When to Care – When to Refer

Acute Eye Problems in the Community

Frank Munro
Today’s Talk

- Acute Eye Problems
- Burden of Disease – Making a Difference
- Shifting the Balance of Care?
- What do I do now – Could I do more?
- Clinical Decisions Making
  - When to Care – When to Refer
Clinical decision Making

- Diagnosis
- Management
- Demonstrate Competence
- Working within scope of practice
- DO NO HARM!
Birth

The Challenge!

Death
<table>
<thead>
<tr>
<th>Category</th>
<th>No</th>
<th>%</th>
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<tbody>
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<td>NAD</td>
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<td>Dry Eye</td>
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<td>Glaucoma</td>
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<td>Retinal</td>
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<td>Diabetes</td>
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<td>31</td>
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<td>Cyst</td>
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<td>Cataract</td>
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<td>29</td>
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<td>Eyelashes</td>
<td>9</td>
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<td>Vitreo-ret</td>
<td>52</td>
<td>4.5</td>
<td>Keratitis</td>
<td>22</td>
<td>1.9</td>
<td>Others</td>
<td>225</td>
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<td>Corneal/Ulcer</td>
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<td>4.1</td>
<td>Visual disturbance</td>
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<td>PVD</td>
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<td>Macular</td>
<td>17</td>
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<td>Headache/migraine</td>
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<td>3.7</td>
<td>Ocular</td>
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<td><strong>Total</strong></td>
<td>1161</td>
<td>100</td>
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Top 10 – Eye Casualty!

1. Seasonal allergic conjunctivitis
2. Anterior Uveitis
3. Infective Conjunctivitis
4. Corneal Abrasion
5. Dry Eye
6. Episcleritis
7. Corneal FB
8. HSK
9. Marginal Keratitis
10. PVD
11. Trichiasis
Contact Lens Work
CURRENT PRACTICE

Meibomian

THYGESONS

TRI CHI ASI S
Clinical Decision Making

**DIAGNOSIS**

**REFERRAL**
- Immediate Referral
  - Microbial keratitis
- First Aid + Urgent Referral
  - Acute glaucoma
- Prescription & Referral
  - Anterior uveitis
- Alleviation - Palliation
  - Com. abrasion
- Prescription & Management
  - Blepharitis

**COMMON CONDITIONS**
- Not normally sight threatening
- Sight threatening
External Eye Disease Patient Pathway

Patient Presentation
Suspected external eye disease

Optometrist / GP
Suspected external eye disease

Optometrist
Diagnosis

Condition not normally sight threatening
Diagnosis uncertain
If sight threatening condition is identified

Optometrist/GP
Management
Advice
Prescription

If no response or there is concern

Optometrist/GP
Follow up & discharge

Hospital Eye Service
Refer to Hospital Eye Service for diagnosis and appropriate management

Common conditions that are not normally sight threatening (can therefore be managed in the community) for example:
- Dry Eye
- Corneal Abrasion
- Foreign bodies
- Blepharitis
- Episcleritis
- Bacterial conjunctivitis
- Conjunctival haemorrhage
- Hordeola
- Allergic, Toxic or Viral external eye conditions

Conditions that are normally sight threatening (should therefore be managed in secondary care) for example:
- Anterior Uveitis
- Inclusion
- Scleritis
- Endophthalmitis
- Cellulitis
- Microbial Keratitis
- Angle Closure Glaucoma
- Chemical Burns
- Marginal Keratitis
- Neoplasia

Self Care Primary Care Secondary Care
History

- Age / Sex
- General Health
- POH
- Family History
- Recent History
- Onset / Duration / Symptoms stable or varying or regressing
- Pain / redness / vision / photophobia
- Presentation – recurring / Intermittent?
What is the problem?

- Pain v No Pain - ? severity
- Red v White
- Visual Loss v Normal Vision
- ? Floaters / Photopsia
- Duration: Recent v Long Term
Examination

- VA / Pinhole
- Pupils
- Ocular Motility
- Anterior Segment – lids/lashes/red?/conj/cornea/anterior chamber
- Internal – Lens/vitreous/retina/macula/optic nerve
- Applanation tonometry
- Slit Lamp
- Volk – DILATE!
- Gonio
- Visual Fields / confrontation
Points to Ponder

- Lashes
- Limbus
- Upper Tarsal
- Lower Tarsal
- Fornices
- Plica
- Adnexa
- Lid Margin
Follicles consist of hyperplastic lymphoid tissue & appear as elevated lesions encircled by blood vessels. Typically seen in reaction to topical agents, adenoviral & chlamydial disease.

