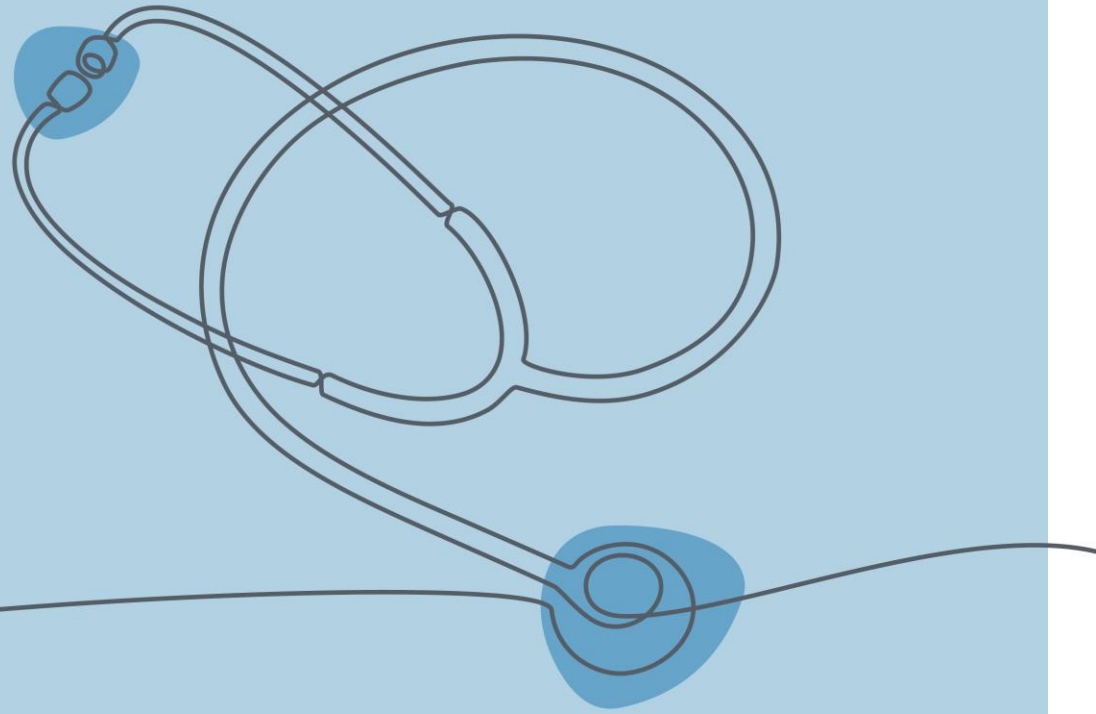
General Practice Liaison Officer Program presents

Championing Generalism Workshop



A collaborative, multi-disciplinary and multi-specialty learning opportunity for GPs covering conditions commonly managed in primary care

