



**University
Hospitals Sussex**
NHS Foundation Trust

Refraction

Orthoptic Department
St Richard's Hospital
Southlands Hospital

Patient information

This leaflet is intended to answer some of the questions of carers of children referred for refraction under the care of University Hospitals Sussex NHS Foundation Trust.

What is refraction?

Refraction is the process by which light waves are bent as they pass through different substances.

This happens when light travels through the different layers of the eye.

Refraction is also the term used when the eye size or shape is measured.

Why is refraction needed?

The orthoptist will usually request refraction when vision appears to be reduced or if a strabismus has developed. You may also be asked to take your child for refraction if there is strong family history of glasses wear or if your child struggled with other parts of the testing, such as 3D vision.

Light waves should travel through the eye and come together to a sharp focus at the back of the eye. When this does not happen vision is blurred. This can be because the eye is shorter than normal, longer than normal or not as round as it should be. Refraction can determine if any of the above are present.

How is it done?

Refraction is generally performed by an optician or optometrist but may also be performed by an orthoptist or ophthalmologist. In this Trust you will usually be asked to go to the optician as recommended by your orthoptist.

A hand held light is used to show a reflection from the back of the eye. Lenses can then be held up in front of the eye until the light is seen to be focused. This is usually done in a darkened room.

What are the drops for?

In children under five, it is recommended that eye drops be used for the refraction. What the drops do is enlarge the pupil (the black part of the eye) and relax the focusing muscles. This makes the test quicker and more accurate.

The drops normally used are known as cyclopentolate and come in two strengths (0.5% and 1%). The strength you are given will depend on your child's age, general health and development. The orthoptist or optician may prescribe these and you will be asked to put them in your child's eyes usually around 45 minutes before they are due to have refraction.

What do the results of the refraction mean?

The type and strength of lenses that are required to focus the light show whether the eye is shorter than normal (long sighted), longer than normal (short sighted) or irregularly shaped (astigmatism).

The optician will then prescribe the appropriate glasses to help the eye focus the light and give normal clear vision. The results can often be different for each eye.

What happens after the refraction?

For the majority of children they will be asked to wear the glasses all of the time.

These glasses should be checked after a period of time to make sure the glasses are being tolerated, that they are fitting well and that they are giving good equal vision. It is important to keep your child's appointments with the orthoptist and the optician for this reason.

Sometimes the glasses strength will need to be reduced in strength initially in order to allow the child to get used to them.

Sometimes other intervention such as patching treatment is needed to encourage the vision to be equal. Your orthoptist will discuss this with you.

Glasses can also affect eye position where a strabismus is present and can sometimes correct the strabismus completely. This will be assessed by your orthoptist.

Further refractions will be required especially in children where the eye is still growing in size and shape.

The frequency of refractions will be determined by the optician or orthoptist.

Contact numbers

Orthoptist:

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