The Eye Institute is very proud to present this collection of diagnostic approaches to ophthalmic problems commonly encountered by general practitioners and non-ophthalmic physicians.

Exhaustive descriptions of clinical features and treatment regimens have been deliberately left out in favour of photographic cues and one-look management flowcharts.

We are confident that this handy flipchart will be a vital addition to your clinic library, and perhaps even earn a coveted spot on your desks in time to come.

*Dr Victor Yong, Director, TEI*
1 cardinal symptoms
   acute loss of vision 1.1
   chronic loss of vision 1.4
   intermittent blurring of vision 1.7
   acute red eye 1.10
   painful white eye 1.16

2 common symptoms
   double vision 2.1
   dots in vision (floaters) 2.3
   distorted vision (metamorphopsia) 2.6
   tired eyes 2.9
   teary eyes 2.11

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1 cardinal symptoms

acute loss of vision
chronic loss of vision
intermittent blurring of vision
acute red eye
painful white eye
acute loss of vision
Most cases require an urgent referral

Retinal Detachment
Optic Neuritis

vascular

Retinal Artery Occlusion (CRAO / BRAO*)
Retinal Vein Occlusion (CRVO / BRVO*)
Acute Ischemic Optic Neuropathy
Vitreous Hemorrhage

* Central Retinal Artery Occlusion, Branch Retinal Artery Occlusion, Central Retinal Vein Occlusion, Branch Retinal Vein Occlusion

causes
acute loss of vision
1. Pain?

2. Pupil reaction

3. Red reflex

- Brisk
  - Normal
    - CRVO (non-ischemic)
    - Submacular Hemorrhage
    - CRAO
    - CRVO (ischemic)
    - Optic Neuritis

- Sluggish / RAPD
  - Impaired
    - VH
    - RD

- Yes
  - See “Acute Red Eye”

- No
  - Normal

approach

acute loss of vision
chronic loss of vision

The causes are usually painless.
causes

chronic loss of vision

macular disorders
- Refractive Error
- Age Related Macular Degeneration
- Diabetic Maculopathy

optic nerve disorders
- Cataract
- Advanced Glaucoma
- Optic Atrophy

1.5
1. Pinhole acuity

- Minimal improvement
- Significant improvement (usually up to 6/12 or better)

2. Pupil reaction

- Brisk
- Sluggish / RAPD

3. Red reflex

- Impaired Cataract
- Normal Macular Pathology
- Impaired Optic Atrophy
- Impaired Chronic RD
intermittent blurring of vision
Intermittent Angle Closure Glaucoma
- Haloes

Amaurosis Fugax
- Dark curtain

Migraine
- Shimmering lights

Dry Eyes
- Misty and gritty

Raised ICP
- Transient darkness

causes
intermittent blurring of vision
<table>
<thead>
<tr>
<th>Duration</th>
<th>Quality</th>
<th>Cause</th>
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<tr>
<td>Seconds</td>
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<td>Minutes</td>
<td>Dark curtain</td>
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<td>Shimmering / vibrating</td>
<td>Migraine *</td>
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<td>Hours</td>
<td>Halo</td>
<td>Intermittent Angle Closure Glaucoma *</td>
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<tr>
<td>Variable</td>
<td>Misty, clears with blinking</td>
<td>Dry Eyes</td>
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* Commonly associated with headache.
Most acute red eyes are painful. Eye pain without redness will be discussed in the next section.
Common, usually self-limiting and painless

Conjunctivitis
Sub-conjunctival Hemorrhage

Less common, more serious and painful “AEIOU”

Acute Angle Closure Glaucoma
Episcleritis / scleritis
Iritis / Endophthalmitis
Orbital Cellulitis
Corneal Ulcer

causes
When is it not “straight-forward” conjunctivitis?

When there is:-

• significant blurring of vision

• significant pain

• any corneal abnormality (loss of clarity, discrete lesion)

• only unilateral involvement even after 5 days

• no improvement at all after 1 week of treatment

• significant lid / peri-orbital swelling
History

History of contact lens

History of trauma

History of recent eye surgery

Unilateral for > 4 days

Bilateral for > 1 week

1 If any of the above history is present, please consider urgent referral.

2 Conjunctivitis usually crosses to the other eye on day 3-4. Unilateral conjunctivitis is uncommon beyond day 5.

3 Conjunctivitis often resolves by 1 week.
Physical examination

Poor vision¹

Pupil abnormalities¹

Cornea hazy / corneal ulcer¹

Discharge, mucous strands²

Preauricular lymph nodes²

1 If any of these are present, it may be Acute Glaucoma, Keratitis or Iritis, please refer urgently.
2 If these are present, it is likely to be conjunctivitis.