Papillae consist of hyperplastic conjunctival tissue full of inflammatory cells, normally seen in the palpebral conjunctiva. Associated with bacterial, and allergic conjunctivitis.
External Eye Problems
Dry Eye

**Evaporative**
- Meibomian Gland Disease
- Glands Missing (Distichiasis)
- Ant / Post Blepharitis
  - Abnormal Blink
  - Abnormal Aperture
  - Incongruous Surface
- Lid Problem
- Other
  - Exposure
  - CL
- Ocular Surface (Xerophthalmia)

**Tear Deficient**
- Non-Sjogren’s
  - Lacrimal Disease
    - Primary
    - Secondary
  - Lacrimal Gland Obstruction
    - Loss of Reflex Tearing
- Sjogren’s
  - Primary
  - Secondary
  - Auto Immune Disease
Tests

- Schirmers type 1 with anaesthesia type 2 as 1 with nasal irritation
  whatman no 41 filter paper
  < 10mm abnormal. < 3mm conculsive

- Tear Break Up time
  fluorescein stain tearfilm
  < 10 sec abnormal (average of 3 tests)
Treatment overview

**Tear secretors**
- Castor oil
- Meibomium lid disease

**Artificial tears**
- Immunosuppressive
- Omega 3 fatty acids
- Mucin secretors

**Warm compresses**
- Moisture chambers
- Androgen drops

**Plugs or occlusion**
Mechanical Stimulation

Hot Compresses

Lid Massage

Lid Scrubs
Lubricants Promote Healing!

**Goblet Cell Density & Preservatives**

- Normal goblet cell density
- Treated with preservative free lubricants
- They're decreased in Dry Eye
- Lubricant preserved with Benzalkonium Chloride

Too Many Choices ......

Avoid Benzalkonium Chloride!
Treatment retention – Punctum Plugs

Plastic or silicone plugs or Collagen
Removable?

Can fall out
Can irritate
Infection?
Can convert a dry eye to a wet one
Blepharitis

Anterior

Posterior
BLEPHARITIS

1. Anterior
   • Staphylococcal
   • Seborrhoeic

2. Posterior
   • Meibomianitis
   • Meibomian seborrhoea

3. Treatment
Staphylococcal blepharitis

- Chronic irritation worse in mornings
- Scales around base of lashes (collarettes)

- Hyphaemia and telangiectasia of anterior lid margin
- Scarring and hypertrophy if longstanding
Complications of blepharitis

- Recurrent styes
- Marginal keratitis
- Tear film instability
- Trichiasis, madarosis, poliosis
Seborrhoeic blepharitis

- Shiny anterior lid margin
- Hyperaemia of lid margin
- Greasy scales
- Lashes stuck together
Treatment of Blepharitis

1. Lid hygiene / Lid Scrubs
   with 50% baby shampoo / Suprannettes / Lid Care

2. Tear substitutes
   - for associated tear film instability

3. Warm compresses - to melt solidified sebum
   in posterior blepharitis / ? Eyebag

4. Topical antibiotics (Fucidic Acid) & steroids

5. Systemic tetracyclines / Topical Steroids
   - for severe blepharitis
Hordeola

Internal

External
Chalazion (meibomian cyst)

- Painless, roundish, firm lesion within tarsal plate
- May rupture through conjunctiva and cause granuloma
# Acute hordeola

<table>
<thead>
<tr>
<th>Internal hordeolum (acute chalazion)</th>
<th>External hordeolum (stye)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• <em>Staph.</em> abscess of meibomian glands</td>
<td>• <em>Staph.</em> abscess of lash follicle and associated gland of Zeis or Moll</td>
</tr>
<tr>
<td>• Tender swelling within tarsal plate</td>
<td>• Tender swelling at lid margin</td>
</tr>
<tr>
<td>• May discharge through skin or conjunctiva</td>
<td>• May discharge through skin</td>
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</tbody>
</table>
Treatment of chalazion