CASE STUDY PRESENTATIONS

Saturday 21 March 2026 | CSDS

phn BRISBANE NORTH
An Australian Government Initiative

Queensland Government
Metro North Health

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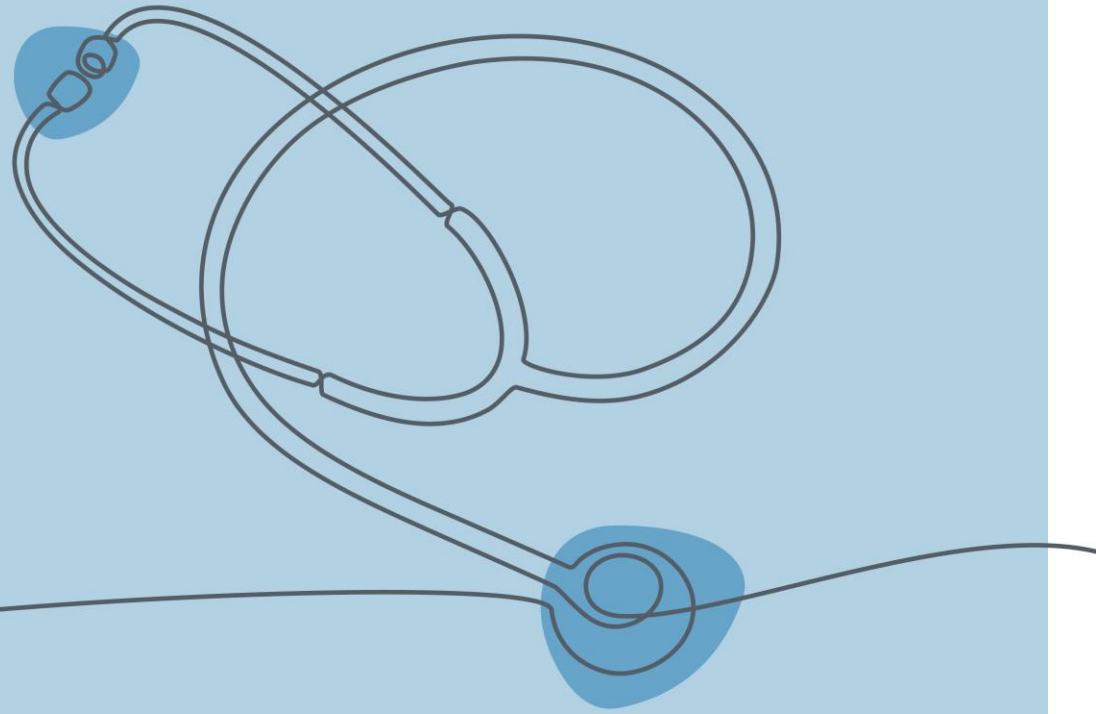
Championing Generalism Workshop

A collaborative, multi-disciplinary and multi-specialty learning opportunity for GPs covering conditions commonly managed in primary care



Case study: Dry eyes demystified

Dr Andrew Rowlands | Principal House Officer, Ophthalmology, RBWH

phn BRISBANE NORTH
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Metro North Health | Queensland Government

Dry Eye Disease (DED)