Important Conjunctivitis can usually be managed conservatively, except when there is copious discharge associated with genital discharge. Gonococcal conjunctivitis should then be excluded.
A subset of patients presenting with painful red eyes may also have associated foreign body sensation.

The causes are as follows:

- Conjunctival or corneal foreign body
- Corneal pathology
  - Corneal abrasion, Infective keratitis
  - Stains positive with fluorescein
- Conjunctivitis
- Dry Eyes
  - Usually more irritation than pain
painful
white eye
causes painful white eye

1. dry eyes

2. g.h.o.s.t.

3. headache

1 See section on “Dry Eyes”
2 Glaucoma, early herpes zoster, optic neuritis, sinusitis, temporal arteritis
3 Raised intraocular pressure, migraine, tension headache, cluster headache, trigeminal neuralgia
common symptoms

double vision
dots in vision (floaters)
distorted vision (metamorphopsia)
tired eyes
teary eyes
double vision
2.2

Blurred? Double?

Double

Uniocular? Binocular?

Uniocular

Binocular

Vertical? Horizontal?

Blurred

Approach as for Blurred Vision

Astigmatism, Dislocated Lens, Cataract

Graves Raised ICP III, IV, VI Palsy Myasthenia

Refer

Approach

Double vision
dots in vision

floaters
➤ Acute Posterior Vitreous Detachment (PVD) / Vitreous Degeneration

➤ Retinal Tear

➤ Retinal Detachment (RD)

➤ Vitreous Hemorrhage

➤ Vitritis / Posterior Uveitis
Refer if:
- onset is acute (within one month)
- associated with flashes of light, visual field defect or visual loss
- there is a history of diabetes, high myopia, trauma
- there is a family history of retinal breaks or retinal detachment

Observe if:
- floaters are fewer than 10 and are chronic (>6 months)
- there are none of the above symptoms
distorted vision

metamorphopsia
Any lesion involving the macular, in particular:

Age-related Macular Degeneration (AMD) ➤ dry or wet

Epi-Retinal Membrane (ERM)

Central Serous Retinopathy (CSR)

Retinal Detachment (RD) involving the macula

Choroidal Neovascularisation (CNV) ➤ from causes other than AMD
Acute onset, associated with visual field defect, flashes and floaters?

- Yes: RD involving macula - Urgent referral

- No:
  
  Recent onset?
  
  - Yes: AMD / CNV - Early referral
  
  - No:
    
    Longstanding, stable or slowly progressing?
    
    - Yes: ERM, CSR - Non-urgent referral
tired eyes
causes

- Dry Eyes
- Exophoria
- Presbyopia / Outdated Spectacles / Prescription
- Myasthenia Gravis
teary eyes
Severity of tearing?

- Mild ("watery eyes")
  - Usually due to reflex tearing from
    - Dry Eyes

- Severe Epiphoria (tears overflow onto cheek)
  - Is there ocular irritation?
    - No → Naso-lacrimal duct obstruction
      - May be associated with discharge
      - Refer to ophthalmologist
    - Yes → Look for a
      - Local cause
        - lid problems (entropion, ectropion)
        - lash problems (inturning)

If not better
four common benign conditions

dry eyes
pinguecula and pterygium
allergic conjunctivitis
subconjunctival hemorrhage
four common benign conditions

- Dry Eyes*
- Allergic Conjunctivitis*
- Pinguecula and Pterygium*
- Subconjunctival Hemorrhage

* These conditions can usually be safely managed by the family physician. However, if severe / recalcitrant, they can cause visual loss. The patient should be referred.
dry eyes

A very common condition which deserves special mention.

**Simple dry eyes ➤ most common, often by exclusion**

- Elderly, lack of sleep, usage of contact lens
- Environmental: air-conditioning, fan / vent directing into the eyes

**Lid conditions ➤ common**

- Blepharitis, meibomitis, lagophthalmos, chronic allergy

**Drug induced ➤ uncommon**

- Anti-cholinergic such as anti-diarrhoea agent

**Auto-immune conditions ➤ important**

- History of rashes, joint pain especially in small joints of the extremities
The patient complains of INTERMITTENT:

**Discomfort**
ocular irritation, foreign body sensation, even stabbing pain

**Blurred Vision**
misty, improves with blinking, no darkening of vision*

**Tearing**
paradoxical tearing sensation, does not usually overflow

**Pink Eye**
often mild, bilateral, usually towards end of the day

Examination shows normal visual acuity and no obvious abnormality except possibly blepharitis. Therapeutic trial of tear supplements at 3 hourly intervals for 1 week usually offers significant relief. If not, please refer to rule out more sinister conditions.

