OPTOMETRY
pharma
SUPPLEMENT TO AUSTRALIAN OPTOMETRY SEPTEMBER 2008

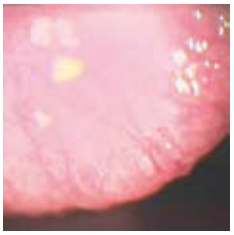
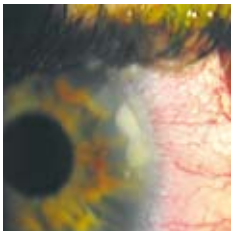
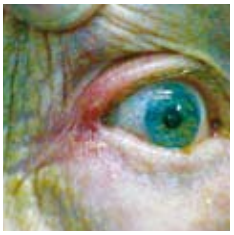
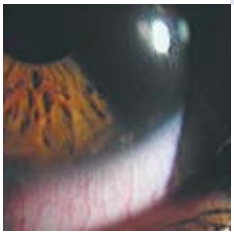
- Angular blepharitis
- Marginal keratitis
- Pharmacological evaluation of pupil anomalies
- Medications and children
- Trachoma in urban practice

Zaditen is a triple action, anti-allergy eye drop that's available without a prescription.[1]

It relieves symptoms in minutes, lasts up to 12 hours and is suitable for children three years and older.[1]

For seasonal allergic conjunctivitis there's no drama, just a quick solution.

Contents

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Angular blepharitis

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A 68-year-old woman presented with a right angular blepharitis of one week duration, which resolved within five days with appropriate treatment. The typical clinical findings, most common causative micro-organism and therapeutic management of this common entity are described.

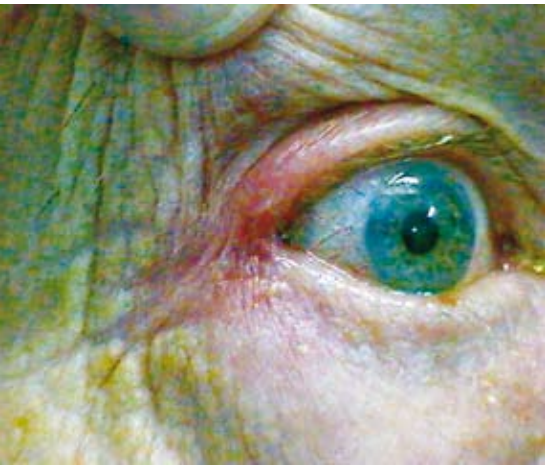

Figure 1. Patient's right eye pre-treatment, showing dermatochalasis and lateral canthus hyperaemia and crusting

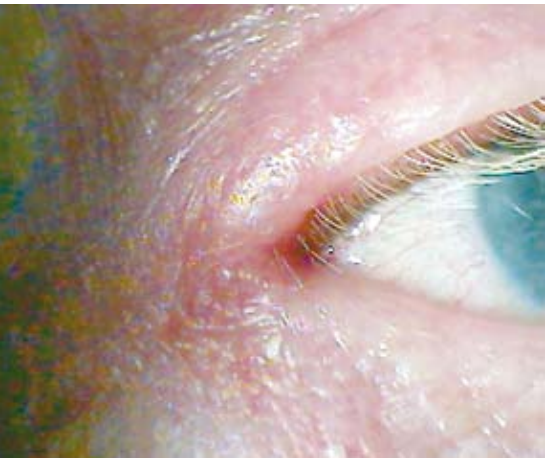

Figure 2. Magnified view of patient's right eye, showing localised inflammation and oedema

Case report

Angular blepharitis presents as a chronic angular blepharoconjunctivitis with crusting and ulceration of the skin in the lateral canthal angle and papillary or follicular reaction on the tarsal conjunctiva.[1] Patients usually report redness and irritation of the involved eye.

The most common causative organism is the gram-negative bacterium *Moraxella lacunata*[2] and typically affects older patients with varying degrees of dermatochalasis. *Moraxella lacunata* angular blepharoconjunctivitis is frequently associated with concomitant *Staph. aureus* blepharoconjunctivitis.[2] Rare reports of angular blepharitis of herpetic origin and from Dysgonic Fermenter-2 (DF-2) bacterium have been documented.[3,4]

A 68-year-old woman presented with an irritated and red right eye, which she vaguely reported as having started about one week earlier. Visual acuity was 6/6 in each eye and her only other significant ocular history was bilateral uncomplicated cataract surgery two years previously. She reported her general health was good other than having hypertension, for which she took one medication.

External examination showed a hyperaemic and slightly oedematous right lateral canthal angle (Figures 1 and 2). Slitlamp examination revealed a mild papillary reaction on the right inferior palpebral conjunctiva, the cornea was clear, anterior chamber was deep and quiet, and posterior chamber intraocular lens was *in situ*. The anterior segment of the left eye was unremarkable, fundus examination and intraocular pressure were normal for both eyes.

The diagnosis of angular blepharitis was made on the basis of the clinical appearance and the patient was started on Tobrex ointment qid to the right eye, lid and lashes. The patient was asked to return in seven days for review or earlier if her symptoms were not improving. On examination seven days later, the blepharitis and papillary conjunctivitis had resolved. The patient was told to cease the Tobrex ointment and was instructed on how to maintain good lid hygiene given her mild dermatochalasis.

The literature does not provide information regarding the predilection for *Moraxella* infections in the lateral canthus but it is not unreasonable to assume that skin folds associated with dermatochalasis along with a moist surrounding from the adjacent tear film provide a good environment for its growth.

As angular blepharitis is readily diagnosed from its clinical presentation and only rarely[3,4] are other organisms the causative agent, it is reasonable to treat this generically. In this case tobramycin ointment was chosen as its antibacterial spectrum covers most gram-negative organisms including *Moraxella*.[5]

The ointment allows for an increased contact time on the skin of the lateral canthus and is easy for patients to apply. This saves the patient the inconvenience and cost of microbial swabs and culturing. If treatment were unsuccessful, then it would be prudent

to investigate via cultures and PCR testing to determine the causative organism and alter treatment accordingly.

In recurrent cases, thought should be given to referring to an oculo-plastic surgeon for repair of the dermatochalasis, as this will often prevent reinfection.

The management of this case highlights the ease with which *Moraxella lacunata* can be dealt with by applying generic treatment protocols. More extensive investigations need to be made only if the condition fails to resolve.

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Gary Page is a member of the therapeutics subcommittee of the Optometrists Board of Queensland. He provided the corneal lectures to the postgraduate therapeutics course at QUT in 2006 and 2007. He has been involved for 13 years in primary eye-care clinics, including The Pacific Eye Centre, Brisbane, and the North Queensland Day Surgery Centre, and works in outreach eye clinics.

Tonometers

Optometrists Association Australia has guidelines on clinical procedures used in optometric practice. The list of guidelines is not exhaustive but focuses on procedures that are often discussed among optometrists.

CLEANING AND DISINFECTION OF TONOMETERS

It is recommended that practitioners have at least two tonometer probes so that one can be cleaned while the other is available for use.

The cleaning/disinfection process should involve:

1. initial wiping with an alcohol swab or cleaning with mild soap, followed by
2. rinsing under tap water for 10 to 20 seconds, followed by
3. soaking for five minutes in 3% H_2O_2 or 70% isopropyl alcohol or 1:10 dilution of sodium hypochlorite, followed by
4. rinsing with water and allowing to dry.

If there is not time for air-drying, the probe could be rinsed with preserved saline but it should be dried immediately after this with a lint-free tissue (for example, Kim wipe) straight from the box, as preserved saline can still become contaminated. Do not use contact lens solution to rinse tonometer probes, as these solutions usually contain lubricants, buffers and so on, which may deposit on the surface of the probe.

- Following tonometry, debris is present on tonometer probes and washing or wiping of tonometer probes has been shown to be important in its removal.[1,2] A five-minute soak in hydrogen peroxide or 70% isopropyl alcohol followed by a cold water wash resulted in the greatest reduction of hepatitis C virus RNA that had been placed on Goldmann tonometer tips and allowed to air dry.[3] Another study found that tonometer prisms soaked for five minutes in 3% hydrogen peroxide (or 70% isopropyl alcohol or a 1:10 dilution of sodium hypochlorite) were adequately disinfected against most ocular pathogens, except *Acanthamoeba*.[4]
- Solutions that are toxic to the ocular epithelium must be rinsed from the tonometer probe with water or preserved saline prior to use of the tonometer probe on the eye.
- Where there is evidence of eye infection, non-contact tonometry should be used or tonometry delayed until the condition has resolved.
- Where there is a risk of CJD infection, it is recommended that either non-contact or puff tonometers, or tonometers with a disposable plastic cover that is discarded immediately after use are employed.[5] Information on heat and sterilisation methods for tonometers that have come into direct contact with the cornea of a high-risk CJD patient can be found at Australian Government Department of Health and Ageing website.[5]

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Ocular and visual drugs for

Stephen Leslie
B Optom FACBO FCOVD

'Barbara' is 27 years old when she presents for an optometric consultation because her frames are broken. She was first examined at the age of 10 years and currently has daily medications of Dexamphetamine (six a day since the age of 12), Citalopram, Mirtazapine, plus Ventolin for her asthma. Over the years she has taken other medications for panic attacks and her asthma (Bricanil, Pulmicort, Becotide, Flixotide).

She is an administrative assistant and part-time student, and her current visual symptoms include intermittent near vision blur, distance vision difficulties and eye strain during exams. Over the years she has also complained at different times of difficulty copying from the board, difficulty focusing and concentrating when reading, an intermittent eye-turn, dizziness, feelings of unreality, motion sickness, intermittent ptosis, and occasional headaches.

CLASS OF DRUG	BRAND NAME	CHEMICAL NAME
Tricyclic antidepressants (TCA)		
	Endep	Amitryptiline
	Tofranil	Imipramine
	Prothiaden	Dothiepin
	Dothep	
	Allegron	Nortriptyline
	Aventyl	
	Surmontil	Trimipramine
	Anafranil	Clomipramine
	Placil	
	Clopram	
	Sinequan	Doxepin
	Deptran	
	Zyban	Bupropion
	Norpramin	Desipramine
Monoamine Oxidase Inhibitors (MAOI)		
	Parnate	Tranylcypromine
	Nardil	Phenelzine
Selective Serotonin Reuptake Inhibitors (SSRI)		
	Prozac	Fluoxetine
	Lovan	Fluoxetine
	Zoloft	Sertraline
	Aropax	Paroxetine
	Cipramil	Citalopram
	Luvox	Fluvoxamine
	Lexapro	Escitalopram oxalate
	Esipram	
Serotonin Noradrenaline Reuptake Inhibitors (SNRI)		
	Efexor	Venlafaxine
	Remeron	Mirtazapine
	Avanza	(similar to SNRI)
Reversible Monoamine Oxidase Inhibitor (RIMA)		
	Aurorix	Moclobemide

Table 1. Classes, brand names and chemical names of antidepressants

Barbara has moderate bilateral myopia and significant against the rule astigmatism; distance (4 prism dioptres) and near (11 pd) exophoria; severely reduced amplitudes of accommodation since the age of 12 (3 dioptres each eye) and associated accommodative insufficiency, accommodative infacility, and convergence insufficiency (breaks at 8 cms, recovers at 25 cms). Her visual conditions and symptoms have been managed well with multifocals.

As an optometrist managing her visual and ocular issues, you may need to use diagnostic or therapeutic ocular pharmaceuticals that could interact with her systemic medications. At the same time, how do you consider the various possibilities that the visual problems are coincidental, or associated with her general conditions, or a result of her medications?

Just as importantly, you will need to keep track of her medications, which change regularly, and monitor her visual problems and symptoms as her medications and visual demands vary.

Incidence

Depression is currently the fourth biggest cause of disability in Australia and will be the second biggest by 2020. Six per cent of Australians are affected each year; one-third of patients in general medical practice probably have common forms of depression or anxiety disorders. It is estimated that one in three people will use antidepressants at some stage in their lifetime.

Many, many of your patients will be using antidepressants or anti-anxiety medications, especially patients who have had a stroke (up to 60 per cent), who have Parkinson's disease, or have had a head injury (from 19 to 55 per cent) or whiplash; or who are suffering through the stress of caring for special needs children, family separation, marriage breakdown, or financial worries.

Depression in children is increasingly common and a growing concern, with an increasing use of medications in children for depression or obsessive-compulsive

effects of depression and anxiety

disorder, although many drugs for depression have been shown to be unproven for use in children, in part due to published but still controversial increased risks of suicide.

Pharmacology

Antidepressants modulate the level of the neurotransmitters serotonin and/or noradrenaline (norepinephrine) in the brain and are classified as follows:[1]

- The older class of ***tricyclics antidepressants*** (TCAs) mainly increase the level of noradrenaline.
- ***Monoamine Oxidase Inhibitor antidepressants*** (MAOIs) bind with and stop monoamine oxidase, which breaks down serotonin and noradrenaline.
- ***Selective serotonin reuptake inhibitors*** (SSRIs) slow the absorption of serotonin, so increasing the activity of serotonin.
- ***Seratonin and noradrenaline reuptake inhibitors*** (SNRIs) increase the activity of these neurotransmitters by slowing absorption.
- The ***reversible inhibitors of monoamine oxidase A*** (RIMAs) reduce the MAO effect, increasing the effect of serotonin and noradrenaline.

The brand names and chemical names of currently used antidepressant medications are listed in Table 1.