Pathophysiology & Treatment

- a practical approach for primary care

Dr Andrew Rowlands

Ophthalmology Principal House Officer

Royal Brisbane & Women's Hospital

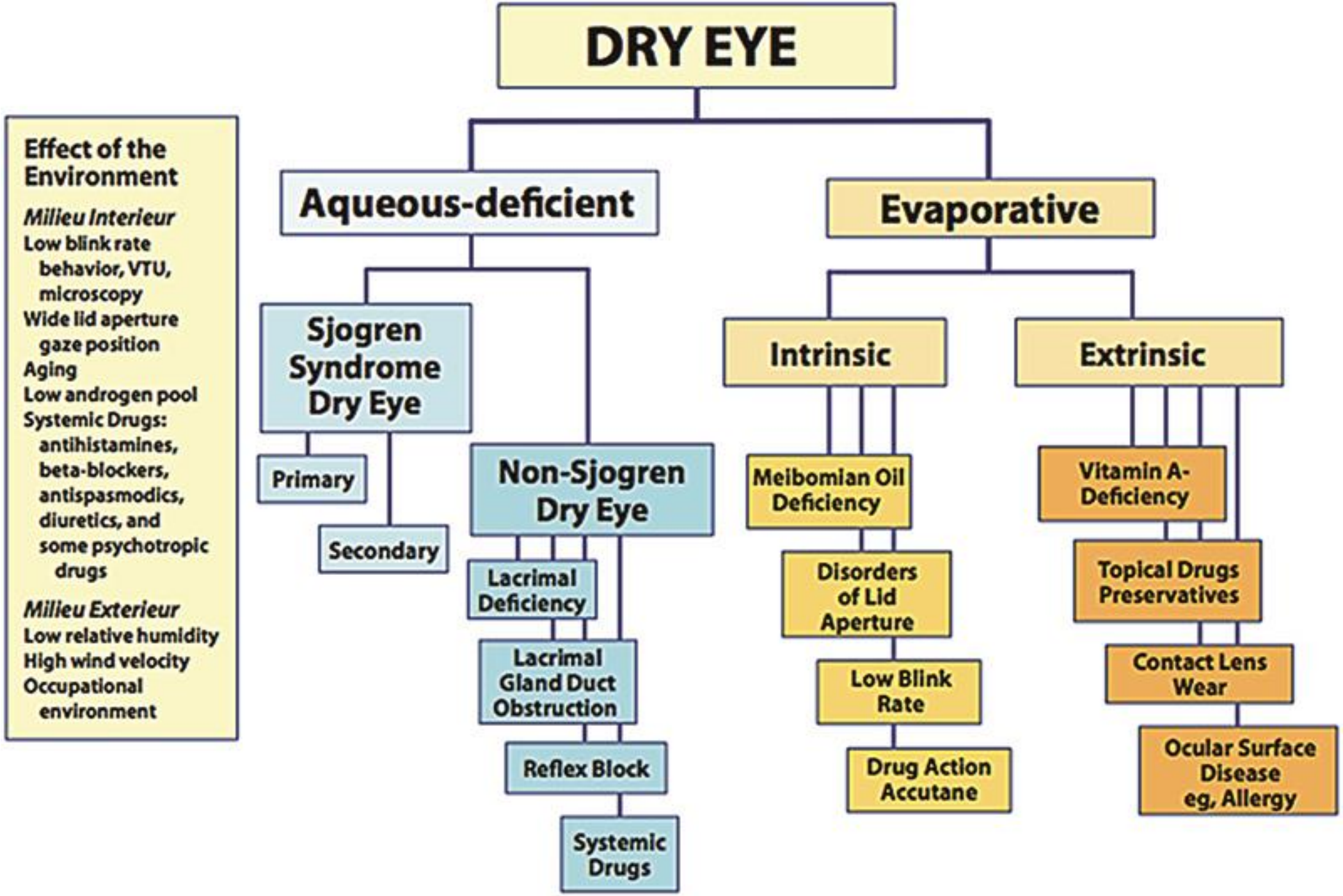
Learning objectives

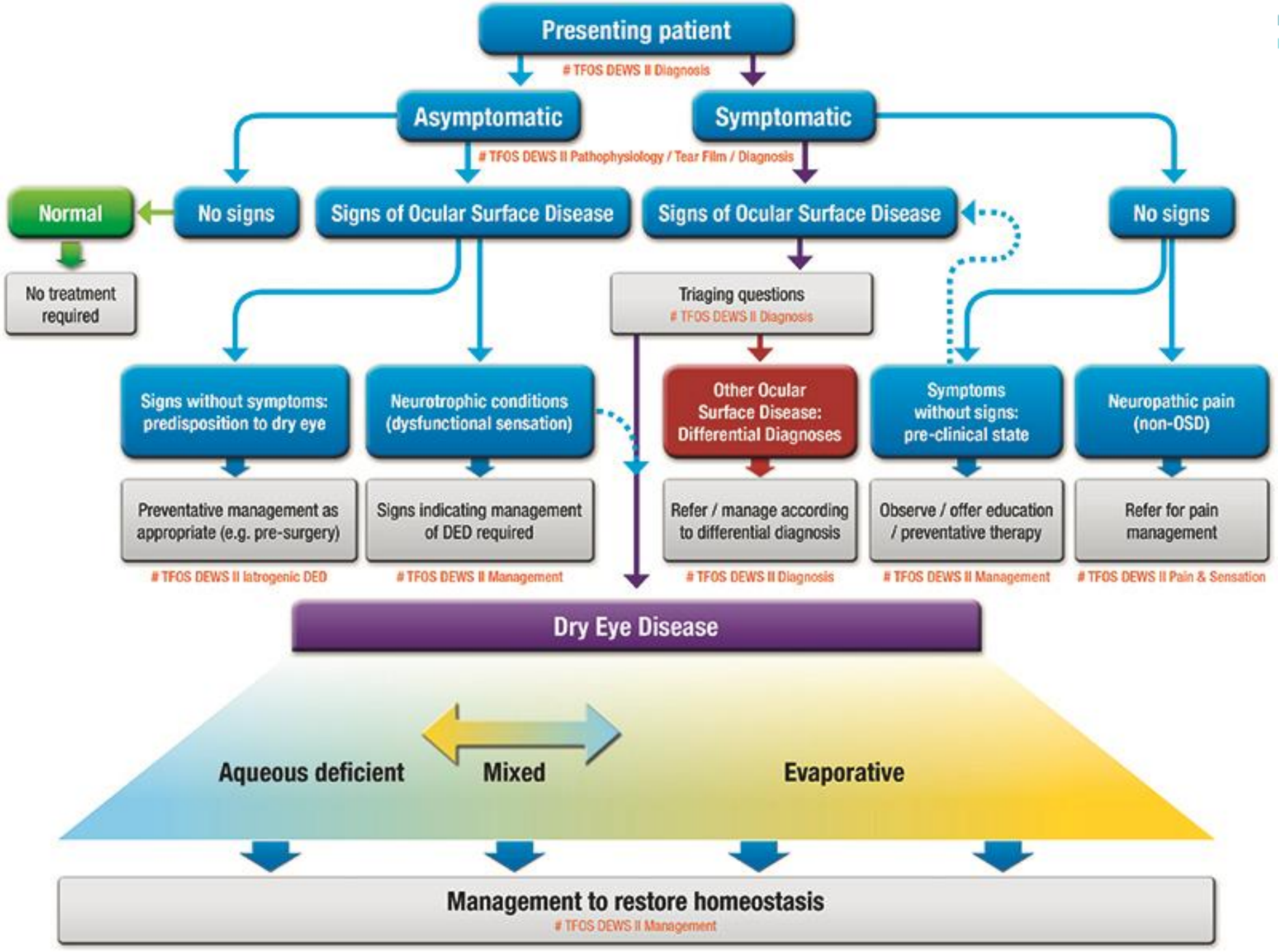
- Define DED using TFOS DEWS II
- Explain the vicious cycle: instability → hyperosmolarity → inflammation → damage
- Phenotype: evaporative (MGD) vs aqueous-deficient vs mixed
- Start evidence-based stepwise treatment
- Recognise Sjögren's and know when to escalate / refer

