



UNDERSTANDING CHILDREN'S VISION

There are about 4 million children in Australia aged 12 and under. Of these, around **one out of every five has a vision problem**.

Rarely do these vision conditions threaten a child's sight but they can prevent their development into a normal, contributing adult member of society. This occurs as some vision problems interfere with learning; inhibit sport participation; or create general frustration.

Children's vision problems are not always easy to find as **many cannot be detected by a standard school eye chart test**. Those related to learning difficulties are often mistaken for other problems.

Children will seldom complain because they think everybody else sees the way they do.

This small summary of information on the vision of children is intended to help parents, teachers and others concerned with children to understand normal vision development and to recognise the types of problems that can develop.



BABIES VISION PROBLEMS

Apart from routine examinations at birth, children do not usually need to be examined until they are two and a half years old. However, they should be examined at 6 months if there is any suspicion that a problem might be present.

The two most common problems are **crossed-eyes (strabismus)** affecting about 4% of children, and **lazy eye (amblyopia)** affecting about 1%.

Visual problems which might interfere with proper development can certainly be detected at any age. Early detection can then prevent future complications.

*** Strabismus:**

It is quite normal for an infant's eyes to appear crossed for brief moments during the first six months of life. This occurs as they are learning to use the eyes together as a team. If by age 4 months the misalignment appears to be frequent or long-lasting or always with the same eye an examination is indicated.

Common causes of strabismus are **poor eye muscle control** or **long-sightedness**. It is then the underlying cause which must be treated.

Sometimes the distance between the nasal corners of the eyes is exaggerated in children, especially when the bridge of the nose is very low. Under these circumstances, a turned eye is apparent during certain positions of gaze. In these cases a simple test can determine whether or not a true strabismus is present.

* Amblyopia:

Lazy eye often affects children with crossed eyes or those who have one eye that for some reason does not see as well as the other eye.

The correct term is “amblyopia” and means the **vision is reduced through disuse**. This occurs when the brain is receiving such different images from the two eyes that it ignores one of them. Again, early treatment gives the best results.

Sometimes the better eye is covered with a patch to stimulate and strengthen the lazy eye. However, patching alone does not usually restore good vision. Unless something is done to correct the underlying cause of the condition, the vision will become poor again once the patching is stopped.



ARE YOUR CHILD'S EYES READY FOR SCHOOL?

* Pre-Schooler's Vision

One in ten pre-school children is affected by a clinically significant visual problem. As with all age groups, parents need to be alert for signs that may indicate their child's vision needs attention. This is especially important as this age group will soon begin learning skills at school where being held back by a vision problem could be avoidable.

Signs of a possible vision problem in this age group include inability to sit still for a simple story; inability to express ideas with paint or pencils; short attention span for the child's age and poor performance in preschool or kindergarten.

* School-Aged Children's Vision

Children should be examined at 6 years of age as a follow up to their earlier vision examination by 3 years of age.

The prevalence of certain vision conditions increases significantly to 1 in 5 during the school years, yet **changes in a child's vision are usually so gradual that most are unaware of them**. Also, many children can easily pass a basic eye chart test and still have undetected near vision problems affecting their school work and some play activities.

Parents and teachers therefore need to be aware of possible vision problems and alert for the symptoms that may indicate them. A checklist of these is shown opposite and a summary of these observations will be helpful to the examining practitioner.

Remember that early diagnosis and treatment can aid in prevention, controlling, correcting or slowing vision problems that can interfere with a child's learning, recreation and self-attitude.



1 in 10 pre-school aged children are affected by a clinically significant visual problem.



SIGNS AND SYMPTOMS OF A POSSIBLE VISION PROBLEM

APPEARANCE:

- Crossed or turned eyes
- Reddened, watering, burning or itching eyes
- Blinks frequently
- Very sensitive to light

BEHAVIOUR:

- Dislike or avoidance of close work
- Short attention span for the child's age
- Turning or tilting head to use one eye only
- Closing or covering one eye
- Placing head close to book when reading or writing
- Frowning while reading, writing or doing blackboard work
- Reading errors of omission, insertion or substitution
- Writing which becomes smaller and crowded
- Irritability, or unusual fatigue after maintaining visual concentration
- Losing place while reading. Using a finger or marker to guide eyes
- Saying words aloud or lip reading
- Difficulty remembering what has just been read
- Repeating and errors when calling words

- Persistent letter or word reversals after Year 2
- Poor eye-hand co-ordination. Difficulty throwing or catching a ball, buttoning clothes, tying shoes etc.
- Eye rubbing or tired eyes after near concentration

COMPLAINTS:

- Headaches, nausea or dizziness
- Complaints of blurring or double vision at any time
- Difficulty adjusting focus to see blackboard or book



**Children seldom complain about their vision.
Parents need to be aware.**



CHILDREN'S VISION PROBLEMS

* Shortsightedness (Myopia)

This is the only refractive vision condition that does increase significantly in incidence throughout the school years. It affects only 3% of 5 to 9 year olds; increases to 8% of those aged 10 to 12 and then more than 17% of teenagers.

