NHS
Worcestershire
Acute Hospitals
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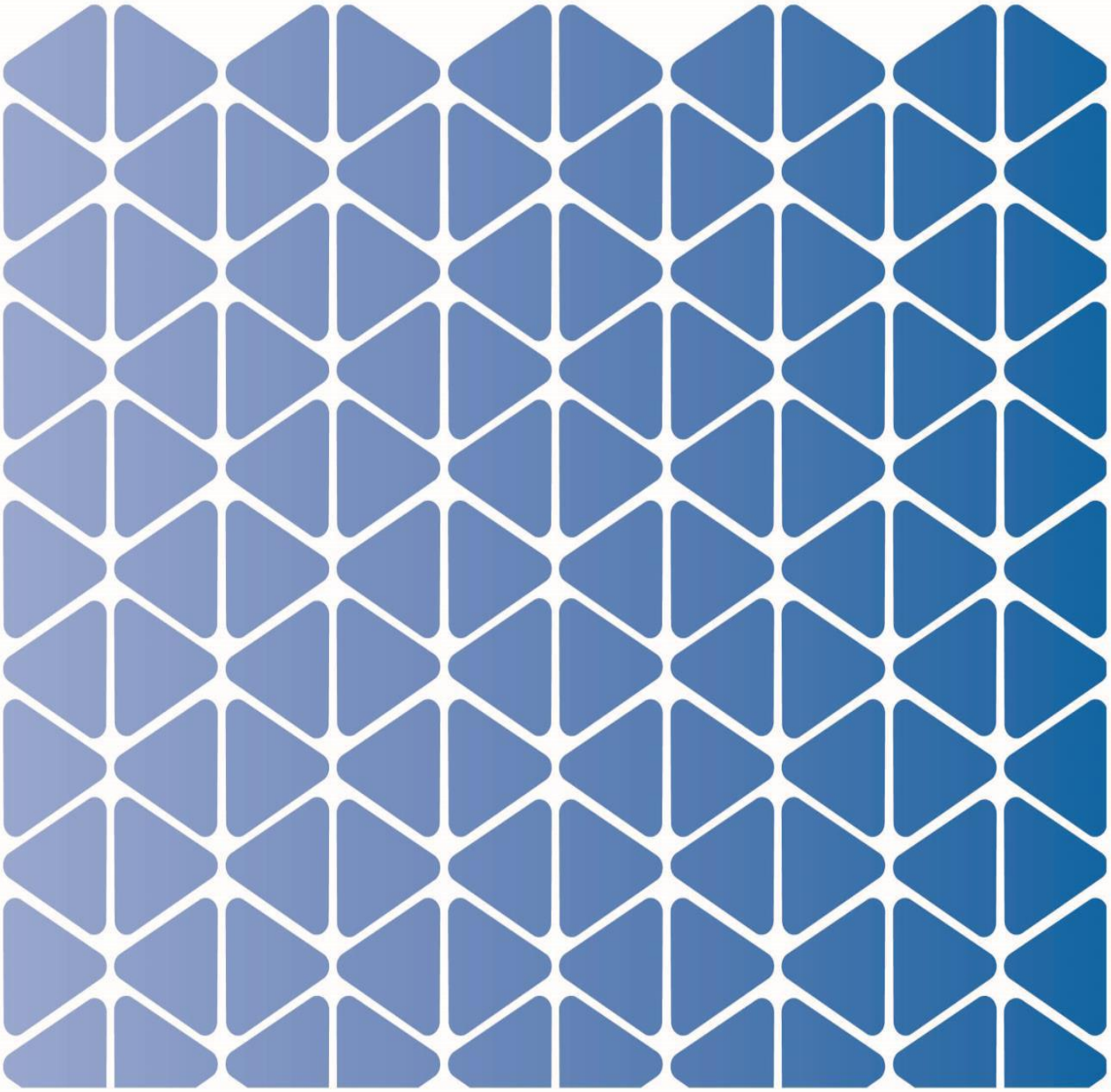
PATIENT INFORMATION