TFOS DEWS III (2025) definition

DED is a multifactorial disease of the ocular surface characterised by loss of tear film homeostasis precipitated by:

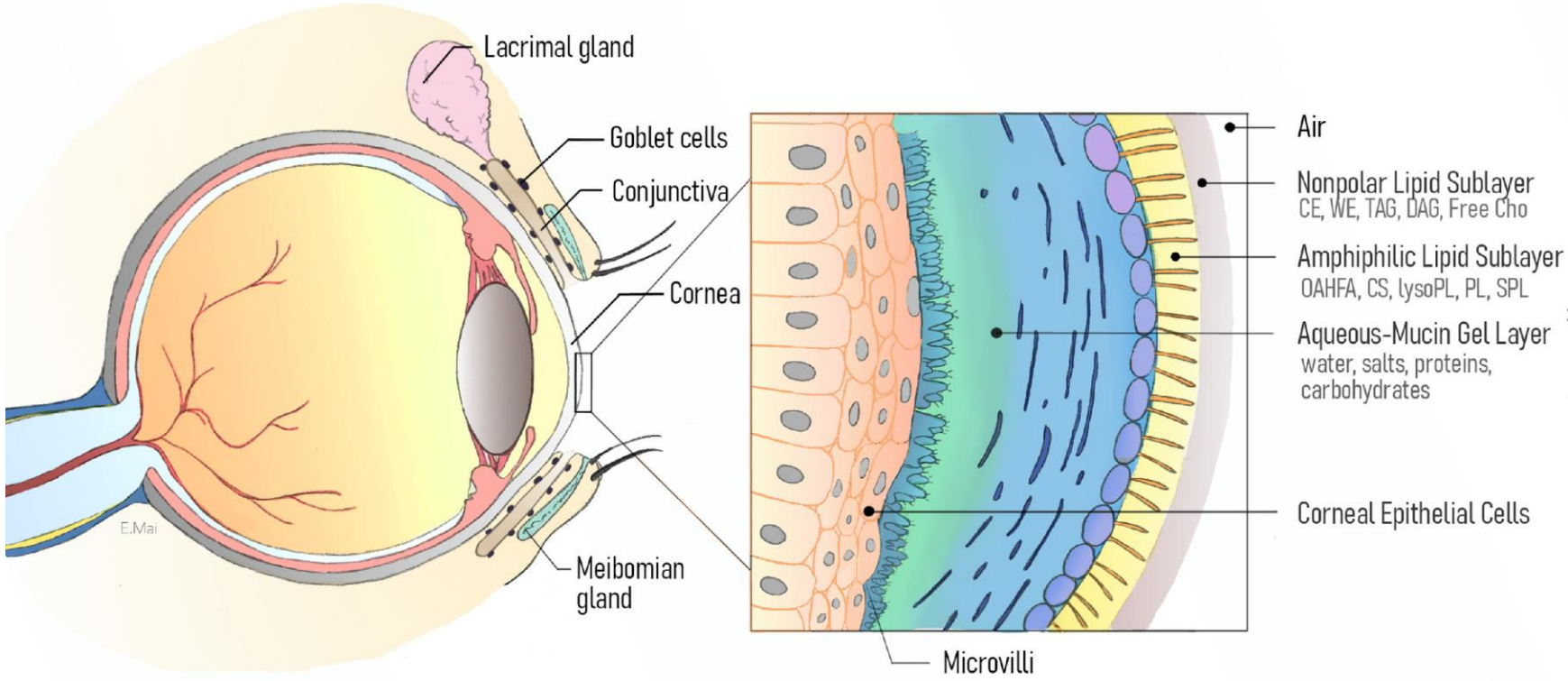
- Tear film instability and hyperosmolarity
- Ocular surface inflammation/damage
- Neurosensory abnormalities


