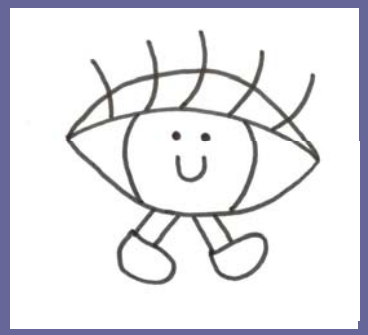
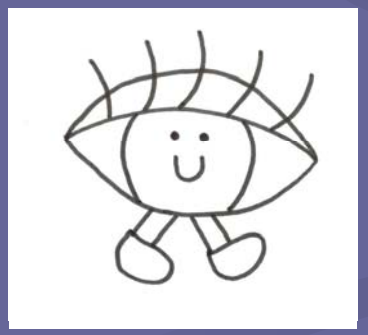
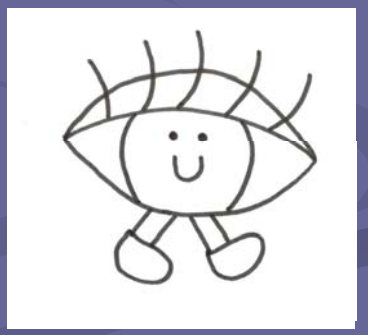
Statewide Eyesight Preschool Screening (StEPS) Program

What is StEPS?

StEPS is a population based vision screening program for 4 year old children, designed to identify vision problems as early as possible so children can receive appropriate intervention and treatment, to achieve good vision for life and learning.

Vision Screening – the Statewide Eyesight Preschool Screening Program (StEPS)

- The StEPS program was an election commitment announced by the Premier in March 2007 and received funding of $14.2M over 4 years.

- The NSW Department of health is working in partnership with several government and non-government agencies to identify and offer all 4 year old children a visual acuity screen prior to school entry

- The StEPS program is a component of the “Blue Book” and will build on regular health surveillance checks for eye health commencing at the birth and newborn health check

StEPS in SESIAHS

- Vision screeners have been employed across the area to perform the StEPS assessment in all preschools and child care centres

- Early childhood nurses have been trained and 4 year old check clinics established in Early Childhood Clinics

Rationale for Vision Screening

- To identify eye and vision problems that may cause permanent vision loss
- To identify eye and vision problems that can affect a child's general eye comfort
- To detect eye and vision problems as early as possible in order to maximise treatment outcomes and optimize the chance of restoring normal vision development.
- Conditions that threaten vision often cannot be detected purely by observation

- Children may not complain of symptoms related to their eyes and may not realise they cannot see well
- Eye disease can indicate the presence of a more serious systemic disease
- Vision screening in the paediatric age group can detect life threatening conditions
- Research demonstrates that people who have amblyopia that has not been treated as a child are 2-3 times more likely to lose vision in their healthy eye, usually to work related trauma. The impact of this is that a person will be vision impaired or blind for the rest of their life

Children's vision continues to develop until approximately eight years of age, however, best treatment results can be gained if childhood vision problems are detected and treated in the preschool years

Normal Visual Development

- Vision develops from birth to 8 years of age
- At birth babies have visual acuity of approximately 6/120
- By 4-6 years of age a child's vision should reach the normal adult level of 6/6
- While young children are all slightly long sighted due to their eyes being small, this does not affect their vision as there lens has enough power to compensate for this.

Interruption to Normal Vision Development

- During the years of visual development, the visual pathway must be stimulated to develop normally.
- For normal vision to occur it is essential that both eyes receive a clear, equally sized image.

- During visual development, when an image received by an eye is blurred, of unequal size or double the brain will block the image.
- This effectively stops vision development in the eye.
- If both eyes receive a blurred or different sized image, the brain will accept the less affected image and block vision in the more affected eye

Amblyopia

Amblyopia is the result of disruption to visual development.