# HYPEROPIA (LONG-SIGHTEDNESS) IN CHILDREN



## Introduction

Please ask for help if you are not happy to read English. This leaflet is about children with hyperopia (say ‘hyper-owe-pee-uh’). This is also known as long-sightedness, far-sightedness or hypermetropia. Please ask the optometrist (optician), the orthoptist or the ophthalmologist (eye doctor) if there is something you do not understand or if you have more questions. Please see other leaflets for Information about myopia (short-sightedness), information about ‘lazy eye’ (amblyopia) and information about children’s glasses (spectacles). This leaflet does not discuss everything about hyperopia.

## What is Hyperopia?  What Makes an Eye Hyperopic (long-sighted)?

The eye is like a camera. The retina is a layer of cells at the back of the eye, like the film or sensor at the back of a camera. For a person to see an object clearly, the light from it must be focused on the retina. The eye has two lenses that focus the incoming light. The first lens is the cornea (the ‘front window of the eye’). The second lens, called ‘the crystalline lens’, is inside the eye. A muscle inside the eye can change the focusing strength of the crystalline lens, for example, to focus on a close object. In adults, when this focusing muscle is relaxed, the light from a distant object should ideally be focused on the retina. If this light is focused behind the retina, the eye has hyperopia (see the diagram below). A small amount of hyperopia is normal in children and normally, the focussing muscle can easily bring the focus onto the retina. Hyperopia may be due to the lenses of the eye being too weak or to the eye being too short. (Myopia or short-sight is the opposite.)

Significant hyperopia can run in families. It is more common if there is some reason why the growth of the eye is not perfectly controlled, for example in children who are born preterm (premature).

## Is Hyperopia Normal?

Hyperopia is measured in dioptres. Hyperopia of up to two dioptres is regarded as ‘low’. Hyperopia of more than five dioptres is ‘high’, and ‘moderate’ hyperopia is between these strengths. Most children with low hyperopia can see clearly by using the focusing muscle to make the crystalline lens stronger. (This extra

focusing effort is needed for both near and distance vision.) If a child can do this without any problems, then the hyperopia does not need treatment. As people get older, it becomes more difficult to increase the strength of the crystalline lens. (Babies can focus on very close things, but after the age of 45, most people need 'reading glasses'.) Therefore, moderate hyperopia may be normal in a pre-school child and low hyperopia may be normal in a school-age child.

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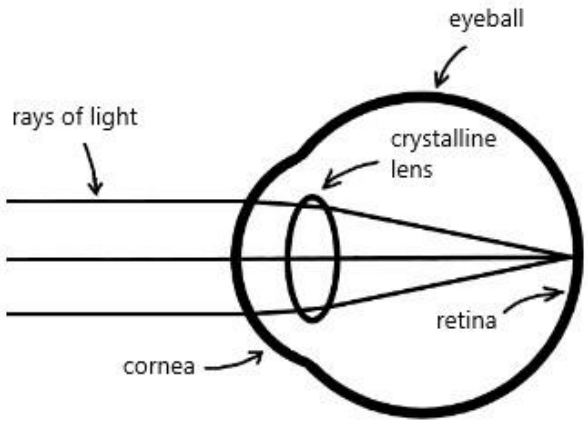
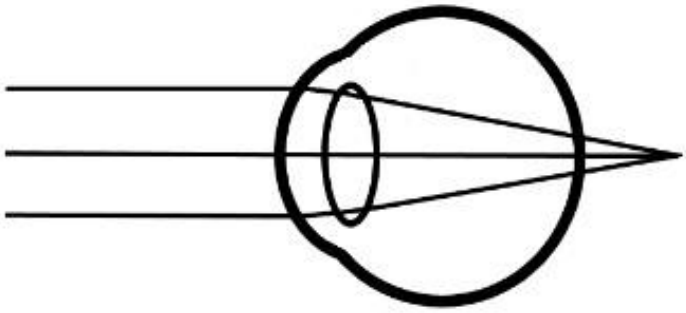
| **Eye with Perfect Focusing**<br><br>Light from a distant object is focused on the retina, giving sharp vision |  |
| **Hyperopic Eye**<br><br>Light from a distant object is focused behind the retina, giving blurred vision |  |