* Intermittent darkening of vision is more likely amaurosis fugax, which should be referred urgently.
Refer when the pterygium head has crossed the midline between the pupil margin and the limbus, if patient is unhappy with its appearance cosmetically, or if there is significant discomfort.
allergic conjunctivitis

- Acute onset of chemosis (conjunctival swelling) in a relatively non-injected eye*
- Itch and irritation are prominent symptoms
- Commonly associated with exposure to dust – old books / dusty toys / carpets
- Resolves in 24 – 72 hrs
- Treat with anti-histamine eye drops

* If chemosis is not itchy, but associated with severe conjunctival injection, ophthalmoplegia, ptosis and headache, the patient should be referred to the A&E to exclude cavernous sinus lesions.
vernal conjunctivitis
A variant of allergic eye disease

Acute on chronic itchy red eyes, associated with mucous production, lid swelling, ptosis and blurred vision

History of systemic atopy: eczema, asthma and allergic rhinitis

Eversion of upper lid reveals papillae and follicles (see photo)

Most common allergens (locally): house dust mite antigen, cockroach antigen and pollen

➤ Manage with eosinophil / mast cell stabilisers:
  eg. Gutte Sodium Cromoglycate and mite control measures

➤ Environment control / modification

➤ Refer severe / recalcitrant cases / when cornea is involved
  – may affect vision
subconjunctival hemorrhage

Brillant red patch, no injection of blood vessels, fairly distinct border

No other associated ocular symptoms: no pain, photophobia, decreased vision

Resolves spontaneously over 2-3 weeks

Management ➤ observation*, reassurance

* Unless it arose as a result of significant ocular trauma
4
ocular trauma

ocular foreign body
chemical eye injury
ocular trauma

➤ Foreign body
➤ Chemical eye injury
➤ Sharp injury
➤ Blunt injury
➤ Others

* This section on ocular trauma is kept intentionally brief. Most cases should be referred, especially sharp or blunt eye injury with significant force.
### ocul ar trauma

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<th>Reassuring Signs (All of the following should be present)</th>
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<td>Good VA</td>
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<tr>
<td>RAPD</td>
<td>No RAPD</td>
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<tr>
<td>Poor view of iris and pupil</td>
<td>Good view of iris and pupil</td>
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<td>Distorted pupil shape</td>
<td>Round pupil</td>
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<tr>
<td>Loss of red reflex</td>
<td>Good red reflex</td>
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ocular foreign body

How did it get there?
History of high velocity FB especially hammering. Refer urgently to exclude intraocular foreign body even if the eye looks normal!

Where exactly is it?
• Check for corneal foreign body and signs of corneal perforation - refer
• Check for conjunctival foreign body
  – removal with cotton bud
• Evert the lids to check for foreign body
  – removal with cotton bud

What has it done to the eye?
Stain with fluorescein, check for corneal ulcer, corneal abrasion, linear abrasion - refer
chemical eye injury

Test with Litmus paper* (Alkaline injury is more severe)
Immediate prolonged irrigation (15 mins, 1L of Normal Saline)
Obtain name of chemical
Refer to A&E

**Technique of ocular irrigation**
- Use normal saline through a drip set
- Look in 4 directions to expose all areas of conjunctiva while irrigating
- Pull lower lid down when looking up
- Evert upper lid when looking down

* Test only if litmus paper is readily available – DO NOT delay ocular irrigation to look for litmus paper
directory

executive committee
TEI @ Alexandra Hospital
TEI @ National University Hospital
TEI @ Tan Tock Seng Hospital
opening hours + appointment numbers
NHG Diabetic Retinal Photography services

All directory information correct as of 1st May 2004
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| A/Prof Paul Chew            | MBBS MMed(Ophth) FRCSEd FRCOphth | Glaucoma             | Deputy Director, TEI  
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Chief, Department of Ophthalmology, NUH  
Senior Consultant, NUH  
Visiting Consultant, TTSH | |
| A/Prof Au Eong Kah Guan     | MBBS MMed(Ophth) FRCSEd FRCS(Glasg) DRCOphth(Lond) FAMS(Ophth) | Vitreo-Retina         | Head, Research, TEI  
Head, Ophthalmology & Visual Sciences, AH  
Consultant, AH  
Visiting Consultant, TTSH | |
| Dr Lim Tock Han             | MBBS FRCSEd MMed(Ophth) | Vitreo-Retina         | Head, Integrated Projects, TEI  
Head, Department of Ophthalmology, TTSH  
Consultant, TTSH | |
| Dr Heng Wee Jin             | MBBS MMed(Ophth) FRCSEd FAMS | Cornea Refractive Surgery | Head, Training & Education, TEI  
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## Visiting Consultants