1. Hot compresses / hot spoon bathing

OR

2. Injection of local anaesthetic
   Insertion of clamp
   Incision and curettage
# Trichiasis

<table>
<thead>
<tr>
<th>Signs</th>
<th>Complications</th>
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</thead>
<tbody>
<tr>
<td>• Posterior misdirection of normal lashes</td>
<td>• Inferior punctate epitheliopathy</td>
</tr>
<tr>
<td>• Most frequently affects lower lid</td>
<td>• Corneal ulceration and pannus</td>
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</table>

Inferior punctate epitheliopathy
Corneal ulceration and pannus
Treatment Options for Trichiasis

1. Epilation - but recurrence within few weeks
2. Electrolysis - but frequently repeated treatments required
3. Cryotherapy - for many lashes
4. Laser ablation - for few scattered lashes
5. Surgery - for localized crop resistant to other methods
Px AJ Phthiriasis palpebrarum

- Infestation of lashes by pubic crab louse and its ova (nits)
- Typically affects children in poor hygenic conditions?

Lice gripping base of lashes
Nits and empty shells adhere to base of lashes

Treatment - removal, destruction and delousing
Conjunctivitis

Bacterial
Viral
Allergy
Toxic
Simple bacterial conjunctivitis

**Signs**

- Crusted eyelids and conjunctival injection
- Subacute onset of mucopurulent discharge

**Treatment** - broad-spectrum topical antibiotics eg Chloramphenicol
Adenoviral Keratoconjunctivitis

Pharyngoconjunctival fever

- Adenovirus types 3 and 7
- Typically affects children
- Upper respiratory tract infection
- Keratitis in 30% - usually mild

Epidemic keratoconjunctivitis

- Adenovirus types 8 and 19
- Very contagious
- No systemic symptoms
- Keratitis in 80% of cases - may be severe
Adenoviral conjunctivitis

- Usually bilateral, acute watery discharge and follicles
- Subconjunctival haemorrhages and pseudomembranes if severe

**Treatment** - Symptomatic / lubricants / NSAIDS eg Acular/? Steroids?
Signs of Adenoviral keratitis

- Focal, epithelial keratitis
- Transient
- Focal, subepithelial keratitis
- May persist for months

Treatment - topical steroids if visual acuity diminished by subepithelial keratitis
Adult chlamydial keratoconjunctivitis

- Infection with *Chlamydia trachomatis* serotypes D to K
- Concomitant genital infection is common

**Subacute, mucopurulent follicular conjunctivitis**

**Variable peripheral keratitis**

**Treatment** - topical tetracycline and oral tetracycline or erythromycin
Allergic rhinoconjunctivitis

- Hypersensitivity reaction to specific airborne antigens
- Frequently associated nasal symptoms
- May be seasonal or perennial

Transient conjunctival oedema

Transient eyelid oedema

Treat. H1 blocker (topical/systemic) / Mast Cell Stabiliser / Topical Steroids
Recurrent Corneal Erosion
Recurrent Corneal Erosion Syndrome

Corneal defect might look like this
Corneal epithelium basement membrane

Basal cells secrete basement membrane, and have hemidesmosome attachments through the basement membrane to the underlying stroma
Corneal epithelium basement membrane

Spontaneous

~ Anterior Basement Membrane Dystrophy (map-dot-fingerprint dystrophy)

Traumatic

~ Branch/ twig in eye, childs fingernail
Recurrent Corneal Erosion Syndrome

Typical therapy once correctly diagnosed is often something like:

- Lacrilube before going to sleep
- Artificial tears eg Viscotears or Systane as required through the day - (For up to 3 – 6 months)
- Silicone Hydrogel Bandage CL
Recurrent Corneal Erosion Syndrome

Alternative therapies for those who fail with "basic therapy":

- Mechanical Debridement/ Diamond Burr (to "polish" Bownams Membrane)
- Anterior Stromal Micro-Puncture
- Excimer laser phototherapeutic keratectomy
- Nd:YAG laser treatment
- Superficial phototherapeutic keratectomy
Marginal keratitis