**Diagram comparing an eye with perfect focusing with a hyperopic eye**

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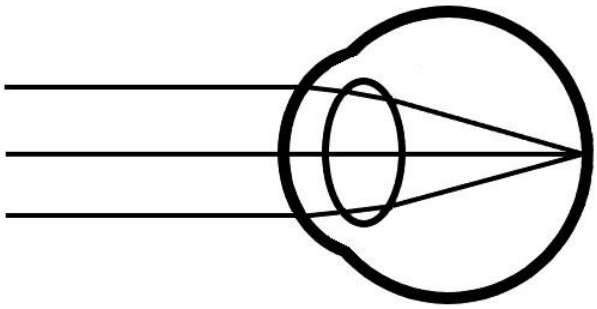
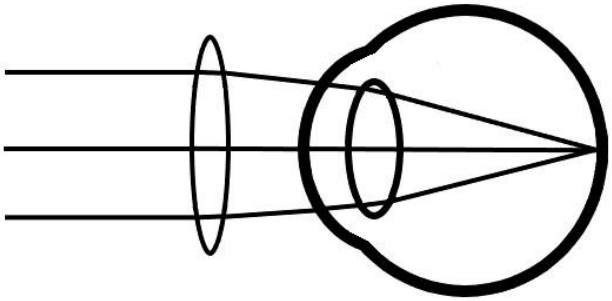
| **Hyperopic Eye with Extra Focusing Effort**<br><br>The crystaline lens is more curved. Light from a distant object is focused on the retina, giving sharp vision |  |
| **Hyperopic Eye with Glasses**<br><br>Light from a distant object is focused on the retina, giving sharp vision |  |

**Diagram showing how a hyperopic eye can have sharp distance vision either with extra focusing effort or with glasses**

## Does the Amount of Hyperopia Change?

At birth the eye is normally short and hyperopic. The amount of hyperopia reduces as the eye grows longer (mainly during the first 3 years of life). The true amount of hyperopia can only be found if the focusing muscle is completely relaxed. Before we test the focusing of the eyes in young children, we usually use eye drops to relax the focusing muscles. If these drops are not working well, the eye may appear to be less hyperopic than it really is. (This particularly happens in children with brown eyes.) The drops usually work better as the child gets older, so that testing becomes more accurate.

When a child has a lot of hyperopia, we may prescribe weak ('training') glasses to start with. Later, when the child is successfully wearing these, we may prescribe stronger glasses. Hyperopia tends to be fairly stable by school age. However, some children will become short-sighted (myopic), and their hyperopia will reduce as the eyes change towards becoming short-sighted.

**When is Hyperopia a Problem?**

If a child with hyperopia does not use the focusing muscle as much as is needed, then they will not see properly. There are different reasons why this may happen:

1) A child may have more hyperopia than they can comfortably deal with at their age. They may start to get blurred vision or eye strain.
2) Occasionally, a child may have an illness or medication that makes it more difficult for them to use the focusing muscle.
3) Some children with disability or special needs seem to prefer not to have sharp vision.
4) In some children, the necessary focusing effort causes one eye to turn inwards more than it should – a convergent squint (esotropia) occurs.

**What is a Squint?**

'Squint' is the common word for 'strabismus' (or 'tropia'). A squint is present when one eye is not pointing in the direction it is supposed to. (Sometimes people use the word 'squint' to mean narrowing of the eyelids, for example in bright sunlight, but this is a different thing.)