Side-effects

The use of SSRIs and other antidepressants is very common and yet the incidence of abnormal vision side-effects has been reported as three per cent or less, so optometrists will not frequently encounter visual and ocular side-effects in patients taking antidepressants.

Usually any effects are reversible, transient, and dependent on dose and length of treatment. Nevertheless, it is important to ask questions of patients to elicit these possible symptoms, as frequently people do not associate their visual symptoms with use of antidepressant medications.

When taking a history with a patient who is using medications for anxiety or depression, patients often omit any mention of depression and drugs, commonly because of embarrassment and a perception of social stigma.

A routine Welcome to the Office Form that particularly enquires about use of common medications such as antidepressants—'*Are you using any medicines for sleeping or depression?*'—serves a useful purpose in gently eliciting such use, which can then be explored further, as well as serving as a record of patient denial of use of such drugs.

If indicated, a specific history questionnaire can be completed orally or manually when the optometrist or ancillary staff becomes aware the patient is taking medications for depression or anxiety (Table 2).

The most common side-effects of antidepressants are listed in Table 3 and less common effects in Table 4.

Continued page 6

Have you recently experienced any of the following problems?

- Blurred vision
- Difficulty focusing with reading or computers
- Enlarged pupils
- Increased sensitivity to light
- Hallucinations
- Redness, puffiness, rashes, twitching or itching of your eyelids
- Conjunctivitis
- More frequent blinking
- Involuntary closing of your eyelids
- Problems moving your eyes
- Problems co-ordinating your eyes
- Drooping eyelids
- Double vision
- Problems with colours
- Dry, watery, gritty or burning eyes
- Sore or painful eyes
- Loss of part of your vision

Table 2. Questionnaire of possible side-effects of antidepressant medication

- Red, sore, gritty, watery eyes due to dry eye (accompanied by dry mouth)
- Mild mydriasis and increased light sensitivity
- Blurred vision, particularly for near vision tasks due to reduced accommodation
- Eyelid redness, itching, ptosis or tics

Table 3. Most common ocular side-effects of antidepressants

- nystagmus
- diplopia
- visual hallucinations
- oculogyric crises
- oscillopsia
- tinnitus and dizziness
- conjunctivitis
- lens changes
- retinal changes

Table 4. Less common ocular side-effects of antidepressants

Ocular and visual effects of drugs for depression and anxiety

From page 5

The tricyclic antidepressants have a potentially greater anticholinergic effect than the SSRIs, but any patient with narrow angles is at increased risk of a closed angle glaucoma attack due to the mydriatic effect of antidepressant use. All patients taking antidepressants should have their intraocular pressures monitored regularly, and patients with narrow angles should be carefully assessed for the risk of a COAG attack when using antidepressant medications.

I can vividly remember being drilled during diagnostic drug education in the 1970s on the risk of using mydriatics for people taking MAO inhibitors, due to the slight but real risk of precipitating a COAG attack.

While there are minor differences in the potential side-effects of different classes of antidepressants, and among some of the drugs within each class, the listed effects are very similar. The best clinical approach is to take a targeted history as detailed above, and to perform an effective examination to detect any signs of visual or ocular side-effects of antidepressant use.

Listed side-effects for individual drugs can be read easily by using eMIMS,[2] which we have on each of our consulting room computers, and I strongly recommend the book *Drug Induced Ocular Side Effects*, which is a handy consulting room reference.[3]

Visual functions

The visual functions potentially affected by the use of antidepressant medications are:

- visual acuity
- accommodation
- vergence
- pursuits and saccades
- binocular vision.

- Visual acuity
- Refraction
- Pursuits and saccades
- Accommodation: near retinoscopy, monocular pushup amplitudes
- Vergence (nystagmus)
- Binocular vision function
- Lids
- Tears (ocular lubrication: BUT, NaFl)
- Cornea
- Anterior chamber evaluation for narrow angles
- Pupil reactions
- Lens
- Retina
- Optic nerve
- Intraocular pressure

Table 5. Examination protocol to detect effects of antidepressants on function and ocular health

The most effective examination sequence to detect possible visual and ocular side-effects is a standard, comprehensive assessment of the functions that could be affected, combined with a sequential examination of ocular structures from anterior to posterior eye, as detailed in Table 5.

Further tests may be indicated by the results of the initial testing, including dilated fundus examination, visual fields and colour vision.

Depression is currently the fourth biggest cause of disability in Australia and will be the second biggest by 2020. Six per cent of Australians are affected each year; one-third of patients in general medical practice probably have common forms of depression or anxiety disorders.

Management

• RECORD positive and negative test results, especially to record the absence of signs of side-effects, as medications can change. It is beneficial to have a specific record in case new symptoms and signs occur over time, or with new combinations of drugs.

• COUNSEL the patient carefully; when visual or ocular side-effects are possibly detected, my approach involves discussing any visual or ocular issues, and how we can manage them with spectacles and other optometric options. If there is a strong likelihood the issues are related to medication use, I briefly discuss my intention to write to their doctor informing him or her of my findings, and I suggest they make an appointment to see their doctor. I specifically caution patients not to stop or change their medications until talking to their doctor, and record in my notes my advice.

• TREAT the specific problems as you would in usual optometric management.

• ARRANGE REVIEW appointments to monitor the conditions and drugs regularly.

• REFER if necessary.

• COMMUNICATE with other health-care professionals involved with the patient's care, who need to be aware of the visual and ocular side-effects and how these may affect their treatment and decision -making.

Above all, communicate with empathy. You have an expert role to play in helping many of your patients who may have side-effects of antidepressant medications, to deal with the possible visual or ocular problems, and to contribute to managing as well as possible their illness.

References

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Abstracts

Andrew Hogan
BScOptom

Where does the doxycycline go?

It appears that oral doxycycline, when used to treat ocular surface diseases such as rosacea, meibomian gland dysfunction and recurrent epithelial erosion, does not actually reach the tear film, and yet still remains a very effective treatment.

It has been suggested that oral doxycycline is able to treat these diseases because of its ability to inhibit matrix metalloproteinase (MMP) activity, as well as interleukin-1 (IL-1) synthesis. A study looked at the amount of doxycycline that could be isolated from tears and blood plasma. It found that, although doxycycline was found in the blood plasma of patients being treated, it was not detected in their tear film. However, when the tear film was analysed for the presence of disease-causing MMPs, they had virtually disappeared. Does doxycycline work in some indirect way?

Smith VA, Khan-Lim D, Anderson L, Cook SD, Dick AD. Does orally administered doxycycline reach the tear film? *Br J Ophthalmol* 2008; 92: 856-859.

It can make you go blind

There may be a connection between the condition central serous chorioretinopathy (CSC) and the erectile dysfunction drug sildenafil (Viagra).

This observational study reviewed more than 1,500 case reports of sildenafil-associated ocular side effects. It identified 11 cases of CSC in men taking sildenafil. In eight of these cases, patients stopped therapy when the CSC occurred, and in six of these cases, the patient's vision improved. In three of the cases, the patients resumed taking sildenafil and the CSC returned, proving that, at least for some people, the positive effects outweighed the negative. The researchers suggested that practitioners who see patients with CSC should consider recommending that they cease taking sildenafil, which will, of course, be a hard decision.

Fraunfelder FW, Fraunfelder FT. Central serous chorioretinopathy associated with sildenafil. *Retina* 2008; 28: 606-609.

Bimatoprost vs latanoprost, no holes barred

It appears that bimatoprost (Lumigan) has significantly greater efficacy in lowering morning IOP than latanoprost (Xalatan) but similar proportions of patients reach their target IOP with both drugs. In this study, the two drugs were well tolerated, although bimatoprost was associated with a greater frequency of conjunctival hyperaemia.

This meta-analysis looked at 13 studies that performed randomised controlled trials of bimatoprost versus latanoprost. They looked at the percentage of IOP reduction, the percentage of patients with a target IOP of less than or equal to 17 mmHg, and the incidence of adverse events.

There was a numerically greater percentage reduction in diurnal IOP with bimatoprost, and a numerically greater proportion of bimatoprost patients achieved their target IOPs, but neither of these results was statistically significant. Both drugs had an extremely low incidence of serious adverse events. As in test cricket, sometimes a draw is not a bad thing.

Cheng JW, Wei RL. Meta-analysis of 13 randomized controlled trials comparing bimatoprost with latanoprost in patients with elevated intraocular pressure. *Clin Ther* 2008; 30; 622-632.

Not a dry eye in the house

This study suggests that there is a definite association between the use of timolol-containing glaucoma drugs and the development of nasolacrimal duct obstruction (NLDO), and that further studies are needed.

The study looked at 209 consecutive eyes of patients over 50 years of age across a 10-year period. It measured the prevalence of primary open-angle glaucoma and the effect of topical glaucoma therapy on the prevalence of nasolacrimal duct obstruction. Bilateral NLDO occurred in 38 per cent of the glaucoma patients, compared to 12 per cent of non-glaucoma patients, and 69 per cent of glaucoma patients in the NLDO group were treated with timolol, compared to just 18 per cent in the control group. Although further studies are needed to clarify what is going on here, it suggests that optometrists should be asking their patients using timolol if they suffer from watery eyes, and then investigating the lacrimal drainage system. Lacrimal lavage, anyone?

Seider N, Miller B, Beiran I. Topical glaucoma therapy as a risk factor for nasolacrimal duct obstruction. *Am J Ophthalmol* 2008; 145: 120-123.

It's even bad for your tear film

In a not-so-surprising finding, researchers in Japan have discovered that chronic smoking induces distinctive disturbances in the health of the ocular surface and on tear film function.

Fifteen right eyes of healthy chronic smokers who smoked 20 cigarettes per day were included in the study. All of these 'healthy smokers' (an oxymoron if I have ever heard one) underwent measurements of breath, blood CO concentration, tear lipid layer measurement, tear film break-up time, Shirmer's test, fluorescein staining, conjunctival impression and brush cytology.

Tear BUT was significantly shorter in the smokers compared to non-smokers. The lipid layer was slower in spreading and tear evaporation rate was higher. Goblet cell loss was worse, as was squamous metaplasia. In case you are not convinced yet, brush cytology showed significant conjunctival neutrophil infiltration in the smokers. Yul Brynner said it best: 'Whatever you do, don't smoke'.

Matsumoto Y, Dogru M, Goto E, Sasaki Y, Inoue H, Saito I, Shimazaki J, Tsubota K. Alterations of the tear film and ocular surface health in chronic smokers. *Eye* 2008; 22: 961–968.

Pharmacological evaluation of pupil anomalies

Sequential testing of pupil function, including pharmacological evaluation, is important in the assessment of anisocoria.

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The hallmark sign in lesions of the pupillary efferent pathways is anisocoria but 25 per cent of the population manifests anisocoria as a normal routine examination finding. Changing consulting room illumination helps to differentiate between physiological and pathological cases.

In physiological anisocoria, the relative difference in size between the pupils is maintained when room illumination is changed. Parasympathetic problems cause a larger pupil in the affected eye and brightening room illumination leads to an increase in the degree of anisocoria due to an inability of the sphincter pupillae to function normally. Sympathetic lesions inhibit the action of the dilator muscle and there will be an increase in the degree of anisocoria, at least initially, as ambient illumination is decreased.

Further investigations include the examination of the direct and consensual light reflex, the near reflex and observing the iris, including the constriction and dilation of the pupil, with the slitlamp. A careful case history is essential and consulting old photographs can be helpful.

A further avenue of investigation concerns the instillation of certain pharmaceutical agents to aid both in the diagnosis of the condition and the localisation of the lesion. Before such a test is undertaken, certain factors need to be remembered.

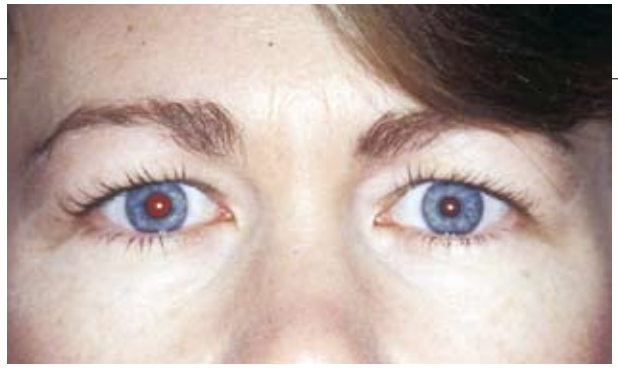

Figure 1. A young adult female with Adie's tonic pupil in the right eye

Figure 2. One drop of 0.125% pilocarpine was instilled into each eye. Twenty minutes later the right pupil had constricted demonstrating denervation supersensitivity. The normal left pupil was unchanged.

The patient should always be given a distance fixation point. The drops should also be instilled into the fellow normal eye so that it can act as a control. The normal integrity of the corneal epithelium must be established with the slitlamp.

A good example is Adie's tonic pupil where there has been a post-ganglionic interruption to parasympathetic input to the sphincter pupillae and the ciliary muscle resulting in an internal ophthalmoplegia. In 80 to 90 per cent of patients with a tonic pupil, denervation supersensitivity can be demonstrated to weak parasympathomimetic drugs such as 0.125% pilocarpine. When required, this concentration can be made up by an enthusiastic local pharmacist or at a growing number of compound pharmacies. This concentration should not constrict a normal pupil (Figures 1 and 2).