- Hypersensitivity reaction to *Staph.* exotoxins
- Often associated with *Staph.* blepharitis
- Normally unilateral, transient but recurrent

**Progression**

- Subepithelial infiltrate separated by clear zone
- Circumferential spread
- Bridging vascularization followed by resolution

**Treatment** -- short course of topical steroids / topical antibiotic eg Fucidic Acid
Acne rosacea
### Rosacea keratitis

- Affects 5% of patients with acne rosacea
- Bilateral and chronic

#### Progression

<table>
<thead>
<tr>
<th>Peripheral inferior vascularization</th>
<th>Subepithelial infiltration</th>
<th>Thinning and perforation if severe</th>
</tr>
</thead>
</table>

#### Treatment
- topical steroids and systemic/topical tetracycline or doxycycline
EPISCLERITIS AND SCLERITIS

Episcleritis

• Simple
• Nodular

Anterior scleritis

• Non-necrotizing diffuse
• Non-necrotizing nodular
• Necrotizing with inflammation
• Necrotizing without inflammation
  (scleromalacia perforans)

Posterior scleritis
# Applied anatomy of vascular coats

<table>
<thead>
<tr>
<th>Normal</th>
<th>Episcleritis</th>
<th>Scleritis</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Radial superficial episcleral vessels</td>
<td>• Maximal congestion of episcleral vessels</td>
<td>• Maximal congestion of deep vascular plexus</td>
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<tr>
<td>• Deep vascular plexus adjacent to sclera</td>
<td>• Slight congestion of episcleral vessels</td>
<td>• Slight congestion of episcleral vessels</td>
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Simple episcleritis

- Common, benign, self-limiting but frequently recurrent
- Typically affects young adults
- Seldom associated with a systemic disorder

Treatment
- Lubricants
- Topical steroids
- Systemic flurbiprofen if unresponsive
Nodular episcleritis

- Less common than simple episcleritis
- May take longer to resolve
- Treatment - similar to simple episcleritis

Localized nodule which can be moved over sclera

Deep scleral part of slit-beam not displaced
Phenylephrine Test
Diffuse anterior non-necrotizing scleritis

- Relatively benign - does not progress to necrosis
- Widespread scleral and episcleral injection

Treatment

- Oral NSAIDs
- Oral steroids if unresponsive
Nodular anterior non-necrotizing scleritis

More serious than diffuse scleritis

On cursory examination resembles nodular episcleritis

Scleral nodule cannot be moved over underlying tissue

Treatment - similar to diffuse non-necrotizing scleritis
Case SL - History

- Age 56, female
- Referred to GIES
- Presented with painful red eye
- Hx recurring red eye
- Vision down R 6/7.5, L 6/5
- Good General Health
- Early cataract
- Health fundi
- IOP 10 mmHg, L 14 mmHg
- Presbyopic
Slit Lamp

- Perilimbal redness
- Mild pain
- Blurring
- Flare anterior chamber – fine
- Irreg pupil
- GP for checks – autoimmune disease (idiopathic)
Treatment

- Cyclopentolate 1%
- Pred Forte 1%
- Review 1 week (check IOP – ? steroid responder)
- After 2 weeks eyes quiet
- Wean off steroid for one week (Rebound effect)
UVEITIS

Anterior Uveitis - 71%

Posterior Uveitis - 5%

Int. Uveitis - 1%

Systemic Association / Infectious / Idiopathic
Causes of Anterior Uveitis

50% HLA-B27 positive

Ankylosing spondylitis

Psoriatic arthropathy

Reiters Synd

Idiopathic

Herpes Zoster Ophth.

Secondary to trauma or infection

Syphilis

Juvenile Idiopathic Arthritis

Fuchs Heterochromic Cyclitis

Behcets disease

Sarcoidosis

Ulcerative colitis

Crohn disease

ACUTE v CHRONIC
SIGNS
Treatment of Anterior Uveitis

- Pupil dilation
  - Cyclopentolate
  - Phenylephrine

- Relieve pain
- Avoid post syn
- Break post syn
- Reduce risk pupil block

Topical Steroids
- Pain relief
- Inhibit migration of neutrophils
- Inhibit macrophage access
- Decrease number of B & T lymphocytes
- Reduce histamine release
- Reduce fibroblast proliferation & collagen deposition
- Inhibit inflammatory activity
- Inhibit tissue scarring & regeneration
Steroids Derivatives

