

## How is Botox used in the treatment of children eye conditions?

Botox is widely used in treatment of squint or strabismus as it weakens the overacting muscles thus improving the alignment of the eyes. It can be used before surgery to demonstrate the possible effects of the operation. Some patients who are unwilling or unsuitable for surgery can gain an excellent temporary or even permanent solution with Botox.

The effects of the procedure are apparent within a few days; reach a peak around two weeks and then taper off. They usually wear off by three months but the injection can then be repeated.

## Side effects and contraindications?

Botox is a safe and very well tolerated drug and there are very few serious side effects associated with its use as the quantities involved are too small to cause systemic effects. It is possible for the toxin injected to diffuse and cause drooping of the eyelid but this usually gets better within 3-4 weeks of injection.

## AMBLYOPIA

Amblyopia or lazy eye is the condition affecting 4% of the general population wherein one eye has less vision than the other. It is usually detected on school vision screening or following a routine visit to the optician. It is usually silent but may be associated with a squint in some cases. Confusingly, a squint or misalignment of the eyes or a droopy eyelid (ptosis) may be referred to as a lazy eye as well. It is important to differentiate between these and this page deals exclusively with amblyopia.

The causes of amblyopia can be:

**Difference in the power of the two eyes:** If the refractive power of the two eyes is significantly different e.g. if one eye has a high minus or plus power, the brain prefers to use the other or normal eye to see and the development of the eye with the high error lags behind.

**Squint or Strabismus:** some children may be born with or develop a squint that leads to the eyes being misaligned. As a result, when one eye looks straight ahead the other may be turned in or outwards.

If this is a constant phenomenon it leads to poor vision in the deviating eye.

**Stimulus Deprivation:** This occurs when the vision out of one (or both) eyes is reduced temporarily by a cataract, droopy eyelid etc. in childhood. This leads to an unequal signal to the brain from the two eyes and as a result the eye with the worse vision lags behind even when the problem is removed.

**Treatment of Amblyopia:** The principle behind amblyopia treatment is holding back or penalizing the good eye to allow the eye with the worse vision to develop better. Treatment should be instituted as soon as possible after diagnosis and works well before the age of seven. The treatment methods include:

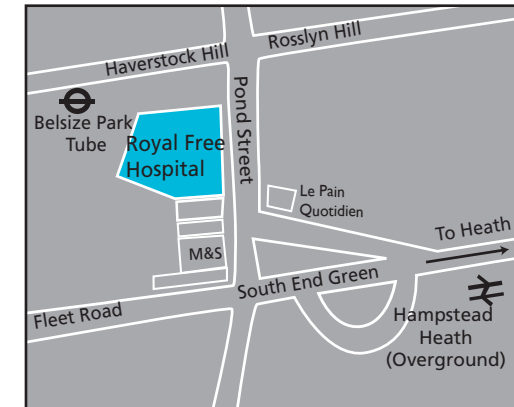
**Patching of the good eye:** This can be carried out between half an hour to three hours a day depending on the severity of the amblyopia. Recent reports suggest that a maximum patching time of two hours is sufficient for most moderate cases.

**Drops:** In children unable (or unwilling) to patch, drops can be used to blur the vision on the good eye on a semi permanent basis. This has the advantage of avoiding a patch that some children find embarrassing to wear in public and has been shown to be as good as patching in most cases.

Squint surgery in patients with amblyopia should be carried out once the treatment is complete and no further improvement in vision is expected, for the best results.

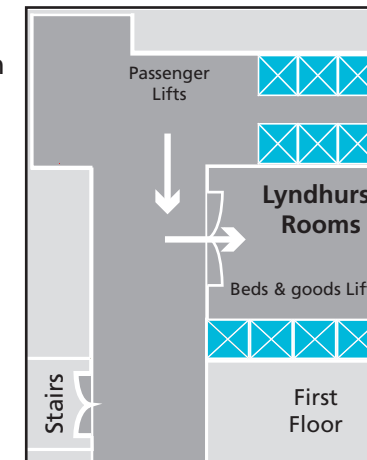
## AT THE ROYAL FREE LONDON PRIVATE PEDIATRIC DAILY WELL CHILD CLINIC

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## Royal Free London Private Patients Unit Children Eye Health Services

## EYE HEALTH IN CHILDREN

During the first few years of life, visual development proceeds very rapidly and sets the baseline for vision in later life. Any problems at this stage that are not picked up can result in defects of vision that cannot be corrected later on. It is therefore essential that children have their eyes examined during this critical period to ensure that these can be looked for and treated.

