THE COLLEGE OF OPTOMETRISTS

Stage Two

Overarching case scenario 2

AGE AND GENDER Male Aged 5 years

ETHNIC BACKGROUND : Asian

OCCUPATION AND HOBBIES: Reception class at school

PRESENTING SYMPTOMS AND HISTORY Mother has noticed a "turn" in his right eye towards end of day and whilst child is "glueing and sticking" Family history: maternal grandfather "poor vision in one eye all his life"

GENERAL HEALTH AND MEDICATION no medication birth full-term, forceps delivery

PRESENT Rx, CENTRATION AND ACUITIES none

PD/NCD 52

VISION RE: 6/60 LE: 6/9 does not like having LE covered

PINHOLE VISION not done

REFRACTION RE: +8.00/+1.50 x 90 cycloplegic retinoscopy 1% cyclopentalate

LE: +5.00 DS

VA Distance RE: 6/18 LE: 6/6 Snellen chart

Near not done

ACCOMMODATION not done

BINOCULAR STATUS unaided before cycloplegia cover test

Dist 20 prism R esotropia

Near 30 prism R esotropia

With correction post-cycloplegic cover test

Dist ortho phoria

Near esophoria

MOTILITY full

CONVERGENCE not done

PUPIL REACTIONS pre-cycloplegia, pupils react to light and accommodation

FUNDUS EXAMINATION see attached

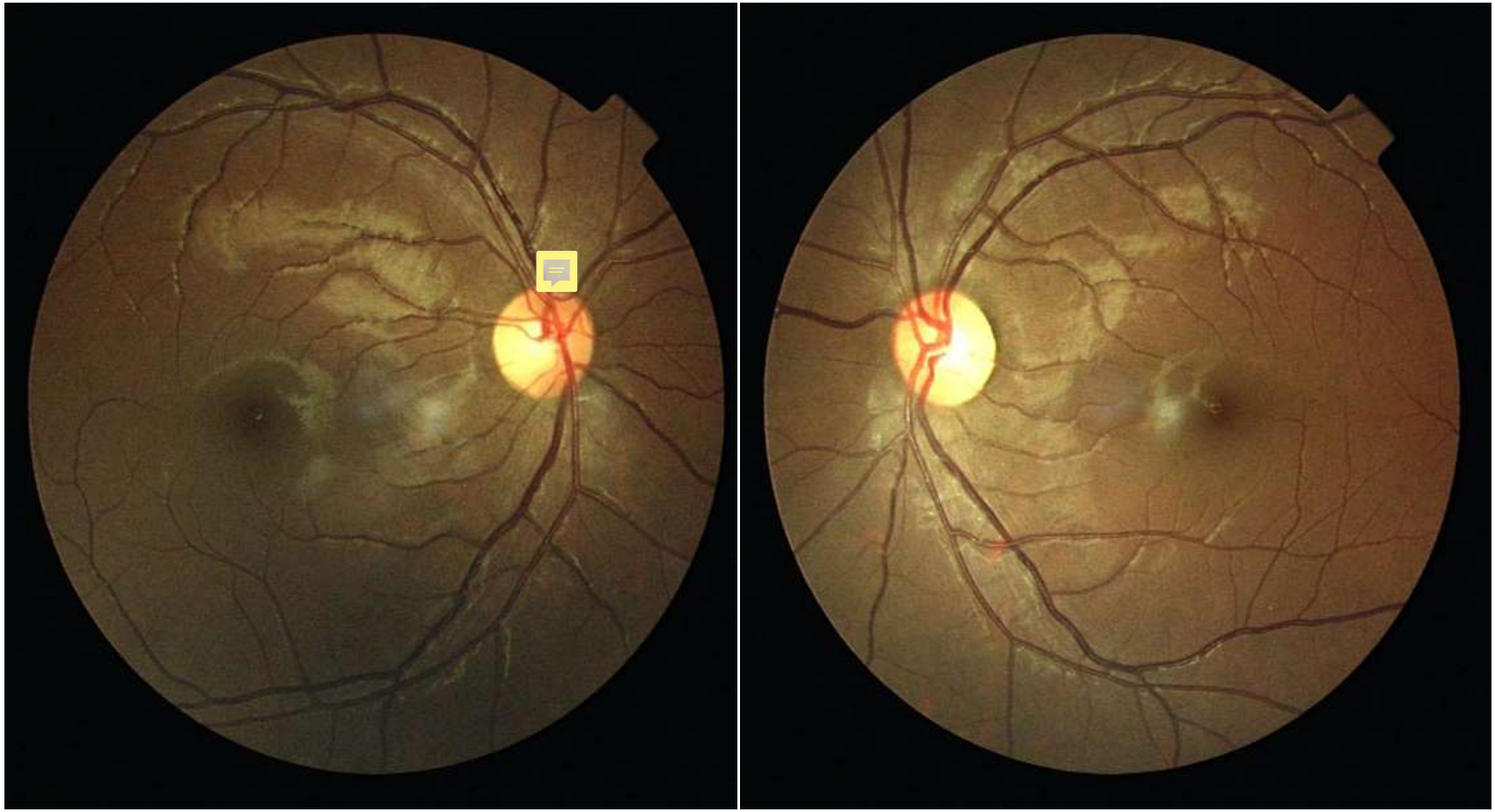
FIELDS not possible

IOP not possible

EXTERNAL EYE EXAMINATION see attached

COLOUR VISION see attached

Fundus Image



External Eyes

Colour Vision (Binocular)

City University Colour Vision Test (3rd Edition 1998)

Subject: Address:

Male/Female: Examiner: Date:

Spectacles worn?: Eye(s) tested (delete as needed): both RE LE

Viewing at 40cm approx. Illumination ('Daylight' type) level: Lux:

Part One, *screening / selection: PD or Tritan*

FORMULA: Here are some rows of 3 coloured spots, each page has four rows.
Please do not touch the pages.

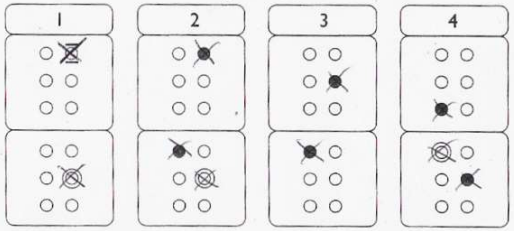
Starting with the left row at the top of the page, tell me if the colour of one of the 3 spots is different from the colour of the other two spots in the same row.

The three colours *may* be the same.

In the top right hand row at the top of the page, is there a different colour?

And the other rows, is there a different colour in one or both rows?

Page number

Symbols	1	2	3	4
○ Should be seen by all subjects ● R/G defect may miss ◎ Tritan defect may miss				
No. seen on each page:	2	3	2	3

TOTAL correctly se[illegible] 10 9 8 7 6 5 4 3 2 1 0