- Alcohol, acetate and phosphate base

- Needs to be biphasic (to penetrate intact hydrophobic and hydrophylic corneal layers)

- Alcohol & acetate base – better penetration of the intact cornea
Available Topical steroids

- Betamethasone sodium phosphate 0.1% – Betnesol (Celltech)
- Dexamethasone Alcohol 0.1% - Maxidex (Alcon)
- Dexamethasone sodium phosphate 0.1% - Minims (Chauvin)
- Fluorametholone alcohol 0.1% - FML (Allergan)
- Hydrocortisone acetate 0.5% - non proprietry
- Prednisolone acetate 0.1% - Pred Forte (Allergan)
- Prednisolone sodium phosphate 0.5% - Predsol (Celltech)
- Rimexolone ? Acetate 1% - Vexol (Alcon)
Risk Effects - Topical Steroids

- Cataract formation
- OHT – Glaucoma (steroid responder – 70% of 1st degree F/H of glaucoma sufferers)
- Retardation of corneal healing
- Keratitis + aggravate HSK
- Corneal thinning
- Ptosis
- Infection – fungal
- Uveitis!
Px KM – 45 year female

- Pain / Red RE / Agony!
- Arrived 10 hour plane journey Asia
- Tender to touch -
- Nausea / blurred / needs to close eye
- Gradual increase in pain past 10 hours
- Mild similar events in the recent past
- ? Infection
- Good General Health
Clinical Presentation

- VA poor 6/10
- SL gross bulbar redness
- Significant corneal oedema
- Pupil partially dilated & fixed
- IOP R 48mmHg L 18Hg (Goldman)
- Narrow angle – Shafer grade 0
Angle Closure Glaucoma = Ocular Emergency

First Aid – Pilocarpine

Same Day - Rapid Referral

Systemic – oral & intravenous Diamox

YAG laser PI / ? Trabeculectomy

Beta Blockers / Steroids / Hyperosmotic agents
Examine the patient on the slit lamp
Look at the anterior vitreous

- Dilate the pupil
- Reduce ¼ width, slit height < pupil, use maximum brightness
- Stir the vitreous: ask the patient to look up, down and straight ahead
Look for Vitreous Haemorrhage

- Numerous opacities
- Can happen without retinal tears
- Compare with other eye
Posterior Vitreous Detachment

- Detached posterior hyaloid face behind lens, rippled mobile undulating net curtain
‘Tobacco dust’ or Shafer sign

- Pigment clumps, usually larger, darker and more irregular

- Can be caused by ocular surgery
Acute posterior vitreous detachment: the predictive value of vitreous pigment and symptomatology

‘presence of pigment in the vitreous gel to be a reliable indicator of the presence of a retinal break in association with an acute PVD occurring in 23/25 (92%) patients’

Look at Posterior vitreous

- Weiss ring
Look at Posterior Pole

- Preretinal haemorrhage
Look at Peripheral Retina

- Retinal tears
  - 10% of PVD
  - U-shaped or horseshoe
  - red discontinuities
  - Upper retina 75%
Look at Peripheral Retina

- Volk or 3 mirror
- Retinal hole or lattice degeneration
Look at Peripheral Retina

- Retinal detachment
  - Convex configuration,
  corrugated appearance,
  undulates
Urgent Referral if symptomatic PVD with any of the following:

- ‘Tobacco dust’
- Vitreous haemorrhage
- Retinal tear
- Retinal hole or lattice degeneration
- Retinal detachment
It’s All About Decision Making

- Accept responsibility
- Work within your scope of practice: Do no harm
- Develop GOS? Grampian?
- Develop your skill set
- Make GOS work
- Demonstrate all optometric competencies
- Shift the balance of care!
- Develop Level 2 / Independent Prescribing
Conclusion – Can we do More?

- Professional Aspiration
- Fully Utilise Skill Set
- Practice Development – Niche Opportunity?
  - additional revenue
- Patient Loyalty
- Practice Diversity
  - Can we see beyond specs?
- Public Benefit
Thanks for your kind attention!