## NORMAL VISUAL DEVELOPMENT

There are certain 'milestones' that help chart the progress of development of vision. Some of these include:

**0-2 months of age:** The baby develops fixing and following behaviour where in they focus on and track bright toys and lights. They develop a smiling response to parent's faces (social smile) by the end of the first two months of life.

**6-12 months:** The hand eye coordination improves to allow recognition of objects in three dimensions which helps in grasping objects. This continues to evolve till 3-4 years of age.

**2 years:** The growth of the eyeball is 90% complete but the visual function continues to mature. By the end of the second year of life, the vision is almost equal to normal adult levels of 6/6 (or 20/20)

**7 years:** marks the end of the critical phase of visual development. It is essential that any problems with visual development are detected and treated by this stage. Undetected eye conditions can have serious effects on children's educational performance so poor concentration at school, worsening grades, distracted behaviour in the classroom etc. can be due to poor eyesight.

## High Risk children?

The incidence of refractive errors (the need for glasses for distance and near vision), squint (or strabismus where the eyes don't point in the same direction) and lazy eye (or amblyopia where one eye sees more than the other) is around 4% in the general population but the incidence can rise to between 15-30% in certain high risk groups for whom visual screening is even more important. Some of these conditions include:

- Prematurity (babies born before 32 weeks of age)
- Problems with Hearing
- Family history of squints/lazy eyes/thick glasses
- Down's Syndrome

## Vision testing? When and by whom?

The Royal College of Ophthalmologists and the UK national Screening Framework recommend that every child's vision be checked between 4 and 5 years of age. It is essential that the person carrying out these tests is experienced in examining and treating children.

## Common problems and how they present?

**White eye on photographs:** A common finding in young babies and children is a white eye on photographs that may indicate an underlying disorder such as cataract or eye cancer (Retinoblastoma). If this is seen on more than one photograph, it is a good idea to have this checked.

**Watery eye:** It is not uncommon for babies to have watering from one eye and this usually clears by itself. However, if there is long standing watering and/or discharge from one or both eyes after birth, it can be cured by massage or minor surgery.

**Cysts on Eyelids:** Children can have recurrent episodes of small cysts on the eye lids that can persist for months at a time. In most instances, these respond to conservative management including hot compresses and antibiotic ointment. However, if they persist for a long time and/or cause visual or ocular symptoms, they can be removed very easily by a quick surgical procedure.

## SQUINT

### What is squint or strabismus?

Squint or strabismus is a condition where both eyes do not point in the same direction. This misalignment of the eyes can result in the eyes being either convergent (looking towards the nose) or divergent (looking away from each other or wandering out) in straight gaze. This may become more evident when tired, while daydreaming, after an illness or following close work and is usually noticed at the end of the day.

It may be accompanied by double vision, headaches or blurred vision. Sometimes the squint is not noticed by the patient but by friends or relatives or picked up on in a photograph or video

### Can a squint be treated?

Contrary to popular belief, a squint can be treated at any age. Some squints can be treated with glasses (with or without prisms) or contact lenses, others with Botox and some patients need a surgical procedure for a definite cure.

People choose to have their squints corrected for different reasons with social embarrassment being the most common.

With advances in surgical skills and techniques over the last few years squint surgery is now much safer and more successful than previously.

A special technique for squint surgery is used at our centre that leaves a small scar hidden under the upper or lower lids. As the surgery is carried out through a small opening, the eyes settle down much sooner with an excellent cosmetic result. This technique has been presented at various meetings all around the world including Australia, Europe and the UK and has been published in the Journal of Paediatric Ophthalmology and Strabismus, a journal of international repute.

### When should a squint be referred?

All squints should be referred as early as possible. A squint may be correctable at an early age by the use of patches or glasses. At a later stage surgery or Botox may be required. A squint may present by itself or be due to an unsuspected underlying disease and thus all squints need to be investigated thoroughly.

### What to expect when undergoing squint surgery?

Squint surgery is carried out under general anaesthetic and the duration varies with the complexity of cases with most lasting less than an hour. It is carried out as a day case procedure and the patient can go home the same day. Most adults have squint surgery using adjustable stitches which can be used to 'fine tune' the result after the operation for the best cosmetic outcome.

### Postoperative care?

The eye is red following the procedure and drops to reduce the inflammation and prevent infection are supplied after the surgery. No patches or pads are needed.

The redness wears off within three weeks. During this time swimming and heavy exercise are not advisable. Children may have to stay off school for the first week. An immediate postoperative appointment is arranged for the next day and then after three weeks.

## BOTOX

### What is Botox?

BOTOX® is a purified protein that comes from the bacterium Clostridium botulinum. It works by preventing nerves from releasing acetylcholine, a substance that transmits signals from nerves to muscles