- Amblyopia is reduced or “dim” vision in an eye which appears to be normal.
- If amblyopia is not diagnosed and treated before visual development is complete, the vision loss in the affected eye is permanent.

- The prevalence of amblyopia is between 2 and 6% of the population.
- It is most commonly caused by refractive errors or strabismus/squint
- Up to the age of 45 years amblyopia causes more loss of vision than any other eye disease.
- In people under 20, amblyopia occurs 10 times more frequently than any other eye condition

Refractive Errors

- It is estimated 5% of preschool children have refractive errors.
- One eye may have a refractive error and the other be normal, one eye may be long sighted and the other short sighted or one eye may just be more severely affected than the other
- A difference in the quality of vision between the two eyes may cause the brain to block out the blurrier image thus causing amblyopia

- This means that even if glasses are prescribed for the refractive error, the vision in the amblyopic eye will not be corrected.

- The child may have to wear a patch also to allow the visual pathway to be stimulated in the amblyopic eye.

Strabismus

- Normally, the brain receives an image from each eye which it fuses into one 3D image.
- When an eye is turned the brain is unable to fuse the images and double vision occurs.
- Children do not accept double vision and therefore block the image to the turning eye. While this avoids double vision, it compromises the visual pathway and amblyopia develops

Significance of Amblyopia when Vision Screening

- When vision screening, visual acuity must be measure monocularly / one eye at a time in order to detect amblyopia
- If visual acuity is measure binocularly, the good eye will mask any poor vision in the other eye and amblyopia will not be detected

Healthy Kids Check

Check Eyesight – may include (but not limited to):

- Seeking parental/other concerns about vision (amblyopia, squint, infection, injury)
- Questioning family history of eyesight problems
- Conducting a visual inspection of the eyes
- Using an eye chart if appropriate
- Referring child to an optometrist if appropriate

Parental Concerns

Do you have any concerns about your child's vision?

Common Responses:

- Sits too close to the TV
  - May indicate refractive error
- Blinks or rubs eyes frequently
  - Blinking is usually a psychological tic or a habit
  - Eye rubbing can be a habit but can indicate itchy eyes or sometimes blurred vision
- One eye seems lazy or looks different to the other
  - Can indicate possible strabismus or ptosis
  - Parents use the term "lazy" to refer to the appearance of the eye not the vision

Family History

Has anyone in your family been prescribed patching or glasses as a child?

Are you aware of any childhood eye problems in your family?

- These questions will indicate whether the child is at an increased risk of having a vision problem
- By just asking about childhood problems you are not going to hear about vision problems which will not affect the child eg reading glasses and cataracts

Visual Inspection of the Eyes

- Sclera is white
- Pupils are equal size
- Pupils are regular shape
- Pupils are not cloudy (white)
- Lids are of equal height in each eye
- Lids do not obscure the pupil
- No watering or discharge present
- No lumps or bumps on the eye lids
- Head position is straight
- Eyes appear straight

Corneal Reflection Test

Normal

Abnormal

Testing Visual Acuity

Unless visual acuity is tested then it is a visual surveillance examination not a vision screen.

However the wording of the HKC implies it is at the discretion of the examiner as to whether it is appropriate.

If visual acuity is not measure one eye at a time there will be a high rate of undetected amblyopia.

Vision Screening must avoid over-estimation of vision and non-detection of reduced vision

To do this there needs to be:

- Appropriate testing environment
- Appropriate vision screening test

Vision must be tested monocularly

LEA SYMBOLS

- The Healthy Kids Check has endorsed the use of the LEA Symbols test.
- Unfortunately this test has many faults and is not used in paediatric ophthalmology practices.
- Research has shown that children are able to guess the difference in shapes without actually being able to clearly see them
- The chart does not light up and this contrast effect has a bearing on accurate acuity measurement.