DRY EYE
Aqueous-deficient
Evaporative
Sjogren Syndrome Dry Eye
Primary
Secondary
Non-Sjogren Dry Eye
Lacrimal Deficiency
Lacrimal Gland Duct Obstruction
Reflex Block
Systemic Drugs
Intrinsic
Meibomian Oil Deficiency
Disorders of Lid Aperture
Low Blink Rate
Drug Action Accutane
Extrinsic
Vitamin A-Deficiency
Topical Drugs Preservatives
Contact Lens Wear
Ocular Surface Disease eg, Allergy
Effect of the Environment
Milieu Interieur
Low blink rate behavior, VTU, microscopy
Wide lid aperture gaze position
Aging
Low androgen pool
Systemic Drugs: antihistamines, beta-blockers, antispasmodics, diuretics, and some psychotropic drugs
Milieu Exterieur
Low relative humidity
High wind velocity
Occupational environment


Presenting patient
TFOS DEWS II Diagnosis
Asymptomatic
Symptomatic
TFOS DEWS II Pathophysiology / Tear Film / Diagnosis
Normal
No signs
Signs of Ocular Surface Disease
Signs of Ocular Surface Disease
No signs
No treatment required
Triaging questions
TFOS DEWS II Diagnosis
Signs without symptoms: predisposition to dry eye
Neurotrophic conditions (dysfunctional sensation)
Other Ocular Surface Disease: Differential Diagnoses
Symptoms without signs: pre-clinical state
Neuropathic pain (non-OSD)
Preventative management as appropriate (e.g. pre-surgery)
Signs indicating management of DED required
Refer / manage according to differential diagnosis
Observe / offer education / preventative therapy
Refer for pain management
TFOS DEWS II Iatrogenic DED
TFOS DEWS II Management
TFOS DEWS II Diagnosis
TFOS DEWS II Management
TFOS DEWS II Pain & Sensation
Dry Eye Disease
Aqueous deficient
Mixed
Evaporative
Management to restore homeostasis
TFOS DEWS II Management

Tear film anatomy = what we're stabilising

- Tear film (functional layers)
- Lipid (meibomian glands)
  - Reduces evaporation
  - Stabilises surface
- Aqueous (lacrimal)
  - Volume
  - Antimicrobial proteins
- Mucin/glycocalyx
  - (goblet cells/epithelium)
  - Wettability
  - Adhesion
- DED is often mixed — treat the dominant driver(s).