**How can Hyperopia Cause a Squint?**

The eyes are supposed to work together as a pair. This helps us tell how far away an object is. This is called 'depth perception' ('3-D vision' or 'stereopsis'). When we look at a close object, our eyes turn inwards (which is called 'convergence') and we use our focusing muscles (which is called 'accommodation'). Convergence and accommodation normally work together, but significant hyperopia can make this difficult. Some children make a strong effort to focus because they prefer to have sharp vision, even if this causes a convergent squint. (This is called an 'accommodative convergent squint'.) Other children prefer to avoid a squint, and

so they make less effort to focus, and they accept some blurring of their vision. Both of these groups of children need treatment for their hyperopia – usually with glasses. However, most children with only low hyperopia can easily manage to see properly. It may be difficult for the child with moderate or high hyperopia to see properly, particularly as they grow older. The orthoptist will check how the child is using their eyes.

## Does an Accommodative Convergent Squint Matter?

When a squint is present, a child will not have good depth perception. The greater the amount of time that a squint is present, the greater the risk of the squint becoming permanent. In a young child, if a squint mainly affects one eye, the squinting eye is at risk of becoming ‘lazy’ (amblyopic). Amblyopia is discussed in another leaflet.

## What is Anisometropia?

The amount of hyperopia may be different for each eye. When this difference (anisometropia) is significant, there is a risk that one eye will become ‘lazy’. It is therefore important that anisometropia is treated (usually with glasses) even if the child does not think that the glasses help them to see better. If anisometropia has caused an amblyopic eye, this may be treated with glasses to start with, but additional treatment is often needed (for example, patching of the good eye).

## What is Astigmatism?

The lenses that focus the eye are supposed to have the shape of the surface of a football, that is, a sphere. In eyes with astigmatism, at least one of the lenses is shaped like the surface of a rugby ball. This means that the shape is slightly more like the curved surface of a tin of food, that is, a cylinder. Astigmatism causes blurring for both near and distance vision. When someone with astigmatism looks at two lines that make a ‘+’ or an ‘x’, one line may appear sharp while the other is blurred, but they cannot both be sharp at the same time. Astigmatism can usually be corrected with glasses that have a ‘cylinder’ lens in them. A small amount of astigmatism may be normal (depending on the child’s age) but significant astigmatism needs to be corrected with glasses.

## What about other Convergent Squints?

In some children with convergent squint (esotropia), hyperopia is not the cause of the squint. For these children, we generally correct any significant hyperopia with glasses. This is because glasses may reduce the size of the squint and it is important for the child to be wearing glasses properly, before any surgery is considered. Also, if the child needs treatment for an amblyopic ('lazy') eye then the treatment may be more successful when the focus of the amblyopic eye is helped by glasses.

## Does my Child Need Glasses (Spectacles)?

In this leaflet we have explained that there are several reasons why glasses may be needed. Glasses can be a nuisance (they can get lost, scratched or broken). We do not prescribe glasses without a good reason. In most cases, we want the glasses to be worn 'full time', which means 'almost all the time that the child is awake'. (They can be taken off for activities such as 'soft play' and swimming.)

## How Long will it take for my Child to get Used to Wearing Glasses? Will my Child Become Dependent on Glasses?

Some children do not like wearing glasses. You can read more about this in the leaflet on glasses for children.

A child may have been getting clear vision without glasses by making extra focusing effort. The child's focusing muscles may have extra 'fitness'. If the child's hyperopia is fully corrected with glasses, they no longer need to make any extra focusing effort, but it may take some time for the child to learn to stop making the extra effort. (Although the focussing muscles may lose their extra 'fitness', they will still get a normal amount of exercise from being used for near vision.) Wearing glasses may also affect the link between focusing effort (accommodation) and the normal inward turning of the eyes for near vision (convergence). For these reasons, It might take the child a several weeks to get used to the glasses.

When the child has got used to the glasses, the child may no longer be able to manage without them. If the child takes the glasses off, the vision may be more blurry than it used to be, and occasionally a convergent squint may develop. These

problems normally disappear when the glasses are put back on, but the child could be disappointed if they hoped to play sport without glasses. This dependency on glasses can be reduced if the hyperopia is only partly corrected. However, if a convergent squint is present, it is usually best to correct all (or almost all) the hyperopia.