The Sheridan Gardiner Linear Chart

- The StEPS program endorses the use of the Sheridan Gardiner Linear Chart.
- This incorporates eight lines, with seven letters including A, X, O, V, U, T and H.
- The SGLC is widely used in Australian paediatric eye clinics as the “gold standard” vision test for children
- The chart uses a matching board which is easily used by preliterate children

Method For Vision Screening

- It is important that the room is evenly and well lit
- The chart should not be mounted near a window where glare could affect the child seeing the letters
- Test distance must be measured accurately

- It is important to ensure that the testing distance is always accurate.
- Referral rate should be about 1:12
- If the screener detects a high or low referral rate, test distance should be re-measured
- Accurate distance includes not letting the child lean forward while being tested

- It is vitally important when screening that the eye not being tested is covered properly

Always use a pirate patch or stick-on patch

NEVER LET THE CHILD USE THEIR HAND

Children with reduced vision, particularly with poor vision in one eye, will attempt to peek to use the other eye, which can see better.

VISUAL ACUITY TESTING

- Start at the top of the chart and point to letters from below
- It is not necessary to point to every letter on each line, 1-2 letters is usually enough until the 6/9 line is reached
- 6/9 is considered normal vision for a 4 year old so every letter of this line must be tested

  (It is important to point to the letters in a random fashion to ensure the child has not memorised the chart)

If the child cannot read the whole of the 6/9 line, go up to the 6/12 line to ensure they can read this whole line.

Record the vision immediately and then swap the patch to the other eye.

Vision Screeners should be mindful of the following:

- The child should not lean forward to see the chart – this shortens the testing distance
- Ensure the child has not altered the test distance by moving their chair
- The child should be observed at all times for peeking
- Do not isolate letters when pointing to the chart
- Record the result immediately

If a child wears glasses they should be tested with their glasses on

Recording the Result

Vision is recorded as a ratio, as follows:

$$\frac{\text{Distance from the eye chart in metres}}{\text{Number of the line read}}$$

The number of the line relates to the size of the letter. It expresses the distance a normal sighted adult can see that size letter from.

- 6/24 = a normal sighted adult can see that letter from 24m away but this person has to be at 6m
- 6/6 = the size letter which can normally be seen from 6m

What if the Child Cannot Read the Whole Line?

When a letter is missed the vision is recorded according to the line that they read with a plus or minus sign indicating the number of letters.

6/12-2 = 2 letters were incorrect on the 6/12 line

6/12+3 = they could read 6/12 plus 3 letters from the 6/9 line

Referrals

- Pass = 6/9 or better in each eye; vision is within normal limits, no follow-up required
- Borderline pass = 6/9-1 or 6/9-2 in either eye; vision is within normal limits but recheck in one year
- Fail = 6/9-3 or worse in either eye; refer to eye health professional
- High Priority Referral = 6/18 or less in either eye; refer to eye health professional for appointment within one month

Who to refer to?

- Ideally all children should be seen by an ophthalmologist. Children with very reduced vision or strabismus should always be seen by an ophthalmologist.
- Optometrists – be aware that over prescribing does occur eg) children never need reading glasses.
- StEPS Secondary Screening Orthoptic Clinic

The Healthy Kids Check and the StEPS Program

How These Programs Can Work Together

- The StEPS program follows very strict screening criteria and unless this is followed then no data can be contributed to the program, such as any Healthy Kids Check results (particularly as a different test is used)

Other AHS have worked together by:

- StEPS vision screeners attending HKC clinics and providing the visual acuity screen

- There are StEPS staff who would be available in participating in this if needed.
- Provide training for Practice Nurses and GP's
- Department of Health is looking at contributing some equipment to interested GP centres so vision could be tested with the SGLC
- The StEPS service could provide a report to the child's GP indicating the vision result therefore the visual acuity would not need to be re-tested

The Sheridan Gardiner chart used for StEPS is supplied by Designs for Vision.

These charts would be a fantastic investment for any practice considering performing the HKC as it gives a more accurate acuity.

The charts are not just for children and the 3m chart is particularly handy for use in nursing homes and on less mobile patients

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