RECORD: Complete Part One of the person's record sheet with a cross **'X'** over each spot chosen as **different in colour** from the other two spots in the **same** row of three spots. (see example)

INTERPRETATION: 10 or **9** spots correctly seen suggests normal colour vision, at least 'adequate' for most every-day purposes. If less than **8** - refer to instructions.

City University Colour Vision Test (3rd Edition 1998)

Part Two, *detection / selection: Protan, Deutan or Tritan*

FORMULA: Here are 4 coloured spots **around** the one in the centre.
Please do not touch the pages.

Tell me which spot looks most like the **colour** of the one in the centre.

Use the words 'TOP','BOTTOM','RIGHT' or 'LEFT'.

(Note: Indicate any variation from part ONE as to eye(s) tested, etc.)

		INTERPRETATION			
Page (**D** is for demonstration)	Subject's choice of match and eye(s): R, L, Both	Normal	Protan	Deutan	Tritan
5		R	B	L	T
6		L	R	T	B
7		R	L	B	T
8		L	T	R	B
9		R	L	B	T
10		R	L	B	T
SCORE:		/6	/6	/6	/6

RECORD: Complete Part Two of the person's record sheet with name, date, etc., R, L, Both eyes, as appropriate.
Mark correct spaces with person's response (B, R, L, T) clearly.
A 'score' out of 6 may be indicated if required. (**see example given**)

INTERPRETATION: A 'normal response' score of 6 suggests that colour vision is at least 'adequate' for most every-day purposes.
If **more** than ONE entry 'Protan','Deutan', or 'Tritan', refer to appendix 3.

PROFESSIONAL OPINION, as appropriate =

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To re-order record charts quote Keeler number 2206-L-7125

Keeler CE

Case scenario 2

First, pick out the key symptoms:

- 5-year-old
- Mother noticed an intermittent squint towards the end of the day, at near
- Possibly a family history of amblyopia
- Forceps delivery

The unaided vision suggested that there is a large anisometropia, confirmed with cycloplegic refraction.

Cyclo should be done when:

- Report of squints/drifts in either eye
- Suspect tropia or large phoria with poor recovery
- Family history of eye problem
- Unequal vision between both eyes
- Vision and symptoms do not correlate
- Fluctuating ret results

Remember to record the type of test chart used – during follow up apt, keep this consistent or 'upgrade' it to a better test once a child is older!

Choose a crowded chart instead of the single optotype as the latter can overestimate the visual acuity due to the avoidance of the crowding phenomenon.