Studies have shown that weak pilocarpine can also cause some degree of pupil constriction in third nerve palsies of pre-ganglionic origin. One per cent pilocarpine will constrict the pupil in third nerve palsy but not in pharmacological dilatation following the instillation of agents such as atropine, homatropine or cyclopentolate. Similarly, 1.0% pilocarpine will not constrict the pupil following a traumatic dilatation. Again, a thorough case history and slitlamp examination of the iris are important.

Horner's syndrome is another condition that is amenable to pharmacological investigation, something that has been traditionally undertaken for many years with 4% to 10% cocaine and 1.0% hydroxyamphetamine. Horner's syndrome is due to a compromise of the sympathetic pathway from the brainstem to the eye. It may be described as pre-ganglionic or post-ganglionic, depending on whether the causative lesion is situated prior to or beyond the superior cervical ganglion. Pre-ganglionic lesions are regarded as potentially sinister.

Cocaine is used to diagnose the condition, as a Horner's pupil will either dilate poorly or not dilate at all irrespective of the site of the lesion. Hydroxyamphetamine, an indirect-acting sympathomimetic, should differentiate between pre- and post-ganglionic lesions, the pupil dilating only if the post-ganglionic pathway is intact. It should be used at least two or three days after the instillation of cocaine so that the latter does not influence its activity.

A difficulty here is that cocaine is a controlled substance and not available to optometrists, and hydroxyamphetamine is generally difficult to obtain and is unavailable in Australia.

A reliable alternative regimen is to use 0.5% apraclonidine and 1.0 per cent phenylephrine. Phenylephrine at this strength can be made by diluting 2.5% phenylephrine, a commercially available concentration, and apraclonidine is available as an ocular hypotensive agent to therapeutically qualified optometrists, albeit in Victoria, and in a comanagement setting.

It is primarily an alpha$_2$ adrenergic agonist but also has a weak alpha$_1$ receptor activity where there has been denervation supersensitivity in Horner's syndrome. It dilates the affected pupil whether the lesion is pre- or post-ganglionic, but not a normal pupil. Weak phenylephrine should dilate the pupil if the lesion is post-ganglionic, again due to denervation supersensitivity, and it is therefore an alternative to hydroxyamphetamine. It should not dilate a normal pupil.

Suggested reading

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3. Danesh-Meyer HV, Savino P, Sergott R. The correlation of phenylephrine 1% with hydroxyamphetamine 1% in Horner's syndrome. *Br J Ophthalmol* 2004; 88: 592-593.
4. Koc F, Kavunco S, Kansu T, Acaroglu G, Firat E. The sensitivity and specificity of 0.5% apraclonidine in the diagnosis of oculosympathetic paresis. *Br J Ophthalmol* 2005; 89: 1442-1444.

Managing hyperglycaemia in type 2 diabetes

Although diabetologists vary in their recommendation of appropriate stepped therapy, Metformin is generally regarded as the first drug of choice for patients with type 2 diabetes.

A trial reported by the National Prescribing Service states that Metformin is significantly better than diet, insulin or a sulfonylurea at decreasing all-cause mortalities, incidences of diabetes-related complications and strokes among overweight people.

Patients are advised to use the drug with caution if they are elderly, have a heavy alcohol intake, suffer from ischaemic heart disease and heart failure, or have impaired liver function.

If the patient has inadequate glycaemic control despite making lifestyle changes and taking high doses of metformin as well as sulfonylurea and glitazone, the NPS recommends initiating insulin without delay.

Taking insulin is often viewed as a major step for patients so they should be provided with encouragement and psychological support. The NPS warns that using the initiation of insulin as a threat to improve patient adherence to diet and lifestyle modifications or to medication use can worsen a patient's fear of insulin when the time to confront this choice arises.

Medications and children

Various medications can be used to treat childhood eye problems; and some medications used in childhood can have an effect on children's vision.

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Cycloplegic and dilating drops

These are used both diagnostically and therapeutically. There are three main **diagnostic** uses:

- to dilate the pupil to allow a good retinal examination (**mydriatic** effect)
- to paralyse accommodation so that an objective refraction can be obtained (**cycloplegic** effect)
- to paralyse accommodation in one eye only to see if that causes a **fixation switch** in a patient with strabismic amblyopia.

Four main drops are used:

- **Tropicamide (Mydriacyl) 0.5% is usually used.**

This will dilate the pupil 20 to 30 minutes after instillation; it stays well dilated for more than 30 minutes, and wears off in one to two hours. This is a reliable mydriatic. It has a variable cycloplegic effect and will usually cause some visual blur, especially in a hyperope.

- **Cyclopentolate in various concentrations**

These are available in single-use minims, which contain about five drops. I am happy to keep using the one minim for other patients for the rest of the day on which I have opened it. I first use one drop of a local anaesthetic (I use Benoxinate minim or Alcaine); this allows for better corneal penetration of the cyclopentolate.

In infants and in patients with known terrible autonomic nervous systems (for example, quadriplegic patients) there is a real risk of toxicity from absorption of these drops. I have had a quadriplegic patient develop troublesome hypotension from these drops and require hospital admission. Convulsions have been reported in infants. In these patients, I use weaker concentrations and wait up to 15 minutes between eyes to lessen the risk of significant systemic absorption without any trouble (Table).

Onset is typically 30 to 40 minutes; it lasts for another 30 to 40 minutes, and wears off in two to four hours in most children (though in some the mydriasis can last eight to 10 hours, though the cycloplegia has worn off long ago).

- **Phenylephrine**

Phenylephrine can be used alone or to augment the dilating effect of either tropicamide or cyclopentolate.

Using a combination of these three medicines allows safe low concentrations of each, for example, 1.25% phenylephrine, and 0.1% of both tropicamide and cyclopentolate provides safe dilation and fairly good cycloplegia in infants and even premature babies.

Higher concentrations of phenylephrine (for example, 2.5%) can also be used; these are available only as minims. Ten per cent is available in a multi-dose bottle; it should not be used in children because of the potential for cardiovascular side-effects.

- **Atropine**

This has two main uses (A and B) and some less frequent uses (C and D):

A. Diagnostic: to determine the cycloplegic refraction
B. Therapeutic: to treat amblyopia.
C. It is also used as part of the treatment of uveitis, which is very rare in children and will not be discussed further here.
D. Atropine has been used for decades to prevent the rate of myopia progression and has had a recent revival after some cautiously optimistic studies were published.

A 'cousin' of atropine—pirenzipine—was so promising as an agent to prevent myopia progression that it almost got to the market but was mysteriously withdrawn.

Atropine has the reputation that it produces the 'best' cycloplegia but in any head-to-head comparison with cyclopentolate it does not prove to be consistently better. When used for cycloplegia, it is used as 0.5% (under 12 months, separate the eyes by 30 minutes) or 1.0% (over 12 months of age) three times daily for three days. Onset of cycloplegia is an hour or so after instillation; it stays profound for one to two days and the associated mydriasis can last a week or more.

Age	0-6 months	6-12 months; quadriplegic any age	1-2 years dark eyes	>1 year pale eyes	> 2 years
% Cyclopentolate with local aesthetic	0.25%	0.5%	1%	0.5%	1%
Time between eyes	15 minutes	15 minutes	15 minutes	0	0

There are many reports of temporary side-effects. The most common I see is facial flushing; another less common one is behaviour disturbance. I have not seen a case of probable allergy for over 10 years.

Atropine has been used to treat amblyopia for more than a century. The first description of iatrogenic occlusion amblyopia with atropine (making the 'good' eye amblyopic) was published in the late 19th Century.

Recently the American PEDIG studies have shown that daily or weekend 1% atropine in three- to seven-year-olds with amblyopia up to 6/24 is as effective as opaque occlusion therapy. This is chosen by more than half of the parents of amblyopic children as the primary treatment for amblyopia when offered the choice of drops or patch.

For children under 12 months, I prefer to use 2.0% homatropine for amblyopia treatment. The only concentration of atropine readily available is 1.0% and I am concerned about its toxicity in this age group.

For children who just refuse to allow cyclopentolate drops in the office, I try homatropine two per cent once or twice overnight (while asleep) and the child is then seen first thing in the morning for a cycloplegic refraction.

Miotics for esotropia

In a child who will not wear hyperopic glasses for esotropia (whether it is the child or a parent being recalcitrant), miotics can sometimes suggest whether anti-accommodative treatment is worthwhile. This drop approach is not as good as wearing glasses but can be much better than not wearing glasses.

If a two-year-old with +2.50 hyperopia has a distance esotropia of 12Δ and near esotropia of 20Δ and refuses to wear glasses, it is worth a trial of miotics. I try 2.0% pilocarpine in the office to both eyes. If this reduces the esotropia to an intermittent tropia or to a phoria, I am then very encouraged to try phospholine iodide. If it has less effect, I will often still try phospholine but with less enthusiasm.

Phospholine has more than a 50-year history of simulating the effect of hyperopic correction in esotropia. It was popular in the USA, especially on the country's east coast, where it was often used continuously in the same patient for years. It probably works by two different mechanisms:

1. by making the child (relatively) myopic, and
2. because of a marked miosis, it increases the depth of focus and eliminates the refractive effect of hyperopia (as does a pinhole).

Phospholine was regularly available on the PBS for decades but was withdrawn about 10 years ago by Wyeth because it was so rarely used. It still is supplied by Wyeth but is now expensive and can be imported for individuals only with the assistance of the TGA section of the Health Department.

Side-effects of oral medicines

- **Ditropan and esotropia**

Various oral medicines can interfere with accommodation. An example of such a drug is Ditropan, used to treat bed-wetting. Parents may not think to mention that the child is taking a tablet to prevent bed-wetting; why would the eye doctor be interested in the child's urinary problems? By interfering with accommodation in an uncorrected hyperope, the child may now generate convergence (CA/C ratio) to make the accommodation better, and this causes an esodeviation.

One case that I saw recently got better when the tablet was stopped, and the underlying hyperopic correction initiated when the ditropan was causing the esotropia was eventually discarded.

Other oral medicines that can have visual side-effects include an epilepsy tablet (Sabril) that is toxic to the retina.

- **L- Dopa for amblyopia**

L-Dopa has been used in managing Parkinson's disease for decades. For about 15 years we have known that L-Dopa has an effect on amblyopia. In 50 per cent of children aged four to seven with amblyopia, when treated with spectacles and patching then given L-Dopa (compared to the other 50 per cent who are given placebos), the L-Dopa group's amblyopia got better faster and with better results. The similar Citicholine has a lot of fans in Europe. L-Dopa has to be made up as a fresh solution every day. Citicholine is given as a weekly injection.

It is not known if L-Dopa improves the results in resistant amblyopia. If we struggle with spectacles and patching for nine months and get to only 6/36, will adding L-Dopa bring the child a better outcome? We do not know. My impression is that less than 50 per cent of children who try it see any improvement.

Botox

Botox has had a small place in the treatment of strabismus in children and adults for more than 25 years, either as an alternative to surgery or to augment the effect of surgery. It has to be given by injection into the extraocular muscle, which in a child requires general anaesthesia.

Use of atropine for amblyopia treatment

Atropine penalisation is as good as full-time occlusion and is an easier method of treatment. With its long half-life and lack of irritation, atropine has stood the test of time as a worthy alternative.

Atropine is our oldest ophthalmic drug and has been available for hundreds of years. Claude Worth first suggested its use for amblyopia in the early 1900s and it is still used by some European ophthalmologists for refraction.

As it takes many hours to have its full cycloplegic effect, if used for refraction this must be done the next day. As a result, cyclopentolate is far more popular with practitioners, although it is less popular with children as cyclopentolate stings.

While atropine is a strong cycloplegic, it does not sting and should be considered for the child who is particularly anxious about drops. Its long half-life and lack of irritation make it a perfect drug for prolonged cycloplegia when penalisation for amblyopia treatment is being considered.

It is beyond the scope of this article to talk about side-effects in detail. Atropine on rare occasions causes a moderate intoxication effect, especially in young children. These children have symptoms of facial flushing and disorientation similar to intoxication with alcohol. I have prescribed atropine for hundreds of children and not experienced this problem. However, the parent should be instructed to stop atropine and contact you immediately if their child shows symptoms of this. Glare sensitivity in preschool children does not seem to be a problem.

Atropine penalisation involves cycloplegging the dominant eye of a patient with amblyopia. This blurs the dominant eye to around 6/60 at near if the patient is wearing their full hyperopic correction in that eye. Atropine penalisation for amblyopia has been very popular with American ophthalmologists for the past 40 years.

Recently, it has been subject to the now famous Pediatric Eye Disease Investigator Group (PEDIG) trials on amblyopia and has been compared with full-time occlusion for speed of acuity improvement, compliance and frequency of instillation. Its effectiveness as an amblyopia treatment is as good as full-time occlusion, which is considered our gold standard.

There is a slight caveat here. It appears that children with mild amblyopia (around 6/18) have a similar rate of improvement as with occlusion but children with more severe amblyopia (worse than 6/48) have a slower rate of improvement. It is unclear whether the slower rate is because occlusion is working at distance and near rather than mainly at near as with atropine, or whether the severely amblyopic child does not swap fixation as reliably at near when cyclopleged.

The PEDIG studies confirmed most practitioners' clinical impression that many children find it a slightly easier method of treatment than occlusion. Although historically atropine has been instilled daily, a PEDIG study found no significant difference between the effect of treatment for daily use compared to once weekly.

It appears that one drop once a week is as efficacious as one drop every day. I still suggest twice or three times a week as good measure.

