Children's Eye Assessment

Dr Antony Bedggood, Children’s Specialist Centre

Paediatric Ophthalmologist, Cataract & Strabismus Surgeon
Why kids need early referral

- Children’s eye problems are often subtle:
  - Young children: usually have no symptoms
  - Strabismus is a key presenting sign
  - Red eye or pain can be a sign of severe problems – aim to detect them before this
- Amblyopia: difficult to treat when detected at age 5 during vision hearing checks
Eye problems <8: common

- GPs have excellent opportunities to screen for key problems:
  - Strabismus
  - Marked focus difference between eyes
  - Cataract, retinoblastoma

- Where do you start?
  - Corneal reflex: Is there strabismus?
  - Binocular red reflex: symmetry
  - Test vision: age 2+
The 10second test:
Combined Corneal light reflex & Red reflex (Bruckner)

- Compares symmetry of light from the cornea & retina of each eye reflected back to you
  - Altered by strabismus, retinal problems, media opacity, and by the focal length of the eye's optics
Dim the lights....

- Look through the Ophthalmoscope
- Largest white light
- Arm’s length, so a red reflex from both eyes is seen
  - Note: colour, intensity, symmetry
Look for:

- Poor red reflex or
- Different in each eye (shows that one eye is more out of focus).

Different focus each eye

Fig 1

Fig 2
Abnormally coloured reflex

- Focus, alignment & retinal pigmentation determine colour
- You must always assume a different colour from each eye, a white pupil, or an absent reflex are always bad

Astigmatism & left eye misaligned
Longsighted & Esotropia

- Top (moderate hyperopia): bright, lighter red crescents at top of the pupil.

- Bottom: both eyes extremely hyperopic (Dark on right), left reflex is bright because the eye is crossed -- a test result that indicates strabismus.
Media opacity

- Cataract (dark/absent reflex)
- Corneal scar or abrasion/ulcer also appear as dark areas
Retinal abnormality

- Retinoblastoma
- Optic nerve developmentally abnormal
Corneal light reflex

- Ophthalmoscope light illuminates whole face

- Get attention, is dot of light centred in each pupil?

  - A: no strabismus
  - B: reflex lateral, eye turning in
  - C: reflex medial, eye turned out
  - D: vertical displacement
Technology: double check

- Free community based service
  - Christchurch
  - Invercargil & Dunedin have similar capability within the eye department

- Plusoptix binocular autorefractor
  - Fast, objective, accurate
  - Quantifies focus error
  - Alignment
  - + abnormal red reflex, poor vision, Horner’s
What should you simply refer for prompt specialist review?

- Obvious new onset strabismus
- White pupil, or absent red reflex
- Nystagmus
- Photophobia (ie child demonstrates aversion)
- Patch or haze visible in the cornea
- Proptosis, lid swollen shut

All need **urgent or immediate** review (to department)
Other prompts for review or screening test

- Even when you can’t see an obvious abnormality
  - Parent certain they have seen an eye/s turn inwards or outwards
  - Family history of early patching, surgery or glasses
    - High risk of similar problems
  - Child difficult to examine adequately
Common Eye scenarios
Concern or no concern?

- **Discharge**
  - Copious, chronic/unremitting in baby: refer now
  - Milder chronic or simple epiphora: wait until 12 months old
  - *Intermittent (ie with URTI): Don’t refer*

- **Itch, irritation, increased blink**
  - Normal vision, watery, summer: treat with Patanol
  - Blur, mucous, Photophobia, any season: refer (vernal)
Common Eye scenarios
Concern or no concern?

- Lid lump or granuloma:
  - Progressive enlargement after 2 weeks: refer
  - Small to med chalasia, stable: wait for at least 2 months unless marked skin involvement

- Red eye:
  - Unilateral, >1 week, or any with Photophobia: refer
  - Vehicles around lids or recent VZV: refer
  - Visible conjunctival lumpiness lower fornix, otherwise normal, or
  - Bilateral conjunctivitis, otherwise normal: do not refer
Common Eye scenarios
Concern or no concern?

- Baby’s vision in question:
  - Can’t elicit red reflex (ie small pupils): refer
  - Nystagmus or other health problems: refer
  - Visual interest, fixing & follow: not reliably present until 3/12

- Unusual pupil
  - Abnormal patch of iris/colour: seldom significant
  - Parent or photo sees white reflex: urgent
Parents questions

- Mild eyelid asymmetry in a baby – one lid narrowed
  - If well above pupil and lid moves normally: wait, review

- Pupils different size
  - Present since 2 or 3 months old: may not need review
  - 1mm difference, light = the dark: no review
  - Acquired, ie new change, & greatest difference when dark
    - Urgent review

- School problems & poor ‘tracking’
  - Educational, not eye, issue - visual acuity test useful screen
  - Fancy glasses, or ‘therapy’ of no use: expensive placebo
Children’s vision: Matching tests

- Quick screening **Method**:
  - Snellen has limited use before age 6
    - Parr 4m letter matching ($25 from otago.ac.nz) age 4
    - From 18 months: isighttest.com
  - **Check child can identify symbols at near:** both eyes
  - **Patch one eye (explain)**
  - Stand at test distance, point towards picture, ask to match or tell you what it is
  - Skip to next smallest line if correct: 1 letter or shape at each size to hold attention
  - When they miss or falter- test all symbols in the line: VA
Summary: be proactive

- Practice & be familiar with normal binocular red reflex
  - Only takes you 10 seconds
- Low threshold to refer if question of strabismus, unusual pupil colour or asymmetric red reflex
- Screening for every child with strong family history of strabismus, amblyopia or glasses before 5
  - Ideally at age 18 to 24 months
Early referral is key

We should be a conduit to an eye assessment, not a gate
  ✓ Ophthalmology depts need to ensure open and prompt access via GPs

Better to refer not to defer

Never observe if a child has strabismus

Eyelid problems and red eyes often don’t need referral
  ✓ Photophobia or distress on exam suspicious
  ✓ Defect in red reflex or corneal opacity urgent
Thank-you

www.iScreen.co.nz for assessment of focus, strabismus and amblyopia: free service

Our focus is solely on making sure barriers to early diagnosis and treatment of serious eye problems in children are minimised or removed. This a community service.