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<td>A/Prof Paul Chew</td>
<td>Glaucoma</td>
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<td>Dr Goh Kong Yong</td>
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<td>Dr Khoo Boo Kian</td>
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<td>Dr Daniel Sim</td>
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<td>Dr Billy Tan Ban Hock</td>
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<td>Dr Lennard Thean</td>
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<td>Dr Yap Eng Yiat</td>
<td>Vitreo-Retina</td>
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</table>
Alexandra Hospital
378 Alexandra Road Singapore 159964

general enquiry tel (65) 6472 2000 (24 hours)
appointments (65) 6476 8828
fax (65) 6379 3912

Ophthalmology & Visual Sciences Clinic (Clinic C)
opening hours mon – fri 8.30am – 5.30pm
tue 5.30pm – 9.00pm
night clinic closed on sat, sun & public holidays
tel (65) 6379 3500
fax (65) 6379 3618

National University Hospital
5 Lower Kent Ridge Road Singapore 119074

Eye Clinic
opening hours Level 3, Kent Ridge Wing (Podium Block)
mon – fri 8.30am – 5.30pm
sat 8.30am – 12.30pm
closed on sun & public holidays
tel (65) 6772 5408
appointments (65) 6772 5504
fax (65) 6772 5508

Vision Correction Centre
Level 3, Kent Ridge Wing (next to Auditorium)
opening hours mon – fri 8.30am – 5.30pm
sat 8.30am – 12.30pm
closed on sun & public holidays
tel (65) 6772 2020
appointments (65) 6772 2030
fax (65) 6779 7533

Tan Tock Seng Hospital
Level 1, TTSH Medical Centre
11 Jalan Tan Tock Seng Singapore 308433

tel (65) 6357 8675

TTSH Eye Centre (Atrium)
opening hours mon – fri 8.00am – 5.30pm
sat 8.00am – 12.30pm
evening eye clinic tue, thu, fri 6.00pm – 9.00pm
closed on sun & public holidays
tel / GP hotline (65) 6357 8383
eye screening (65) 6357 2232
subsidised appointments (65) 6357 7000
private appointments (65) 6357 8000

TTSH Lasik Centre
opening hours mon – fri 8.00am – 5.30pm
sat 8.00am – 12.30pm
closed on sun & public holidays
LASIK hotline (65) 6357 8383
appointments (65) 6357 8000

Urgent Appointments (GP direct access 24-hour hotlines)
Alexandra Hospital tel (65) 9369 6292
fax (65) 6369 5348

National University Hospital tel (65) 6772 2000
fax (65) 6775 4421

Tan Tock Seng Hospital tel (65) 9666 6698
fax (65) 6357 7011
Mobile DRP

**Booking**
tel  (65) 6357 7648 / 6471 8999  
fax  (65) 6357 7718 / 6471 3138

**General Enquiries**
tel  (65) 6357 8383 / 6357 8006  
fax  (65) 6357 8675

**Availability**
mon – fri  1.00pm – 4.00pm  
6.00pm – 9.00pm

Minimum booking of 1 hour is required.  
Up to 10 patients may be allotted per hour.  
Booking of the DRP service requires 2 weeks’ advance notice.  
Bookings of multiple screening dates are welcome.

Hospital-based DRP

**Alexandra Hospital**
opening hours  mon – fri  8.00am – 4.00pm
appointments  (65) 6476 8828

**National University Hospital**
opening hours  mon – fri  1.00pm – 2.00pm
appointments  (65) 6772 5504

**Tan Tock Seng Hospital**
opening hours  tue, wed, fri  8.00am – 12.00pm
appointments  (65) 6357 2232 / 6357 8383

Community-based DRP

**Yew Tee Specialists Clinic**  Blk 61 Choa Chu Kang Drive  
#01-05 Singapore 688845  
(Yew Tee MRT Station)
consultation hours  
(tue)  8.00am – 12.00pm  
(fri)  1.00pm – 4.00pm

eye screening hours  
(mon – fri)  8.00am – 12.00pm  
(sat)  1.00pm – 4.00pm  
(sat)  8.00am – 12.00pm

appointments  (65) 6877 2728 / 6877 2250

**Diabetic Society of Singapore**  tel (65) 6450 6132 / 6450 6142
NHG Diabetic Retinal Photography services

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<tr>
<th>Polyclinic-based DRP</th>
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