In my experience, when older children instil atropine daily, by the third day the majority report they can read with the eye

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that was treated with atropine. When used three times a week, atropine will effectively provide complete cycloplegia throughout the week and any incomplete response of the amblyopia is unlikely to be a result of insufficient treatment with atropine.

Is atropine suitable for every child with amblyopia?

While it is extremely popular in the United States it is not my first recommendation to the parent but one of the options discussed. A two-year-old child who is non-compliant with occlusion is a perfect candidate for atropine penalisation. Once the atropine is in it cannot be taken out. For the school-aged child with reading difficulties part-time occlusion is a far better option.

Some children find occlusion at school or atropine penalisation very disruptive to their reading progress and I try and avoid amblyopia treatment by these means at school. For most children under the age of three years, atropine tends to be a far easier option for the child and parent.

It is reassuring to be able to confirm that the child has swapped fixation at near once you have cyclopleged the fixating eye. This is less of a problem if the child has mild amblyopia of say 6/24 or better but if the child has very poor acuity of say 6/60 or worse, one cannot necessarily assume that fixation to the amblyopic eye has been achieved.

This is the beauty of direct opaque occlusion. There is complete certainty that fixation has been swapped with this technique. If the child has strabismus and is undergoing atropine penalisation, the cover test at near should confirm that the dominant eye is now strabismic at near. This confirms effective treatment is being provided. At the same time, the cover test at distance will usually demonstrate that the amblyopic eye is strabismic and the strabismus is unilateral.

Children with atropine penalisation should be monitored every month. When one sees alternation of fixation at distance or a swapping of fixation at distance so that the amblyopic eye is now fixating, this indicates that the acuity in each eye is now equal. This should occur after two to six months of treatment.

Once amblyopia treatment is ceased, the child should be monitored at three months and then every six months until at least seven years of age to confirm the non-dominant eye has not developed amblyopia again. Recurrence of amblyopia occurs in about 30 per cent of children. This is especially true for younger children or if spectacle wear is ceased. If atropine penalisation is unsuccessful, a two-month trail of full-time direct occlusion should be considered before discontinuing treatment.

Atropine is a very effective tool for a number of young children who have amblyopia and should be part of every optometrist's arsenal.

Polypharmacy

The more medications a patient is taking, the more likely they are to suffer side-effects. **MATT TROLLOPE** reports that medical professionals can take steps to manage or prevent adverse reactions.

A patient may be taking multiple medications for several reasons. They may be suffering multiple illnesses, perhaps due to one illness inducing other complications, or they need medications to counteract the side-effects of another medication they have been prescribed.

This occurs most commonly in the elderly because the rate of chronic disease among this population group is disproportionately high.

When a patient takes numerous medications concurrently, it is known as polypharmacy. Polypharmacy is usually defined as being the use of five or more drugs. The patient's medications can be a combination of prescription drugs, over-the-counter medicines and complementary therapies.

Polypharmacy is unavoidable in many cases because a patient suffering more than one condition often cannot be treated with just one or two drugs.

Dr Sarah Hilmer, clinical pharmacologist and geriatrician at the Royal North Shore Hospital and University of Sydney, says that on average, people from the age of 60 years acquire one chronic disease each decade and several medications may be necessary to manage them.

Harmful effects

A cycle can occur when medications interact badly, causing side-effects on top of the patient's initial illnesses. The patient is then often forced to take other medications to combat these side-effects, something Dr Hilmer describes as the 'prescribing cascade'.

Dr Hilmer says the risks of polypharmacy include adverse drug reactions such as pharmacological dose-related problems and idiosyncratic immune-mediated responses. Other risks include drug interaction issues.

'Drug interactions can be pharmacokinetic, with drugs affecting each other's absorption, distribution, metabolism and excretion, or pharmacodynamic, with drugs affecting each other's actions on the body. Some drug interactions increase each other's effects, causing toxicity,' she explained.

Head of aged care at Austin Health, Dr Michael Woodward, says that at the other end of the spectrum, one medication could cancel out another. 'Some medications can become ineffective if they are combined because one drug basically causes the other drug to be metabolised in the body more quickly,' he said.

Polypharmacy can create confusion because patients must keep track of the different dosages and frequencies for each of their medications. For elderly people this is especially troubling.

'The more medications that a patient takes, the more likely they are to make a mistake. They either forget to take a medicine, or forget that they have taken it and take it again, which can result in even more adverse effects,' Dr Hilmer said.

In optometry

As optometrists know well, there are some ocular medications that can cause adverse effects when combined with systemic drugs. As an example, Dr Woodward highlights glaucoma medications, such as the beta-blocking medications timolol maleate and betaxolol, as drugs that can potentially create systemic side-effects, especially when combined with other medications.

'In some people, particularly the elderly, these drugs can cause slowing of the heart rate, and if combined with other medications taken orally, those effects can be magnified,' he said.

Dr Hilmer says certain anti-inflammatory eye-drops are sometimes responsible for causing systemic allergic reactions in patients, particularly when used at high doses over a long period. She says the

> **You need to use clinical judgement but almost always when a patient is on 10 or more medications, I can guarantee you there will be one or two medications that can be safely stopped.**
> Dr Michael Woodward

issue of patient confusion also arises with eye medications.

'Using eye-drops can complicate patients' medication management, especially when they have to apply them many times each day. This can result in errors with eye-drops and their other medicines,' she said.

Too many prescribers

Polypharmacy can be attributed in part to the large number of prescribers in the medication process.

The more illnesses a patient suffers, the more specialists they will see to attend to each condition. Additional factors such as smoking, drinking and poor diet increase the risk of a patient suffering more diseases, which means they will see more specialists.

'An 80-year-old ex-smoker could get prescriptions from a general practitioner, a respiratory physician who manages their chronic airways limitation, a cardiologist managing their ischaemic heart disease and an ophthalmologist managing their glaucoma,' Dr Hilmer explained.

Dr Woodward says a lack of communication between the various specialists can create an inefficient system in which confusion and health problems for patients inevitably occur.

'Often these specialists are only concerned with their field of expertise. They may not have enough knowledge of other areas or a practical method of contacting other doctors to see what else the patient has been prescribed,' he said.

'The patient is in the best position to give a total summation of all the tablets that they are on but unfortunately some patients can get pretty bamboozled. Sometimes we even find a person has acquired from various doctors the same drug but in three different brand names.'

Adverse effects

The first steps towards ensuring patients remain healthy while taking multiple medications is to limit the number that they are using. Dr Woodward says de-prescribing medications could potentially leave patients inadequately treated, but more often than not this brings them relief from the systemic side-effects of polypharmacy.

'That's where you need to use clinical judgment but almost always when a patient is on 10 or more medications, I can guarantee you there will be one or two medications that can be safely stopped,' he said.

Streamlining the prescribing process is another way to prevent negative polypharmacy effects eventuating. Dr Hilmer advocates the need for one prescriber per patient. This ensures one person knows all of the medications a patient is taking and can identify and prevent possible adverse drug interactions occurring.

Dr Woodward agrees and says the current system needs revision. 'The way it works now is that specialists are to initiate treatment and refer patients back to GPs, however research shows specialists' recommendations are not always followed through,' he said. 'A system that removes that dual level of assessment and treatment would be more likely to deliver good health outcomes.'

Donvale Hospital, where Dr Woodward also works, has implemented this system to avoid the confusion created by having multiple prescribers. He says all of the hospital's patients see a rehabilitation specialist and a general practitioner, and that except in emergencies, drugs are prescribed by the GP only.

Dr Woodward says the possibility of patients having their medication record on a card would also help in instances of polypharmacy.

'This would be the most up-to-date list of a patient's medications. Theoretically every time they get a new medication prescribed they would produce their card and it would get updated, but we are a long way from that yet,' he said.

Persistency rates

Patients are more likely to persist with certain types of eye-drop treatment for ocular hypertension and glaucoma, a study published in *Clinical and Experimental Ophthalmology* has found.

The study sought to establish patients' persistency with their treatment regimen, and involved examining the resupply rates of prostaglandins, beta-blockers, alpha-agonists and carbonic anhydrase inhibitors from PBS claim-rates data between 1999 and 2005.

Data was obtained for more than 14.3 million supplies of hypotensive eye-drops to nearly 360,000 concessional patients who were divided into the groups 'new to this eye-drop' and 'new to any eye-drop'. For both groups, resupply rates for prostaglandins and dorzolamide-timolol combination drops were higher compared with beta-blockers, alpha-agonists or carbonic anhydrase inhibitors.

The study found that persistency rates were lower when patients were allowed a 60-day period to replenish their eye-drops—as opposed to 90 or 120 days in other cases—and that the probability of resupply was lower for the 'new to any eye-drop' group.

Persistency rates declined by 50 per cent between three and 12 months of the patient beginning treatment.

Researchers suggested that low persistency rates may have existed because the patient experienced no clinical benefit from the drug, suffered adverse side-effects, found the dosing regimen to be inconvenient, could not afford the treatment or lacked the necessary understanding of their condition to know the importance of persisting with treatment.

They said that doctors should consider the persistency rates for each type of eye-drop when prescribing for patients with ocular hypertension and glaucoma, and should stress to patients the importance of persisting with treatment.

Clin Exp Ophthalmol 2007: 35: 602-611

Marginal

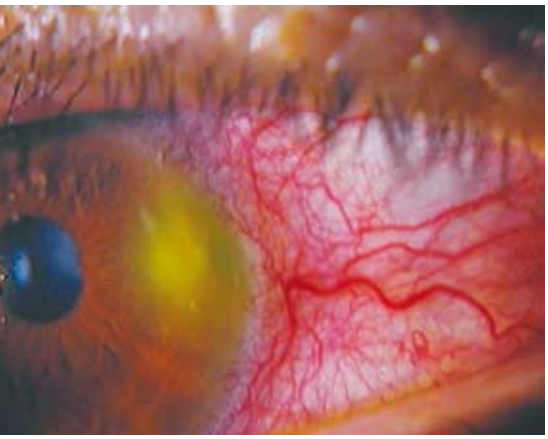

Figure 1. Right eye nasal peripheral corneal ulcer and infiltrate

Diligent lid hygiene may assist a patient in greatly reducing or eliminating future painful attacks of marginal keratitis

Case report

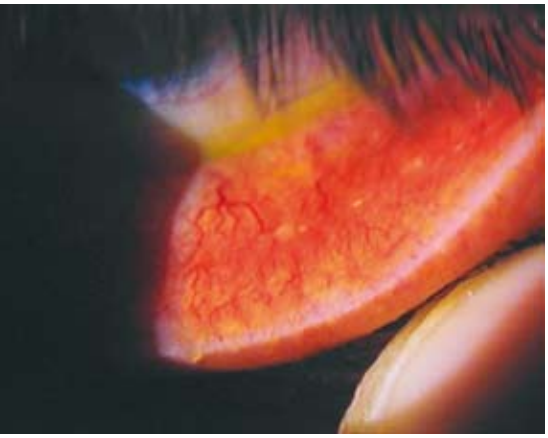

Figure 2. Inspissated meibomian glands with capped gland orifices

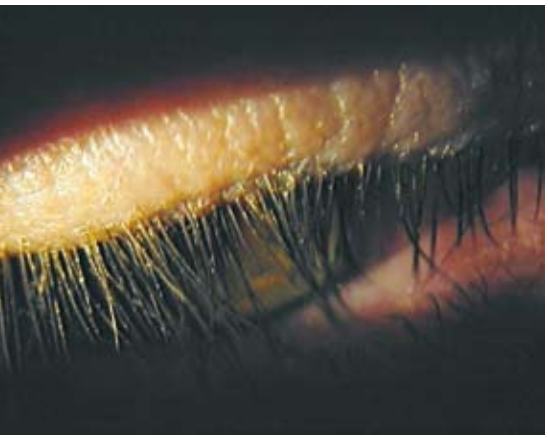

Figure 3. Staphylococcal blepharitis with collarettes around the base of the lashes

A 60-year-old female was referred for assessment by her general practitioner because of a sore and red right eye that had worsened over the previous 24 hours. The red eye was associated with severe photophobia and grittiness but there was no mucopurulent discharge. The patient denied any trauma to the eye or any previous contact lens wear.

On review of her ocular history, she noted the occurrence of similar symptoms in the past on a regular basis in either eye, although this episode was more painful than the other instances. In the previous instances, her GP usually sent her to an ophthalmologist for treatment but on this occasion he was on vacation and unable to treat her.

The medical history was significant for medically managed hypertension and hypercholesterolaemia, and rheumatoid arthritis, currently treated with oral prednisolone and hydroxychloroquine (plaquenil). She used a continuous positive airway pressure (CPAP) machine overnight because of obstructive sleep apnoea.

At presentation, the visual acuity was R 6/7.5- and L 6/6 with her current spectacle correction. Slitlamp examination revealed an irregular 3 mm R nasal corneal infiltrate located at 2:30 in the corneal periphery with a small area of clear cornea between the infiltrate and the limbus (Figure 1).

An irregular corneal epithelial defect was present over the central half of the infiltrate and fluorescein staining extended past the margins of the infiltrate. There was significant adjacent conjunctival and limbal hyperaemia without corneal neovascularisation.

The central cornea was unaffected and the anterior chamber was free of cells or flare. Both eyes had a number of whitish peripheral scars along the margins of both corneas, indicative of past infiltrative keratitis.