The full cycloplegic refraction is as follows:

R +8.00/+1.50x90 (6/18)
L +5.00DS (6/6)

Consider the following:

- **What is your management, including prescription, full or part time wear, dispensing considerations**
- **Follow-up interval, referral to Orthoptics for management and timeframe**
- **Role-play to explain the findings and management to the parent (communication, empathy)**

Management

Would you prescribe the full cyclo results? It depends. Opinions vary between different optometrists based on their own judgement and experience.

In this case, our patient has a fully accommodative esotropia. We know this because the esotropia becomes an esophoria at near with refractive correction.

For a convergent deviation, a full cyclo results should be prescribed full-time wear to relax the accommodation and straighten the eye out.

However, some children may find this difficult to adapt and be put off wearing glasses. I personally prefer reducing the rx (by 0.50 to 1.00) binocularly to help adaptation and reduce distance blur but ensure that the correction of the difference between the anisometropia is maintained.

Due to the large anisometropia here, I would check the VA again with the prescribed results once the cyclo drops have worn off with the following rx:

R +7.25/+1.25x90

L +4.25DS

Repeat cover test with the glasses on and note the speed and recovery of the deviation. Stereopsis is also a good test to assess any improvement in binocular vision development.

Review in 6-8 weeks, advised full-time wear of glasses and explain to the parents why this is important.

Since this child is within the critical period of vision development, and the aim is to improve the RE as much as possible during this time.

My local guidelines have recommended that community optometrists follow up on a child between 6-8 weeks to see how the vision improves with glasses before referring to the hospital eye service (HES). This can largely vary in YOUR area, so please check with your supervisor.

Some practitioners may refer the child immediately after cycloplegic refraction and prescribing glasses to consider occlusion therapy for amblyopia.

Dispensing considerations

Take monocular PDs for children and especially for those with a tropia, as inaccurate PD can induce prismatic effects.

For a high prescription, measure heights as this may need to be lowered by 1mm for every 2° pantoscopic tilt of the frame (though should be ideally zero)

Measure the BVD for those above ±5.00

Choose a light sturdy frame that fits well on the child's nose to avoid slipping down and peering through the top of the glasses. Ideally a round frame will give a better thickness than a boxy squarish frame with a high prescription.

Sometimes, frames with nose-pads can be a problem for those who declined thinned lenses. The thickness of the lens impedes proper adjustment of the nose-pads, and this causes an ill-fitting frame. If the parents declined thinning, consider other frame options to avoid this problem.

Aspheric lens produces thinner and flatter lens and should be recommended for moderate to high prescription. Choose the most appropriate lens material for each child.

Lens for children offers UV protection, scratch resistant should be discussed. AR coating automatically comes with index of 1.60 above and good for those who uses screens.

Smaller blank sizes can be ordered to avoid heavy thick lens, though most opticians do not usually do this unless there is a very qualified D.O.

A good and comfortable fitting frame is the first step to getting children to be compliant with wearing their glasses!

Role-play: Explaining your management to the parents

Empathy

Educate them

Be clear on the management plan

Time for questions

Some parents may feel apprehensive about their children wearing glasses at such a young child. There can be misconceptions about how the child will get reliant on glasses or how it will make their vision worse. We know this is not true, but they don't.

Help the parents understand why this is important and they are more likely to comply and cooperate with you.

I like to start off with the good news and highlight the positive outcomes of the eye exam. For example,

'Tommy's eyes are very healthy, and he has normal colour vision. As you mentioned, his right eye drifts in slightly at times and I do notice that. This is because he is long-sighted in both eyes, but more in the right eye. He sees fine further away but struggles with near vision. That's why when he gets tired or when he is doing something up close, his right eye turns inwards.

The good thing is that you brought him in today. We know that glasses will help to relax his accommodation, which is the focusing power of the eyes, and straighten itself out.

All this while, his left eye has been doing most of the work. We want to give the right eye a chance to develop its vision. Therefore, I would like Tommy to wear his glasses all the time.

This is very important because up until the age of 8, this is the critical period where the brain and the eyes are the most adaptable (neural plasticity). Good vision is obtained when each eye sees a clear image. When the vision is blurry in Tommy's right eye, the vision does not develop and that's what we call a lazy eye.

By wearing glasses all the time, we are sending a clear stimulation to the brain so that the vision in the right eye improves. We will see you in 6 weeks to see how he is getting along with his glasses, but I would really appreciate it if you could encourage him to wear his glasses all the time.

Going forward, if his vision has improved to an acceptable level, that's great.

Otherwise, we will refer him to the orthoptic eye clinic, people who specialize in children and vision to explore other options such as patching the left eye, to further stimulate the vision in his right eye. Do you have any questions?'

Possible questions from parents:

Does this mean my child needs to wear glasses all his life?

Will it make his prescription improve to the point that he does not need glasses?

When we say improve vision – we mean they could see down the chart, or smaller letters than they did before. Some parents may misunderstand this as a reduction in prescription.