**Will my Child Need to Wear Glasses Long Term?**

This depends on what the glasses are for. Sometimes, weak glasses can be stopped after squint surgery, but this is generally not predictable and is not a reason for having squint surgery. If treatment for amblyopia has been finished, and the good eye has good vision without glasses, it is sometimes reasonable to stop wearing glasses in later childhood. However, if the child has only one eye with good vision, then wearing glasses may give some important physical protection against accidental injury to their only good eye.

Until a child is around the age of 14 years, the brain may still be developing some skills that depend on vision, so for most children, it may be helpful to continue wearing glasses, at least until this age. After the age of 14, the glasses are usually simply worn as much they are needed for clear comfortable vision, which usually means ‘almost all the time’.

**What about Contact Lenses?**

In general, contact lenses are an option that the family needs to pay for at their community opticians. Some older children prefer to wear contact lenses instead of glasses, for example, while playing sport. However, children and parents need to understand the risks of infection and the need for very careful hygiene. Those who wear contact lenses should keep a suitable pair of glasses available to wear during any periods when they need to stop wearing the contact lenses. In general, if an accommodative convergent squint is successfully controlled by glasses, it can also be controlled by contact lenses. Contact lenses can correct astigmatism, but this is not always successful.

**Can Hyperopia Cause Other Eye Problems in the Long Term?**

Over their lifetime, people with hyperopia have a higher-than-average risk of 'angle-closure glaucoma'. Wearing glasses does not prevent this problem. The overall risk is low, but it is more significant in people with high hyperopia or people over the age of 50. Community optometrists (opticians) routinely check for glaucoma in this age group. (Eyes with myopia are at risk of different problems.)

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**Child's Name** **Date**

**Reasons for glasses being prescribed for your child:**

__ Too much hyperopia for good vision without glasses

__ Anisometropia

__ Astigmatism

__ Control of accommodative convergent squint (full or partial benefit)

__ Hyperopia with a convergent squint
(especially if surgery is being considered)

__ As part of the treatment for amblyopia (lazy eye).

__ To give some physical protection when there is only one good eye.

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**If your symptoms or condition worsens, or if you are concerned about anything, please call your GP, 111, or 999.**

## Patient Experience

We know that being admitted to hospital can be a difficult and unsettling time for you and your loved ones. If you have any questions or concerns, please do speak with a member of staff on the ward or in the relevant department who will do their best to answer your questions and reassure you.

## Feedback

Feedback is really important and useful to us – it can tell us where we are working well and where improvements can be made. There are lots of ways you can share your experience with us including completing our Friends and Family Test – cards are available and can be posted on all wards, departments and clinics at our hospitals. We value your comments and feedback and thank you for taking the time to share this with us.

## Patient Advice and Liaison Service (PALS)

If you have any concerns or questions about your care, we advise you to talk with the nurse in charge or the department manager in the first instance as they are best placed to answer any questions or resolve concerns quickly. If the relevant member of staff is unable to help resolve your concern, you can contact the PALS Team. We offer informal help, advice or support about any aspect of hospital services & experiences.

Our PALS team will liaise with the various departments in our hospitals on your behalf, if you feel unable to do so, to resolve your problems and where appropriate refer to outside help.

If you are still unhappy you can contact the Complaints Department, who can investigate your concerns. You can make a complaint orally, electronically or in writing and we can advise and guide you through the complaints procedure.

## How to contact PALS:

**Telephone Patient Services: 0300 123 1732 or via email at: wah-tr.PALS@nhs.net**

## Opening times:

The PALS telephone lines are open Monday to Friday from 8.30am to 4.00pm. Please be aware that you may need to leave a voicemail message, but we aim to return your call within one working day.

If you are unable to understand this leaflet, please communicate with a member of staff.