Examination of the eyelids revealed meibomian gland dysfunction in the form of inspissation (thickening) of the meibomian secretions, capping of the gland orifices and telangiectasis of the lid margins (Figure 2). There were flakes and collarettes at the base of the lashes but no chalazia or trichiasis (Figure 3). No lid laxity was noted, with apposition of the lids to the globe and full closure on blinking.

Because a number of ocular and systemic conditions can lead to the formation of corneal ulcers or infiltrates, a short list of differential diagnoses needed to be considered before treatment was initiated.

- **Marginal keratitis**

Typically presents with limbal infiltrates along the inferior or superior corneal margins. Frank ulceration of the cornea is not usually present. Associated with meibomian gland dysfunction and blepharitis. Common.

- **Traumatic ulcer/erosion**

Caused by injury or trauma to the cornea, or from chronic abrasion, for example,

keratitis

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in-grown eyelash. No history of trauma in this case and no trichiasis were present.

- **Contact lens peripheral ulcer**

Presumed sterile infiltrates in the peripheral cornea in response to contact lens wear. There was no history of contact lens use in this patient.

- **Herpes simplex**

Herpetic corneal disease can present as a non-dendritic peripheral stromal keratitis; typically unilateral. This patient had historical and clinical evidence of bilateral disease in different areas of both corneas.

- **Corneal melt**

Peripheral ulcerative keratitis can occur rarely in rheumatoid arthritis, leading to extreme stromal thinning or perforation. Only epithelial loss was present in this case.

- **Exposure keratitis**

Ulcerative keratitis secondary to corneal exposure from floppy eyelid syndrome. Although this patient had obstructive sleep apnoea, there was normal lid tension and full eyelid closure.

- **Marginal degeneration**

Terriens marginal degeneration affects the superonasal cornea but the corneal epithelium is usually intact and there is no infiltrate.

- **Mooren's ulcer**

Painful autoimmune marginal stromal thinning can be associated with rheumatoid arthritis. Rare.

Provisional diagnosis was made of marginal infiltrative keratitis secondary to chronic lid disease.

The aetiology of marginal keratitis is attributed to the proliferation of staphylococcal bacteria in the dysfunctional meibomian gland secretions and along the eyelash line.

The staph bacteria produce a hard and scaly flake and collarette that forms along the base of the eyelashes. The bacterial colonies release significant amounts of bacterial exotoxin, which lead to an inflammatory response in the corneal periphery adjacent to the infected eyelids. The limbal vessels dilate and discharge leucocytes into the cornea, forming a stromal infiltrate.

Treatment is directed towards removing the infiltrative white blood cells mediating the inflammatory response, with a topical steroid eye-drop, and concurrently reducing the bacterial load with a topical antibiotic eye-drop.

Treatment with either a steroid or antibiotic agent alone would not be optimal, as both the cause and the effect of the disease need to be managed. The selection of steroid and antibiotic agent will vary with the severity of the clinical presentation.

Given the significant epithelial defect and large infiltrate, the patient was commenced on gtt ciprofloxacin 0.3% (Ciloxan) qid and gtt prednisolone acetate 1.0% (Prednefrin Forte) q2h. On review 24 hours later, the corneal infiltrate had reduced in size and the epithelial defect was also smaller (Figure 4). The amount of limbal and conjunctival hyperaemia was also reduced.

Treatment was continued unchanged for the antibiotic and the advice for steroid dosage was q2h for two days and then qid until the next review on Day 6. At this visit, slitlamp examination revealed a fully-healed epithelial defect without fluorescein staining but there were some signs of very superficial fluorescein pooling over the lesion because the corneal epithelium was not yet back to full thickness (Figure 5).

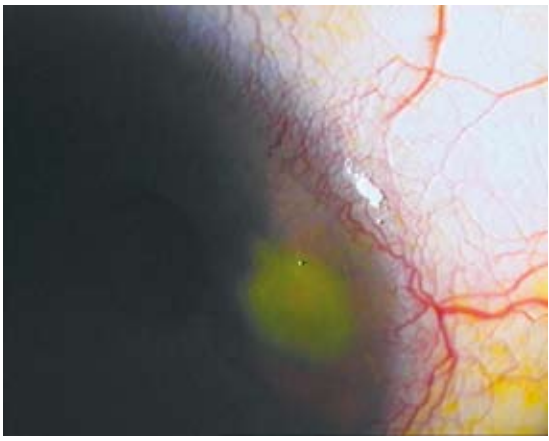

Figure 4. Day 1: partial resolution of the marginal ulcer

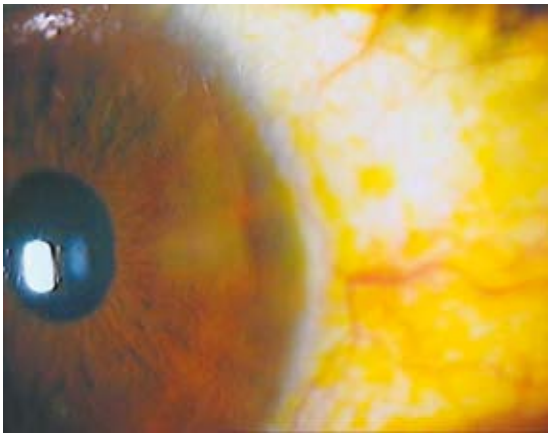

Figure 5. Day 6: fully-healed ulcer with mild stromal opacification

Continued page 18

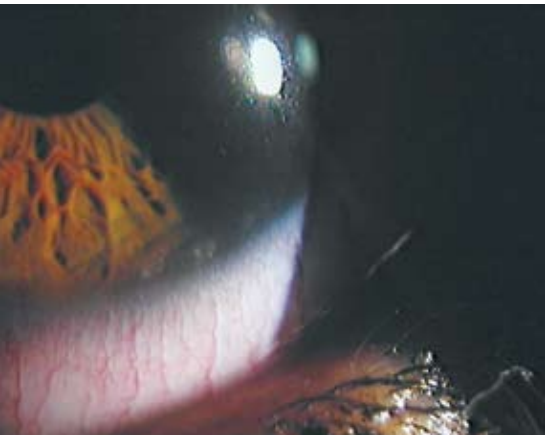

Figure 6. Mild asymptomatic marginal keratitis in another patient

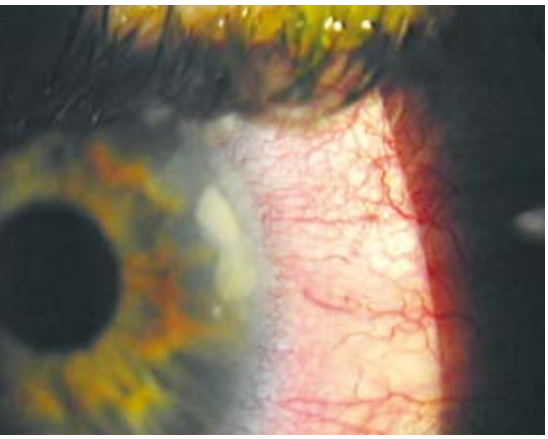

Figure 7. Large infiltrate with minimal staining in another patient

Marginal keratitis

From page 17

A mild corneal stromal opacity remained but this was well clear of the visual axis, and VA corrected to R 6/6. The antibiotic drops were discontinued and the steroid drops were tapered for three days and then discontinued.

As marginal keratitis is a consequence of chronic lid disease, treatment was also directed to improving the meibomian gland dysfunction and blepharitis, in an attempt to reduce the frequency and severity of the keratitis attacks. Hot compresses and meibomian gland expression of the eyelids were initiated twice a day to soften and expel the inspissated meibomian secretions, followed by Steri-Lid anti-bacterial foaming cleaner to reduce the bacterial load on the lid margins and lashes.

Non-preserved artificial tears were prescribed qid as meibomian gland dysfunction leads to a poor tear lipid layer and subsequent evaporative dry eye.

Once the diagnosis is made, treatment of marginal keratitis is usually straightforward, with topical steroid drops to control the inflammation related to infiltrative keratitis, and topical antibiotics to decrease the bacterial load present on the lid margins.

Review is required within 24 hours to check on treatment response, and therapy is adjusted if an alternative diagnosis comes to the fore.

Marginal keratitis can also present in milder forms than this case. Sometimes the infiltrates can be small and isolated with no loss of corneal epithelium (Figure 6), or there can be small areas of punctate fluorescein staining over large areas of infiltrate (Figure 7). In these instances, milder therapy can be initiated, for example, chloramphenicol antibiotic eye-drops and fluormoethalone acetate (Flarex) steroid eye-drops.

A major concern with this particular case is the past ocular history of recurrent attacks of keratitis, confirmed on the slitlamp by multiple peripheral corneal infiltrative opacities in both eyes. It is important to communicate to the patient that the cause of the attacks was due to eyelid disease, and instruct the patient on the importance of lid scrubs or meibomian gland expression.

Medication history on file

The Pharmaceutical Society of Australia has released professional guidelines, standards and training materials for pharmacists as part of its Patient Medication Profile (PMP) Program.

Under the program, pharmacists establish a patient's full medication history and knowledge of the medicines they use, and provide them with a medication profile—including prescription, over-the-counter and complementary medications the patient is currently taking—and appropriate counselling.

The program was launched on 31 March. It was implemented to provide pharmacists with advice and guidance on good practice behaviour and how to fulfil their responsibilities, and to outline standards for pharmacists to ensure that patients are correctly and effectively using their medications.

It is hoped the program will enhance patients' knowledge of and confidence in administering their medications, which may increase adherence, reduce medication errors and promote better health outcomes.

Double PI cover at lower cost

OPTOMETRISTS
ASSOCIATION AUSTRALIA

Indemnity insurance claims statistics reflect the professionalism and high level of competence of Australian optometrists.

Optometrists Association has negotiated a lower professional indemnity insurance premium for its members, but with twice the cover.

As part of their membership, association members receive indemnity insurance coverage through Avant Insurance Limited. This covers optometrists against patient claims of negligence or malpractice in the discharge of the member's professional duties, and legal costs incurred during the course of the member's defence against these allegations.

At the beginning of 2008, Avant increased its coverage of malpractice claims up to the value of $10 million for any one claim and up to $10 million in aggregate. Previously, Avant's coverage was $5 million both for any one claim and in aggregate. It also negotiated a lower premium with the association.

Optometrists Association national executive director Joe Chakman said that when the association was offered double the indemnity insurance cover for its members at a lower premium, it took advantage of the opportunity.

'There has not been one therapeutic-based claim made against an optometrist since this legislation was introduced in Victoria in 1996,' Chakman said.

'This is most likely because optometrists have increased levels of education and can provide greater care, following the introduction of the legislation and the therapeutics courses in optometry schools.

'Any sort of claim against an optometrist is rare, and in some years no claims of any significance are made,' he said.

Chakman said Avant's increased coverage and lower premiums indicated that the insurance provider was comfortable with the good record and experience of association members.

'As paradoxical as it may sound, I expect professional indemnity insurance premiums to fall even further as drug legislation progresses and optometrists' responsibilities expand,' he said.

Diagnostic techniques

What motivates an optometrist to undergo extensive training in therapeutics without having the right to prescribe ocular therapeutic drugs? **GARY OSHRY** reports

Optometrist Alan Burrow of Coffs Harbour, NSW, has been participating in therapeutic training since 1993 yet New South Wales legislation has prevented him from prescribing ocular therapeutic drugs.

In 2003, with prescribing rights still a pipedream, he started on the demanding road to a therapeutic endorsement that culminated this year in a trip to Tasmania to do his clinical training at the Royal Hobart Hospital.

The therapeutics course emphasises equally diagnostic skills and treatment protocols, according to Burrow. It extensively covers ocular diseases and reviews a wide range of diagnostic techniques.

'In cases such as acute corneal infection, for example, which may lead to loss of sight, the optometrist may be the first port of call,' says Burrow. 'It is essential that we diagnose the condition accurately so that the therapeutic treatment can be initiated quickly and the condition monitored.

'Another example is evident with patients presenting with variable vision. The patient may be experiencing symptoms as a result of dry eye rather than a change in refractive error.'

Optometrists understand that glaucoma is diagnosed through a risk analysis based on intraocular pressure, the nature of the cupping of the disc, a visual field test if cupping looks suspicious and corneal thickness. The therapeutic course reinforced for Burrow the optimal diagnostic techniques in the detection of glaucoma.

In rural areas, an optometrist may provide the only means of management when an ophthalmologist is not available. Burrow says that he has earned the trust of the three local ophthalmologists to provide a reliable assessment and he is often asked to monitor patients when they are unavailable.

The relationship Burrow shares with the ophthalmologists was strengthened while he was undergoing the clinical component of his therapeutic endorsement. The ability to discuss many cases with a team approach has great benefits to patients.

'I frequently hear optometrists complaining of the boredom of a daily refractive routine,' says Burrow. 'One made the comment, "The greatest thing about being an optometrist is driving home at night knowing that you helped to save someone's sight". By having a better understanding of ocular therapeutics you certainly do this.'