Shortsighted children can **see clearly up close but not in the distance**. Prescription lenses can provide good vision but periodic lens changes are often needed because this problem is usually progressive in the childhood years. Myopia will then tend to stabilise at about age 25.

The cause of shortsightedness is not known for certain but the factors involved do include hereditary and visual stress.

To demonstrate **hereditary causes**, one study showed that 85% of all shortsighted children have at least one shortsighted parent. Illustrating **visual stress**, another study of Eskimos found that two-thirds of the children developed myopia after starting school, while their illiterate parents had no shortsightedness. This type of shortsightedness related to environmental stress factors is often controlled with specialty lens types such as bifocals or progressive lenses. Once again, early intervention is critical.

Parents should be alert for early warning signs of shortsightedness. These include squinting when looking at distant objects like road signs and movie screens; less clear vision at night; or constantly sitting close to the TV set.

*** Longsightedness (Hyperopia)**

Most school-age children are in fact a little long-sighted. This means they can **see better at a distance than up close**. Therefore they must exert an extra effort to bring their vision into sharp, clear focus for both far and near seeing.

This is no problem for most of them, but some 6% with **higher degrees of longsightedness will suffer symptoms of strain** which begin to interfere with their schoolwork. These children will often be able to pass an eye chart test with 6/6 (20/20) distance vision but still have very real visual problems at close work.

Symptoms related to the strain of overcoming excessive longsightedness include difficulty in concentrating when reading; fatigue and/or headaches after close work; aching or burning eyes; nausea; poor reading ability; very close reading distance; trouble maintaining a clear focus when doing sustained close work; difficulty adjusting focus and irritability after sustained concentration.

Prescription spectacles or contact lenses to alleviate longsightedness do so by relieving the excessive strain on the child trying to overcome the condition. Often, children wearing them will not report clearer vision but rather a **relief of the strain** after sustained periods of concentrated close work.

*** Astigmatism**

Astigmatism is a **distortion in the shape of the eye**. Instead of being spherical like a marble, the affected eye is somewhat in the shape of a grape. This affects 2% of pre-schoolers and 3% of school-age children to a significant degree.

Small amounts may cause headaches, fatigue and discomfort. Higher degrees of astigmatism result in distorted or blurred vision. Again this condition can show inherited tendencies. Treatment is usually with prescription spectacles, or contact lenses, that correct the distorted astigmatic focus. Apart from clearer vision and less visual stress, correction of astigmatism is sometimes critical in the treatment of amblyopia (“lazy eye”).

*** Muscle Inco-ordinations**

There is a complete muscle system for **co-ordinating the two eyes to work as a team**. When this muscle system is not properly balanced, a number of treatment types may be used to correct or reduce the resulting strain.

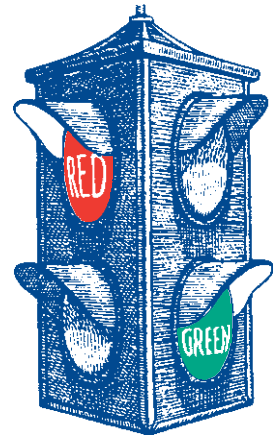
Muscle inco-ordinations frequently occur together with other optical vision problems. Symptoms are more often discomfort rather than a simple blur. If left untreated muscle imbalance can contribute to the “worsening” of eye focusing difficulties. The types of treatment used for muscle imbalance difficulties include exercises, therapeutic spectacles, bifocals, progressive lenses, or prisms for control.

* Colour Vision

About 8% of boys and 0.5% of girls have colour vision deficiencies. These are almost always **inherited** although they may sometimes occur as a result of disease or injury.

Almost all colour deficient children **see most colours but they will have difficulty identifying particular ones**, confusing certain shades of red and green for example.

Few of these children will be aware that they have a colour vision deficiency but the detection of these problems is important, especially when career choices are affected.



CONTACT LENSES

Contact lenses may be indicated for children who have a strong dislike for their spectacles. On the other hand, they are not suitable for all children; especially those who require corrections for near vision only.

