li> <li>• Perform a thorough case history focusing on family history.</li> </ul>
<b>REFERRAL CRITERIA:</b>	<ul style="list-style-type: none"> <li>• People with recent-onset nystagmus need to be referred to a medical practitioner or ophthalmologist</li> <li>• It is important that when nystagmus is first seen that the child or adult is referred to a medical practitioner immediately</li> <li>• Recent-onset nystagmus may be the first sign of a serious problem with the eye or brain.</li> </ul>



### TREATMENT FOR NYSTAGMUS:

- There is no real treatment for nystagmus
- However, referral to a medical practitioner is very important, because nystagmus may be the first sign of a serious problem with the eye or brain
- If it is an acquired nystagmus and is detected early, they may be able to find the cause of the nystagmus and maybe even a solution to the problem
- Spectacles will not correct nystagmus.

## AMBLYOPIA

<b>WHAT IS IT?</b>	<ul style="list-style-type: none"> <li>• An eye with amblyopia (also called an amblyopic eye) has decreased vision, even though the eye appears to be healthy and normal</li> <li>• An amblyopic eye will not see clearly even if you correct any existing refractive error in that eye</li> <li>• An amblyopic eye is sometimes called a lazy eye</li> <li>• When a baby is born, the centres in the brain that control vision are not fully developed yet</li> <li>• The brain continues to develop until the child is about eight years old</li> <li>• The vision centres and visual pathways in the brain need good vision from both eyes to develop normally; if one eye does not see well, then the part of the brain that receives visual messages from this eye will not develop properly</li> <li>• This means that even if you treat the cause of the poor vision when the child is older, the child will continue to have vision problems as the brain is unable to interpret the image properly – because the visual pathways did not form properly in the first eight years of the child's life (critical period)</li> <li>• An adult who develops poor vision later in life will not develop amblyopia because the pathways are already developed in their first years of life.</li> </ul>
<b>CAUSES:</b>	<ul style="list-style-type: none"> <li>• Amblyopia can be caused by anything that prevents the eye from seeing well during childhood, such as: <ul style="list-style-type: none"> <li>– Crossed eyes</li> <li>– Nystagmus</li> <li>– Uncorrected refractive error in early childhood (especially if in one eye only)</li> <li>– Eye problem at birth (e.g. cataract).</li> </ul> </li> </ul>
<b>WHAT DO I ASK?</b>	<ul style="list-style-type: none"> <li>• When did you first notice the poor vision?</li> <li>• Have you always had poor vision in this eye, or did it happen recently?</li> <li>• Ask parents if the child holds their book close or trips over objects.</li> </ul>
<b>SYMPTOMS:</b>	<ul style="list-style-type: none"> <li>• Poor vision (mostly in one eye, but sometimes in both eyes)</li> <li>• May have an eye turn</li> <li>• Often the child does not realise they have poor vision in one eye, so amblyopia may not be detected until it is too late.</li> </ul>

<b>SIGNS:</b>	<ul style="list-style-type: none"> <li>• The child may squint or frown to try and see better</li> <li>• There may be an eye turn</li> <li>• The child may become agitated if the good eye is covered because he/she will then be only able to see the blurry image formed by the amblyopic eye.</li> <li>• The child may cover or close one eye when looking at an object</li> <li>• There could be a head turn or head tilt.</li> </ul>
<b>WHAT SHOULD I DO?</b>	<ul style="list-style-type: none"> <li>• Measure visual acuity in both the right and left eye</li> <li>• Check the pinhole visual acuity</li> <li>• Examine the eye with an ophthalmoscope to make sure it is healthy</li> <li>• Perform a cover test (if you know how).</li> </ul>
<b>TREATMENT PLAN:</b>	<ul style="list-style-type: none"> <li>• All people with amblyopia require a full eye examination</li> <li>• Children with poor vision that does not improve with treatment should be referred to an ophthalmologist</li> <li>• Children with amblyopia may be advised to wear a patch over one eye to help improve the vision in their amblyopic eye</li> <li>• It is important that the parents of the child follow the instructions to patch the eye very carefully.</li> </ul>



- If a child receives treatment for an eye condition before they are eight years old, amblyopia can be reversed or prevented.



#### **AMBLYOPIA: DIAGNOSIS OF EXCLUSION**

- This means that you can only say that a person has amblyopia if all other possible reasons for poor vision have been excluded (ruled out)
- It can be very dangerous to assume that a person has amblyopia – they might have a more serious eye disease that you are missing!
- If you are not sure, refer the person to an eye care specialist.

## TEST YOURSELF QUESTIONS

1. Name three other terms used to describe crossed eyes?

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_

2. What are some of the possible causes of crossed eyes?

---

---

---

3. Why is it so important to refer a baby or young child who has a crossed eye?

---

---

---

4. Do all people with crossed eyes have double vision? Please explain your answer.

---

---

---

5. What is nystagmus and what are the two types of nystagmus?

---

---

---

6. What should you do if you see a person with nystagmus?

---

---