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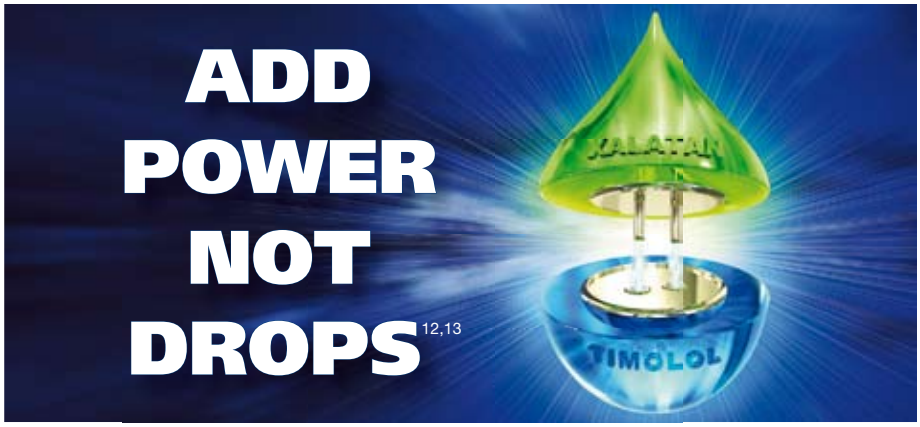

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PBS Information: This drug is listed on the PBS for the treatment of Open Angle Glaucoma and Ocular hypertension.

Before prescribing, please refer to Approved Product Information. Full Approved PI is available on request from Pfizer. MINIMUM PRODUCT INFORMATION. XALATAN® (Latanoprost 50 micrograms/mL) Eye Drops INDICATIONS Reduction of intraocular pressure (IOP) in patients with open-angle glaucoma or ocular hypertension. CONTRAINDICATIONS Hypersensitivity to ingredients. PRECAUTIONS Change in eye colour due to increased iris pigmentation, heterochromia; eyelid skin darkening; changes in eyelashes and vellus hair; macular oedema; other types of glaucoma; pseudophakia; aphakia; contact lenses. Severe or brittle asthma. Pregnancy category B3, lactation. Children. Interactions: other prostaglandins, thiomersal. Blurring of vision. ADVERSE EFFECTS Increased iris pigmentation; eye irritation (burning, grittiness, itching, stinging and foreign body sensation); eyelash and vellus hair changes (darkening, thickening, lengthening, increased number); mild to moderate conjunctival hyperaemia; transient punctate epithelial erosions; blepharitis; eye pain; conjunctivitis; vision blurred; eyelid oedema, macular oedema. Muscle/joint pain; dizziness; headache; localised skin reaction on the eyelids; skin rash. Uncommonly: keratitis; non-specific chest pain; Others, see full PI. DOSAGE AND ADMINISTRATION One eye drop in the affected eye(s) once daily. Other eye drops at least 5 minutes apart. REFER TO PRODUCT INFORMATION BEFORE PRESCRIBING The full disclosure Product Information is available on request from Pfizer Australia Pty Ltd. NAME AND ADDRESS OF THE SPONSOR Pfizer Australia Pty Ltd ABN 50 008 422 348, 38-42 Wharf Road, West Ryde, NSW 2114. Full PI approved by the TGA on 4 February 2003, last amended 20 November 2006. PBS dispensed price, September 2007: $36.65. References: 1. Parrish RK *et al. Am J Ophthalmol* 2003;135:688-703. 2. Gandolfi S *et al. Advances in Therapy* 2001;18(3):110-121. 3. Netland PA *et al. Am J Ophthalmol* 2001;132:472-484. 4. Hedman K *et al. Surv Ophthalmol* 2002;47(Suppl 1):S65-S76. 5. Reardon G *et al. Eur J of Ophthalmol* 2003;13(Suppl 4):S44-S52. 6. Stewart WC *et al. Rev of Ophthalmol* 2002;9(4). Accessed via URL http://www.revophth.com/index.asp?page=1_83.htm. 7. Noecker RS *et al. Am J Ophthalmol* 2003;135:55-63. 8. Watson P *et al. Ophthalmology* 1996;103:126-137. 9. Konstas AGP *et al. Am J Ophthalmol* 1999;128:15-20. 10. Mishima HK *et al. Arch Ophthalmol* 1996;114:929-932. 11. Alm A *et al. Ophthalmology* 1995;102:1743-1752.

PBS Information: Restricted benefit:
This product is listed on the PBS for the reduction of elevated intra-ocular pressure in patients with OH or POAG who are not adequately controlled with timolol maleate 5mg (base) per mL (0.5%) eye drops or latanoprost eye drops.

Before prescribing, please refer to Approved Product Information. Full Approved PI is available on request from Pfizer. MINIMUM PRODUCT INFORMATION. XALACOM® Eye Drops (latanoprost 50µg/mL and timolol 5mg/mL). INDICATIONS. Reduction of IOP in open-angle glaucoma and ocular hypertension, if insufficient response to other medications. Not for initial therapy. CONTRAINDICATIONS. Reactive airway disease including bronchial asthma (and history), or severe COPD. Sinus bradycardia, second or third degree atrioventricular block, overt cardiac failure, or cardiogenic shock. Hypersensitivity to ingredients. PRECAUTIONS. Beta-blocker systemic effects: cardiovascular/respiratory reactions; consider gradual withdrawal prior to major surgery; anaphylactic reactions; caution in hypoglycaemia, diabetes, hyperthyroidism, myasthenia gravis; concomitant beta-blocker or prostaglandin not recommended. Ocular: change in eye colour due to increased iris pigmentation, heterochromia; eyelid skin darkening; changes in eyelashes and vellus hair; macular oedema; caution in other types of glaucoma, pseudophakia, aphakia, filtration. Contact lenses. Pregnancy category C, do not use; lactation. Children. Interactions: additive effects with other drugs; thiomersal. Blurring of vision. ADVERSE EFFECTS. Ocular: eye irritation, hyperaemia, abnormal vision, visual field defect, increased iris pigmentation, eyelash and vellus hair changes, corneal oedema and erosions. Systemic: serious respiratory and cardiovascular events (worsening of angina pectoris, pulmonary oedema), anaphylaxis. Others, see full PI. DOSAGE AND ADMINISTRATION. One eye drop in the affected eye(s) once daily. Other eye drops at least 5 minutes apart. REFER TO PRODUCT INFORMATION BEFORE PRESCRIBING The full disclosure Product Information is available on request from Pfizer Australia Pty Ltd. NAME AND ADDRESS OF THE SPONSOR Pfizer Australia Pty Ltd, ABN 50 008 422 348, 38-42 Wharf Road, West Ryde, NSW 2114. Full PI approved by the TGA on 25 November 2002, last amended on 20 November 2006. PBS dispensed price, September 2007: $43.50. References: 12. Higginbotham EJ *et al. Arch Ophthalmol* 2002; 120: 915–22. 13. Konstas AGP *et al. Arch Ophthalmol* 2005; 123: 898–902. www.pfizer.com.au

Determine the risk of loss of visual function

Gary Oshry

Because the progression of glaucoma is slow, some may say that diagnosis and treatment of the early signs of glaucoma may not be justifiable, says leading ophthalmologist Mark Walland. This is particularly pertinent in older patients with preperimetric glaucoma.

The burden on the patient of the diagnosis and treatment of the disease must also be considered. Screening protocols should be directed not to detecting early glaucoma per se, but to finding those with a greater lifetime risk of loss of functional vision.

'When screening patients, you are not looking for an 80-year-old patient whose optic disc looks subtley abnormal,' says Walland, 'but rather for those patients who have established visual field defects, or abnormal discs at a younger age or have high IOP. These patients have a lifetime risk of going on to functional vision loss. The risk increases exponentially when the IOP is high.'

By adopting oversensitive screening protocols, Walland says optometrists run the risk of excessive false positive rates and generating so much work that they compromise time spent treating other patients. Will treating patients with ocular hypertension, and in whom the IOP is high and the disc is normal, affect long-term vision loss?

'Treating ocular hypertension can halve the risk over five years of the onset to having actual glaucoma, from 10 per cent to five per cent,' says Walland. 'If you turn those figures around, 95 per cent of patients who are treated do not get glaucoma and 90 per cent of patients who are not treated do not get glaucoma.'

Walland recommends optometrists use the risk calculator to assist in determining the patient's next treatment. The risk calculator or STAR, distributed by Pfizer, accesses the risk of patients with abnormally high intraocular pressure progressing to glaucoma within five years based on the patient's age, baseline IOP, CCT, PSD, vertical cup to disc ratio and whether the patient has diabetes mellitus.

It is compatible with the Humphrey Field Analyser but not directly compatible with the Medmont Automated Perimeter. The average defect and pattern defect results obtained from the Medmont perimeter may be substituted for the mean deviation and pattern standard deviation from the Humphrey Field Analyser after an appropriate conversion.

The department of health has made a step in the right direction by granting optometrists a rebate for visual field tests, says Walland. In relation to glaucoma, patients with specific visual field defects have a risk of going blind in their lifetime and have to be treated quickly. A standard automated perimetry test will pick up all the significant visual field defects.

Although they are an effective way of detecting real defects, Walland says conducting countless visual field tests requires extensive manpower and ultimately cannot definitively determine the prevalence of glaucoma.

'We see referrals of patients with visual fields showing a lot of noise and visual defects who end up being normal patients,' says Walland. 'It is preferable to see whether the disc is abnormal before doing a visual field test. Few patients have a normal optic disc yet have a defect of standard automated perimetry.'

GREATER ROLE FOR OPTOMETRISTS

Medical practitioners must accept and encourage optometrists' major contribution to glaucoma detection, says ophthalmologist Mark Walland.

In an editorial in the March 2008 issue of *Medical Journal of Australia*, he says optometrists are technologically equipped and trained to detect and diagnose eye disease, are often the primary eye-care practitioners and are numerous.

Glaucoma has a prevalence of about three per cent in the population aged over 50 years, yet 50 per cent of cases of glaucoma in Australia today remain undiagnosed.

Progression of glaucoma is slow, painless and irreversible, visual acuity is affected only late, and symptoms of peripheral vision loss with mobility difficulties do not occur until gross levels of field constriction have developed. For these reasons, Walland says that affected patients tend not to present but need to be found.

Ophthalmologists diagnose and manage glaucoma but are referral-dependent and see only a selected sample. Walland says that a greater responsibility should be given to the optometrist as the primary eye-care provider to determine family history of glaucoma and assess the optic disc.

He claims that ophthalmoscopy is a dying art that needs to be rejuvenated in training programs for general practitioners, so that visualisation of the optic disc can resume its place in the routine medical check-up.

There remains no device that can identify early glaucoma with appropriate sensitivity and specificity. Walland says that misconceptions about the importance of intraocular pressure in diagnosing and screening for glaucoma continue to result in unnecessary blindness in Australia from glaucomatous optic neuropathy.

Glaucoma could occur despite an IOP of less than 21 mmHg. Known as normal pressure glaucoma (NPG), such cases comprise one-third to one-half of all open-angle glaucoma cases. Conversely, cases where IOP is elevated above normal levels do not guarantee the prevalence of glaucoma.

In the absence of raised IOP or visual field loss, Walland says early detection of the disease can depend entirely on identifying optic disc cupping, notching or rim loss, and associated retinal nerve fibre layer defects. The optometrist has the expertise and equipment to conduct the necessary screening and current therapies are more effective if the diagnosis is made early.

Pharmacists supply of PBS medications

The guidelines outlining pharmacists' obligations when supplying PBS-listed medicines can be found in the 'For Health Professionals' section of www.pbs.gov.au by clicking on the 'For Pharmacists' link, followed by the link to 'Supplying Medicines–What Pharmacists Need to Know'.

Pharmacists must follow guidelines when supplying medicines under the Pharmaceutical Benefits Scheme.

The guidelines ensure that pharmacists dispense PBS-listed medicines appropriately. Approved suppliers can also be doctors practising in isolated areas, friendly society pharmacies and certain hospitals.

Approved pharmacists must endorse a PBS prescription and duplicate with their name and approved supplier number, and allocate to both a PBS prescription identifying number. Multiple items on a PBS prescription require separate identifying numbers while repeated authorisations require the same number to be carried through. (NOTE: Optometrists must include only one item on a script.)

Pharmacists cannot supply medicines if:

- A PBS prescription, a repeat authorisation, an approved authority PBS prescription or an authority to prescribe is more than 12 months old.
- The prescriber has not included the four-digit code on an authority required (streamlined) item prescription.
- This exceeds the number of times the medicine can be supplied as specified on the PBS prescription.

Pharmacists cannot alter PBS prescriptions but they may seek to clarify the prescriber's intentions and then endorse the prescription accordingly.

If an eye preparation has five or more repeats allowed in the schedule, pharmacists cannot supply patients with a subsequent pharmaceutical benefit within four days of the same benefit being supplied earlier.