There is **no age barrier** for the use of contact lenses. Even infants are sometimes fitted with them as the appropriate form of correction.

If contact lenses are being considered for school children, they should understand that they will need to be responsible enough to handle and care for the lenses themselves. In fact, children are sometimes better than adults in reliably following instructions. If they can be made to understand the importance of proper care, the use of contact lenses can offer vision advantages as well as the freedom from spectacles which might be crucial to some for their self confidence and personality development.



Vision problems can be mistaken for learning difficulties



VISION-RELATED LEARNING DIFFICULTIES

Approximately 15% of 5 to 12 year old children have vision-related learning difficulties. These are the **result of many interrelated and complex processes of growth and development**, of which the ability to use vision properly is only one. However, since vision accounts for as much as 80% of what is learned, it is a very significant factor.

There is a need to identify all ways of improving vision that will help the process of education. For example, if a child's ability to concentrate and persevere with near vision tasks is improved, the results for all future teaching efforts are likely to be enhanced.

* **Visual Perception**

Visual perception is the **ability to analyse and understand what the eyes are seeing**. For each child, normal development of this skill is important before they enter school. Studies have shown that children with vision problems are more likely to have difficulty with their visual perception. However, these difficulties may also occur with otherwise normal vision.

If a perceptual problem does exist, the underlying vision problem is treated first, then a plan or perceptual skills therapy is administered.

It is important that any child experiencing learning problems be given a thorough examination **to exclude or correct a visual cause**. There are many different vision skills which must develop normally after birth. These include the clearness of vision, eye-hand co-ordination, visual form perception, eye movement, eye focussing, eye aiming and eye teaming skills.

Situations which interfere with normal visual development can in turn hamper the child's ability to learn to read and then later to read to learn.



VISION ADVICE FOR CHILDREN

There are many things which parents can do to encourage their children to practice **good vision habits**. With care, visual stress can be controlled.

- ☆ Provide **proper lighting** for reading and study. General overall room lighting is needed, plus desk and bed lighting that does not cast shadows on the reading material and which does not cause glare.
- ☆ Obtain a **desk and chair** suitable to the child's size.
- ☆ Encourage a **near working distance**, from the book to the face, which is not too close. As a guide, it should be equal to the distance between the child's elbow on the page and their closed fist on their cheek.
- ☆ Supervise **regular breaks** during long periods of study or reading. A short game of catching a ball will stimulate blood circulation and relieve ocular stress.
- ☆ Discourage reading while **lying face down**.
- ☆ Place the TV set to **avoid glare and reflections** in a room with soft lighting.
- ☆ As a guideline, **TV viewing** should be from a distance of 5 times the screen width and with screen and eyes at roughly the same level.



PREVENTING EYE INJURIES

It is estimated that every year, 12,500 Australian children aged 5 to 17 suffer eye injuries, mostly during play or sports.

Parents can help prevent accidents for small children by screening all toys. Avoid those with sharp edges or those that come apart into sharp pieces. Also flying toys, or those that fire a projectile, can too easily lead to ocular injury.



PREPARING FOR A CHILD'S FIRST VISION EXAMINATION

Anxieties about first time experiences are common to everyone.

When children are faced with their first vision examination, parents can help **change the apprehensive attitude to an inquisitive one.**

- ☆ For younger children plan the appointment **early in the day**, before the child becomes too tired.
- ☆ **Talk naturally** about the visit, as you would about any other routine experience.
- ☆ Don't suggest fear to the child. Bribes are not necessary as the examination is an **enjoyable experience.**
- ☆ Children can expect the visit to be **a series of games and activities** which are appropriate to their age and mental development.
- ☆ Do not mention the possibility of your child needing glasses or **spectacles** since for the majority of cases they are not prescribed. (In fact some children are then disappointed).
- ☆ Avoid any mention of **blindness.**
- ☆ Be prepared to go into the examination room with your child, but **let your optometrist lead the conversation with your child.**
- ☆ **Allow ample time** for the examination. Your child will also need time to adjust to the new situation and relax.



CONCLUSION

Good times depend on good vision. Just as vision anomalies can have profound effects on school performance, so too can recreational activities be impaired. It's very difficult to hit the ball if you can't see it properly and it is unusual for children to notice or complain about their own vision problems. It therefore becomes the responsibility of caring adults to be aware.

All children should have their vision examined before the age of 3 years and at 3 yearly intervals thereafter. For those with specific problems, your optometrist will advise a schedule which is appropriate for the individual child. Regular eye examinations are important to ensure that problems have not developed at critical stages in a child's growth and education.