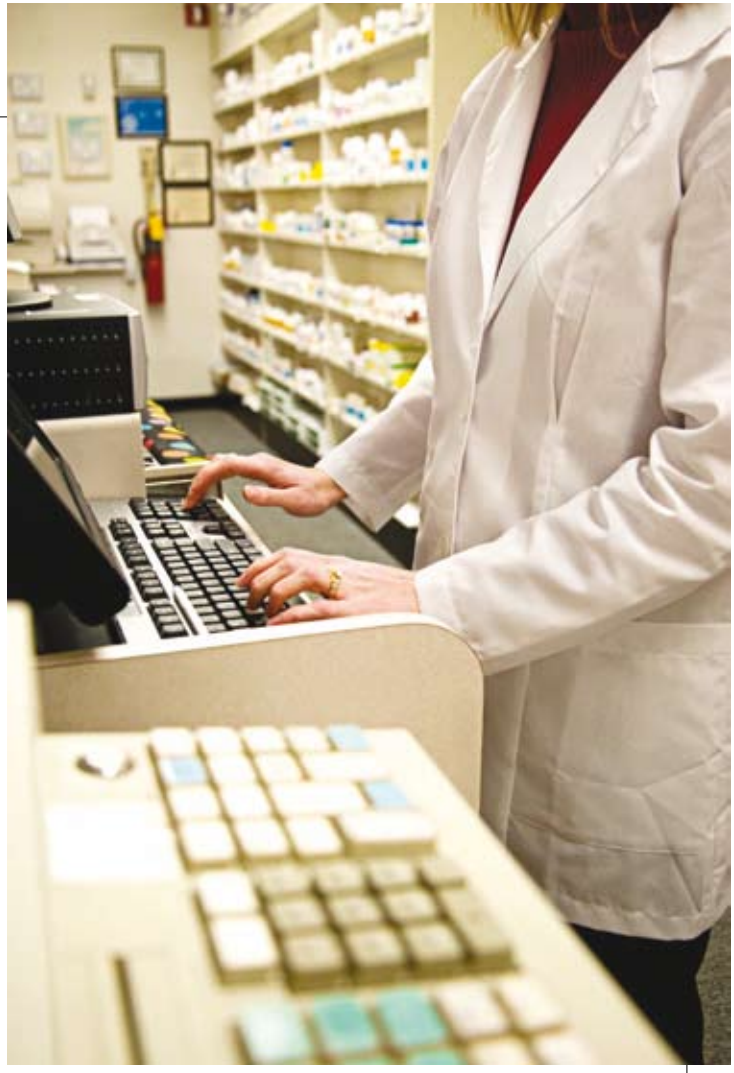
If the Schedule changes, including having medications taken off it, or changes to repeat authorisations, medications cannot be supplied as a pharmaceutical benefit from the date the deletion comes into effect, even if the prescription was written before this date.

Pharmacists can supply:

- The original medication and all repeats of a PBS prescription at the one time if the prescriber has endorsed it with the words 'Regulation 24' or 'hardship conditions apply' (NOTE: Regulation 24 does not apply to optometry scripts).
- A patient with medication–provided they believe treatment is urgent or the patient's medication has been lost, stolen or destroyed–by signing the prescription and writing 'immediate supply necessary'.
- An alternative benefit without reference to the prescriber (provided the prescription does not indicate that only what is prescribed can be supplied, that the alternative is of equivalent benefit and is listed on the PBS, and that supplying the alternative does not infringe on relevant state or territory laws).
- A benefit to a person without a PBS prescription, provided the prescriber can communicate details of the prescription to the pharmacist and if state and territory laws permit (the prescriber must then ensure the pharmacist receives a written copy and duplicate of the prescription within seven days of supply).
- A benefit needing prior approval from Medicare Australia, provided the prescriber has obtained this approval and informed the pharmacist of the PBS prescription and approval details (this does not apply to repeats).

Repeat Authorisations

Pharmacists are to prepare a Repeat Authorisation Form if a standard or authority PBS prescription or Authority to Prescribe Form requests this. This form should include patient details, prescription medication details and identification numbers, pharmacy and pharmacist details, the date of original medication supply and the number of repeats allowed and supplied.



Receipts

A pharmaceutical benefit must have a receipt signed and dated by the person receiving it and receipts cannot be obtained until the benefit has been supplied.

Receipts may not be practical if the pharmaceutical benefit is sent via post, in which case the pharmacist must indicate on the PBS prescription or repeat authorisation the date of supply and the manner in which it was sent.

Similarly, for items supplied in urgent cases or to people unable to read or write, pharmacists must sign and date a statement on the PBS prescription or repeat authorisation outlining the date it was supplied and why no receipt is available. For example, a patient may have urgently needed prescription painkillers for a broken arm but as a result of this injury was unable to sign for it.

FOR OPTOMETRISTS

Therapeutically-endorsed or 'authorised' optometrists can prescribe medications only from a PBS list of optometry-related items. Prescriptions are filled out on a light-green form entitled 'PBS-RPBS optometrist prescription'.

Optometrists must:

- include one item per prescription, as well as their prescriber number
- use the same prescription form for unrestricted, restricted and authority items
- include a Medicare Australia or DVA approval number on an authority prescription
- include repeats on a prescription if permitted in the Schedule listing.

Pharmacists supplying optometry items should use their software to limit PBS/RPBS dispensing to optometry items only. Similar rules apply to pharmacists when supplying optometry items instead of other PBS items: urgent supply rules and the steps involved in preparing Repeat Authorisation Forms are the same. 'Regulation 24' does not apply for optometry prescriptions.

Pharmaceutical Society of Australia's public affairs manager, Aaron Hall, said he was not aware of any queries or concerns raised by pharmacists in relation to the dispensing of optometry PBS prescriptions.

He said that because these formed such a small percentage of the prescriptions dispensed by pharmacists, they may need to consult the PBS guidelines to ensure they were performing their optometry-related duties correctly.

This information was current at the time of writing.

Trachoma in urban practice

Roman Serebrianik
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Victorian College of Optometry
rserebrianik@vco.org.au

Case report

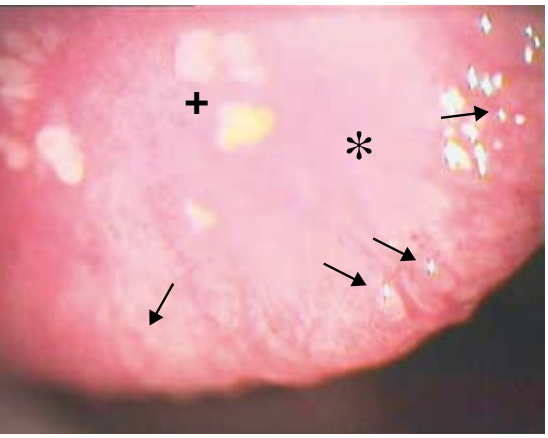

Figure 1. Right tarsal conjunctiva. Arrows indicate follicles, asterisk indicates area of possible very early conjunctival scarring, plus sign (+) indicates concretions.

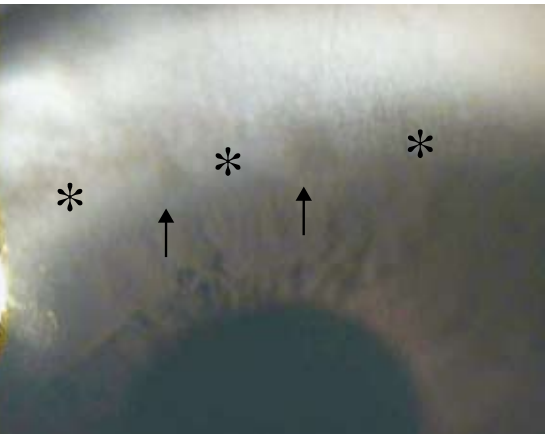

Figure 2. Left upper limbus. Arrows indicate Herbert's Pits, asterisks indicate mild pannus.

A 45-year-old female of African descent presented with symptoms of persistent vague ocular soreness and watery discharge. The symptoms were worse in the right eye, persisting with fluctuating severity for 10 weeks. A previous practitioner had already prescribed non-preserved lubricants and ketotifen fumarate (Zaditen) drops TID; neither of which offered relief.

Visual acuity was 6/6–2 R and L. Ocular fundi and intraocular pressures were normal. No anterior chamber reaction was present.

Generalised hyperaemia was evident on the right upper palpebral conjunctiva. Several follicles were seen in the right tarsal region. An area of pale, slightly coarser conjunctival tissue was also present in the middle of the right tarsal plate, with several large concretions (Figure 1). No corneal involvement beyond few scattered SPK was evident.

Left conjunctiva appeared mostly quiet but two circular areas of pale scarring were present at the left superior limbus (Herbert's Pits). Mild inactive pannus was also present (Figure 2).

After questioning the patient more closely, two significant facts emerged: she had returned from a trip to rural Ethiopia two weeks before the symptoms started; and during her childhood there, she had had numerous episodes of similar symptoms. Within the past 14 years of living continuously in Australia, no outbreaks had occurred.

Given the evident conjunctival signs, fluctuating severity of symptoms and their emergence following a trip to Africa, a diagnosis of active trachoma was made. This was supported by the presence of characteristic corneal scars (Herbert's Pits) in the left eye, suggesting prior resolved episodes of the infection. The patient was urgently referred to her general practitioner for systemic antibiotic azithromycin.

Trachoma is a chronic inflammatory conjunctivitis caused by a gram-negative obligate intracellular bacterium *Chlamydia trachomatis*.[1] As it is spread by direct person-to-person transfer of infected ocular or nasal secretions, eye-seeking insects or sharing of contaminated personal items, it predominates in areas of poor sanitation.[2,3] Trachoma is the world's leading cause of preventable blindness, estimated to affect 84 million people in 56 developing countries2 including Ethiopia.[4,5]

Trachoma begins with chronic tarsal conjunctival inflammation, thickening, follicles, concretions and papillae.[6-8] This is followed by conjunctival cicatricial changes, which distort the upper lid structure, leading to entropion and subsequent trichiasis. If untreated, corneal abrasions, neovascularisation (pannus), opacification and ultimately blindness ensue.[2,8]

Because *C. trachomatis* is an intracellular pathogen, topical antibiotics are seldom effective. Oral tetracycline, doxycycline and erythromycin have been used successfully but oral azithromycin 1 gram is now preferred due to its single-dose application. To date, *C. trachomatis* has not acquired resistance to any of the above antibiotics.[2]

This case study emphasises the importance of careful history-taking in managing cases of persistent 'red eyes', and the possibility of encountering in urban practice eye diseases that are usually found in developing nations.

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• The author thanks Dr Genevieve Napper and Dr Adrian Bruce for their kind assistance in preparing this report.

News briefs

WA therapeutic drugs hopes high

Optometrists in Western Australia are optimistic that legislation will soon be passed in their state to enable them to prescribe Schedule 4 therapeutic drugs.

John Hyde, the Parliamentary Secretary to the Minister for Health, Jim McGinty, said that the Western Australia *Poisons and Therapeutic Goods Bill* would include optometrists among the health professionals who will be regulated to supply specific poisons and medicines according to their level of skills.

Speaking at the opening of the WAVE conference in Fremantle on 8 August, Mr Hyde said that the bill would differ in wording but would have the same intent as the Victorian *Drugs, Poisons and Controlled Substances Act 1981*.

The Western Australia Premier Alan Carpenter has called a state election for 6 September.

Glaucoma drugs in Northern Territory

Northern Territory optometrists will soon be able to prescribe glaucoma medications as part of a shared-care model, following a decision by the Northern Territory Optometrists Board.

Northern Territory division councillor Asha Mahasuria said the board had accepted the Therapeutics Advisory Committee's recommendation to allow endorsed optometrists access to glaucoma drugs under shared-care guidelines, and would adopt protocols for the shared-care of glaucoma patients.

The Northern Territory joins Victoria, New South Wales and South Australia as states and territories allowing optometrists this access within a shared-care protocol.

Systane on PBS

Systane preservative-free lubricant eye-drops packaged in 28 single-dose vials of 0.7 millilitres became available on the Pharmaceutical Benefits Scheme on 1 August.

The dry eye therapy is an 'authority required benefit' for endorsed optometrists and an 'authority required streamlined benefit' for ophthalmologists.

The drops contain polyethylene glycol 400 with propylene glycol. They were added to the PBS following an application by Alcon Laboratories (Australia) Pty Ltd and a recommendation from the Pharmaceutical Benefits Advisory Committee.

Varenicline causes adverse effects

The National Prescribing Service (NPS) is urging all health professionals to monitor patients using varenicline (Champix) to quit smoking for behaviour or mood changes, or unusual symptoms or events that occur while taking the medicine. This follows the release of a study in the USA.

Varenicline has been available on the PBS since 1 January 2008 and has proved to be effective at reducing craving and withdrawal symptoms, but it is a new drug in a new class of drugs.

Users participating in clinical trials have complained of nausea, insomnia, abnormal dreams, headache and constipation. It is unclear whether these are caused by smoking cessation or by varenicline. Adverse effects should be reported to the Australian Drug Reactions Advisory Committee by visiting www.tga.gov.au/adr/adrac.htm.

Rose bengal melanoma treatment

The ophthalmic stain rose bengal is being used to treat melanoma.

The treatment involves injecting a solution of 10 per cent rose bengal in saline into tumours, a process known as chemoablation. The solution causes malignant cells to become necrotic without damaging surrounding tissue.

Researchers from the Sydney Melanoma Unit (SMU) began conducting phase 2 clinical trials of the therapy in August 2007, involving 80 patients with advanced metastatic melanoma. To date, 20 patients in Sydney and Brisbane have been treated and in 80 per cent of cases there has been a complete or partial regression in the injected melanomas.

Findings from this trial were presented by the SMU's Professor John Thompson at the Sydney Cancer Conference 2008 on 24-26 July.

Letter from **Canada**

CRAIG WOODS finds strong similarities between optometry in Canada and Australia. The first Canadian state to gain therapeutics legislation was Alberta in 1996, the year in which Victoria won therapeutics in Australia. The two countries also have similar polulation densities concentrated in a handful of major cities–in Canada, hugging the US border, in Australia, along the coastline–and reliant on optometrists for eye care in regional and remote areas.

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Vancouver

It has been more than three years since I left the shores of Australia, Melbourne to be exact. I see Richmond FC has not changed, still hanging around 10th spot; looks like another frustrating year.

Here I am in Canada; three fantastic years in a very interesting place. So similar to Australia in many ways and yet so different. Both countries have social consciences to be proud of, which reflects well at an international level, and both countries are obsessed with sport–Ice Hockey here and Aussie Rules with you.

Can you believe there is an Aussie Rules league here in Ontario? Eight teams, two-thirds of which are ex-pat Aussies. My son plays for the Guelph Garoyles, who have adopted the Brisbane Lions colours.

My time at the School of Optometry has been devoted to research, a little different from my role at the Victorian College of Optometry, but optometry is optometry, isn't it? Optometry in Australia is now firmly using therapeutics. You have made huge strides to level the playing field and the similarity between the professions in the two countries is almost scary.

The four-year degree at Waterloo follows a Bachelor of Science degree, covering the same aspects that are covered by the degree in Melbourne. The main difference is that the Melbourne model results in a registerable degree, but that is not the case here, where the graduates have to pass board examinations before they can practise.

Our close proximity to the USA has enabled the evolvement of the optometry degree to be concordant with the two countries' regulatory requirements, so the Canadian degree is recognised by the USA state boards as equivalent. Canadians can choose to register to practise anywhere across North America, as long as they pass that state's board exams.

Part of that recognition has to do with the advanced state of therapeutic teaching at Waterloo. When therapeutic practice became an integrated part of optometry in the USA, it did so in Canada, too.

The first Canadian state to recognise the therapeutics skills of optometrists was Alberta in 1996. It looks as if the last state will be Ontario, which is very interesting when you consider that Ontario is home to the only English-speaking optometry school that has been teaching a therapeutically accredited optometry course for as long as any of the US schools. Who said politics was logical?

The scope of practice allows for extensive use of drugs by categories–that is, antibacterial, antiglaucoma drugs–rather than by a list of approved drugs. As in Australia, once a person is diagnosed with glaucoma, they have to be comanaged.

This brings me to the relationship between optometry and ophthalmology, and again it is remarkably similar to what has passed in Australia. On an individual level, relationships vary widely but the inter-professional level borders on open warfare. The inevitability of the progression of the profession of optometry and the subsequent demonstration that we do not practise with the devil but are caring and cautious professionals slowly wins over the sensible heads that care to pay attention to good patient care.

Better local, community-based care for the Canadian population results in better public health, and optometry is totally involved in better delivery of health care.

The two countries have very similar population density distributions. Whereas in Australia the population is concentrated around five or six major metropolitan areas and the coastline, in Canada the population is concentrated around five or six metropolitan areas and the US border.

This results in large areas of the country having only remote access to rural optometrists who play a very important role in closing that gap of care. Again like Australia, Canada has a shortage of ophthalmologists, especially for urgent care.

The similarities between optometry in Australia and Canada are uncannily numerous. I just wish they had cricket.

PBS List of Medicines for Optometrists 11 August 2008

	Product	Restriction	Max qty	Repeats
Anti-viral eye preparations		Restricted:		
Aciclovir eye ointment 30 mg per g (3%), 4.5 g	Zovirax	Herpes simplex keratitis	1	0
Antibiotics		Unrestricted		
Chloramphenicol eye drops 5 mg/mL (0.5%), 10 mL	Chlorsig		1	2
	Chloromycetin		1	2
Chloramphenicol eye ointment 10 mg/g (1%), 4 g	Chlorsig		1	0
	Chloromycetin		1	0
Sulfacetamide Sodium eye drops 100 mg per mL (10%), 15 mL	Bleph-10		1	2
Anti-inflammatory agents		Unrestricted		
Fluorometholone eye drops 1mg/mL (1%), 5mL	Flucon		1	0
	FML Liquifilm		1	0
Flurbiprofen Sodium eye drops 300 µg per mL (0.03%) single dose units 0.4 mL, 5	Ocufen		1	0
Hydrocortisone Acetate eye ointment 5 mg per g (0.5%), 5 g	Hycor		1	0
Hydrocortisone Acetate eye ointment 10 mg per g (1%), 5 g	Hycor		1	0
Anti-allergy agents		Restricted:		
Sodium cromoglycate eye drops 20 mg per mL (2%), 10 mL	Cromolux	Vernal kerato-conjunctivitis	1	5
	Opticrom		1	5
Topical ocular lubricants		Restricted:		
Carbomer 980 ocular lubricating gel 2 mg per g (0.2%), 10 g	Geltears	Severe dry eye inc Sjogren's synd	1	5
	PAA		1	5
	Viscotears Liquid Gel		1	5
Carmellose sodium eye drops 10 mg per mL (1%), 15 mL	Refresh Liquigel		1	5
Carmellose sodium eye drops 5 mg per mL (0.5%), 15 ml	Refresh Tears plus		1	5
Hypromellose eye drops 3 mg per mL (0.3%), 15 mL (contains sodium perborate)	In a Wink Moist'ing		1	5
	Genteal		1	5
Hypromellose eye drops 5 mg per mL (0.5%), 15 mL	Isopto Tears		1	5
	Methopt		1	5
Hypromellose with Carbomer 980 ocular lubricating gel 3 mg-2 mg/g (0.3-0.2%), 10 g	HPMC PAA		1	5
	Genteal gel		1	5
Hypromellose with Dextran eye drops 3 mg-1 mg/mL (0.3%-0.1%), 15 mL	Poly-Tears		1	5
	Tears Naturale		1	5
Polyethylene glycol 400 with Propylene glycol drops 4 mg-3 mg/mL (0.4-0.3%); 15 mL	Systane		1	5
Polyvinyl alcohol eye drops 14 mg per mL (1.4%), 15 mL	PVA Tears		1	5
Polyvinyl alcohol eye drops 30 mg per mL (3%), 15 mL	PVA Forte		1	5
Polyvinyl alcohol eye drops 14 mg per mL (1.4%), 15 mL	Liquifilm Tears		1	5
Polyvinyl alcohol eye drops 30 mg per mL (3%), 15 mL	Liquifilm Forte		1	5
Polyvinyl alcohol eye drops 14 mg per mL (1.4%), 15 mL (contains sodium chorite/hydrogen peroxide as preservative)	Vistil		1	5
Polyvinyl alcohol eye drops 30 mg per mL (3%), 15 mL (contains sodium chorite/hydrogen peroxide as preservative)	Vistil Forte		1	5
Unpreserved unit dose ocular lubricants		Authority required:		
Carbomer 974 ocular lubricating gel 3 mg per g (0.3%), single dose units 0.5 g, 30	Poly Gel	Severe dry eye syndrome in patients sensitive to	3	5
Carbomer 980 eye drops 2 mg per (0.2%) , single dose units 0.6 mL, 30	Viscotears	preservatives in multi-dose eye drops	3	5
Carmellose sodium eye drops 5 mg per mL (0.5%), single dose units 0.4 mL, 30	Cellufresh		3	5
Carmellose sodium eye drops 10 mg per mL (1%) , single dose unit 0.4 mL, 30	Celluvisc		3	5
Carmellose sodium eye drops 2.5 mg per mL (0.25%), single dose units, 0.6 mL, 24	TheraTears		4	5
Carmellose sodium ocular lubricating gel 10 mg per mL (1%), single dose 0.6 mL, 28	TheraTears		3	5
Hypromellose with Dextran eyedrops 3-1 mg per mL (0.3-0.1%), single 0.4 mL, 28	Bion Tears		3	5
Tamarindus indica seed polysaccharide eye drops 10 mg per mL, 0.5 mL, 20	Visine Professional		3	5
Polyethylene glycol 400 with Propylene glycol drops 4 mg-3 mg/mL (0.4-0.3%); single dose units 0.7 mL, 28	Systane		3	5
Topical ocular lubricant ointments		Unrestricted		
Paraffin compound eye ointment 3.5 g	Polyvisc		2	5
Paraffin pack containing 2 tubes compound eye ointment 3.5 g	Polyvisc (2 pack)		1	5
Paraffin compound eye ointment 3.5 g	Duratears		2	5
Paraffin pack containing 2 tubes compound eye ointment 3.5 g	Ircal (2 pack)		1	5
	Lacri-Lube (2 pack)		1	5

Controlled substances that may be used or prescribed by optometrists

Ocular Medicine	Vic	Tas	Qld	NSW & ACT	NT	SA	WA	PBS Optometry	PBS Listed
Anti-infectives									
Chloramphenicol	✓	✓	✓	✓	✓	✓	–	✓	✓
Ciprofloxacin	✓	✓	✓	–	✓	✓	–	–	✓
Framycetin	✓	✓	✓	✓	✓	✓	–	–	✓
Gentamicin sulfate	✓	✓	✓	–	✓	✓	–	–	✓
Ofloxacin	✓	✓	✓	–	✓	✓	–	–	✓
Sulfacetamide	✓	✓	✓	✓	✓	✓	✓	✓	✓
Tetracycline	✓	✓	✓	✓	✓	✓	–	N/L	N/L
Tobramycin	✓	✓	✓	–	✓	✓	–	–	✓
Aciclovir	✓	✓	✓	–	✓	✓	–	✓	✓
Anti-inflammatories									
Dexamethasone	✓	✓	◆	–	✓	✓	–	–	✓
Fluorometholone	✓	✓	✓	✓	✓	✓	–	✓	✓
Fluorometholone acetate	✓	✓	✓	✓	✓	✓	–	–	✓
Hydrocortisone	✓	✓	✓	✓	✓	✓	–	✓	✓
Prednisolone	✓	✓	◆	–	✓	✓	–	–	✓
Diclofenac	✓	✓	✓	✓	✓	✓	–	N/L	N/L
Flurbiprofen	✓	✓	✓	✓	✓	✓	–	✓	✓
Ketorolac	✓	✓	✓	✓	✓	✓	–	N/L	N/L
Decongestants & anti-allergics									
Ketotifen	✓	✓	✓	✓	✓	✓	✓	N/L	N/L
Levocabastine	✓	✓	✓	✓	✓	✓	–	N/L	N/L
Lodoxamide	✓	✓	✓	✓	✓	✓	–	N/L	N/L
Olopatadine	✓	✓	✓	✓	✓	✓	–	N/L	N/L
Sodium cromoglycate	✓	✓	✓	✓	✓	✓	✓	✓	✓
Anti-glaucoma preparations									
Apraclonidine	✓	–	◆	✓	✓	✓	–	–	✓
Betaxolol	✓	–	◆	✓	✓	✓	–	–	✓
Bimatoprost	✓	–	◆	✓	✓	✓	–	–	✓
Brimonidine	✓	–	◆	✓	✓	✓	–	–	✓
Brinzolamide	✓	–	◆	✓	✓	✓	–	–	✓
Carbachol	✓	–	◆	✓	✓	✓	–	N/L	N/L
Dipivefrine	✓	–	◆	✓	✓	✓	–	–	✓
Dorzolamide	✓	–	◆	✓	✓	✓	–	–	✓
Latanoprost	✓	–	◆	✓	✓	✓	–	–	✓
Levobunolol	✓	–	◆	✓	✓	✓	–	–	✓
Pilocarpine	✓	–	◆	✓	✓	✓	–	–	✓
Timolol	✓	–	◆	✓	✓	✓	–	–	✓
Travoprost	✓	–	◆	✓	✓	✓	–	–	✓
Mydriatics & cycloplegics									
Atropine	✓	✓	✓	✓	✓	✓	–	–	✓
Cyclopentolate	✓	✓	✓	✓	✓	✓	✓	N/L	N/L
Homatropine	✓	✓	✓	✓	✓	✓	–	–	✓
Pilocarpine	✓	✓	✓	–	✓	✓	–	–	✓
Phenylephrine	✓	✓	✓	✓	✓	✓	–	N/L	N/L
Tropicamide	✓	✓	✓	✓	✓	✓	✓	N/L	N/L
Local anaesthetics									
Amethocaine	✓	✓	✓	✓	✓	✓	–	N/L	N/L
Lignocaine	✓	✓	–	–	✓	✓	–	N/L	N/L
Oxybuprocaine	✓	✓	✓	✓	✓	✓	✓	N/L	N/L
Proxymetacaine	✓	✓	✓	✓	✓	✓	✓	N/L	N/L

◆ The use of these medicines by optometrists is currently being considered

N/L Substance is not listed under the PBS

eye drops - olopatadine

Patanol®

Prescription strength allergy relief

Give your patients effective protection[1] this ocular allergy season...

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Alcon®

PBS Information: This product is not listed on the PBS.

Please review Approved Product Information before prescribing. Full Product Information is available on request from Alcon Laboratories (Australia) Pty Ltd. PATANOL® (olopatadine) 0.1% Eye Drops Abridged Product Information. Use: Treatment of signs and symptoms of seasonal allergic conjunctivitis for up to 14 weeks. **Contraindications:** Hypersensitivity. **Precautions:** Not for injection or oral ingestion, pregnancy (Category B1), lactation, children below 3 years of age. Caution should be taken when driving or operating machinery if blurred vision is experienced. **Adverse Reactions:** Headaches, asthenia, blurred vision, burning or stinging, cold syndrome, dry eye, foreign body sensation, hyperaemia, hypersensitivity, keratitis, lid oedema, nausea, pharyngitis, pruritus, rhinitis, sinusitis and taste perversion. **Dosage:** One to two drops of PATANOL Eye Drops in the affected eye(s) twice daily. ® Registered trademark. Alcon Laboratories (Australia) Pty Ltd. ABN 88 000 740 830, 10/25 Frenchs Forest Road East, Frenchs Forest, NSW 2086. POPH 1455 **References: 1.** PATANOL Approved Product Information.