The DED vicious cycle (TFOS concept)

Trigger(s)

→ tear film instability

→ hyperosmolarity

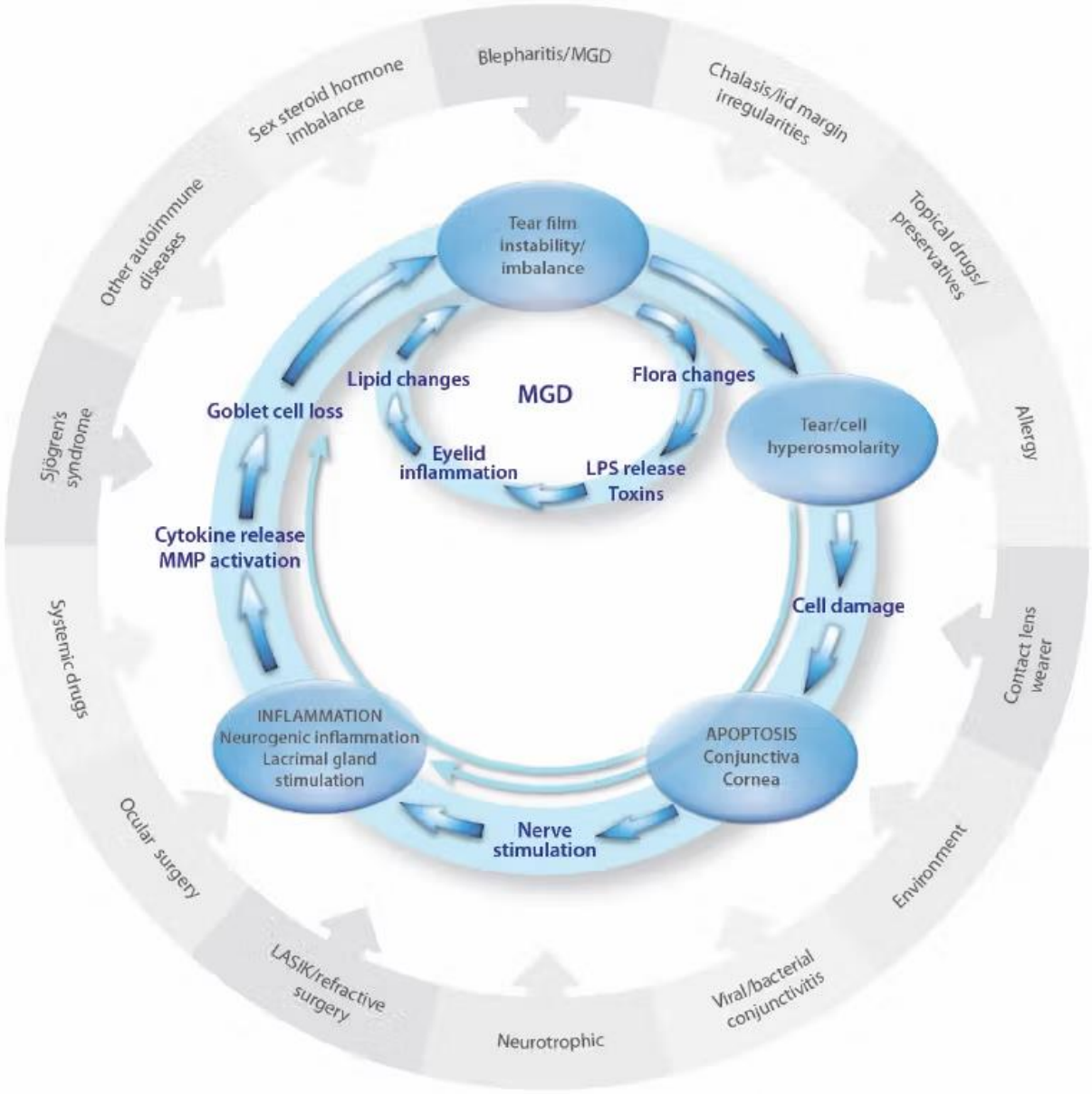
→ epithelial stress

→ inflammation

→ surface damage / goblet cell loss

→ worsening tear film instability

- Common triggers
  - MGD/blepharitis, screen use (↓ blink), low humidity
  - Medications, contact lenses, surgery
  - Autoimmune disease, exposure, CPAP leak



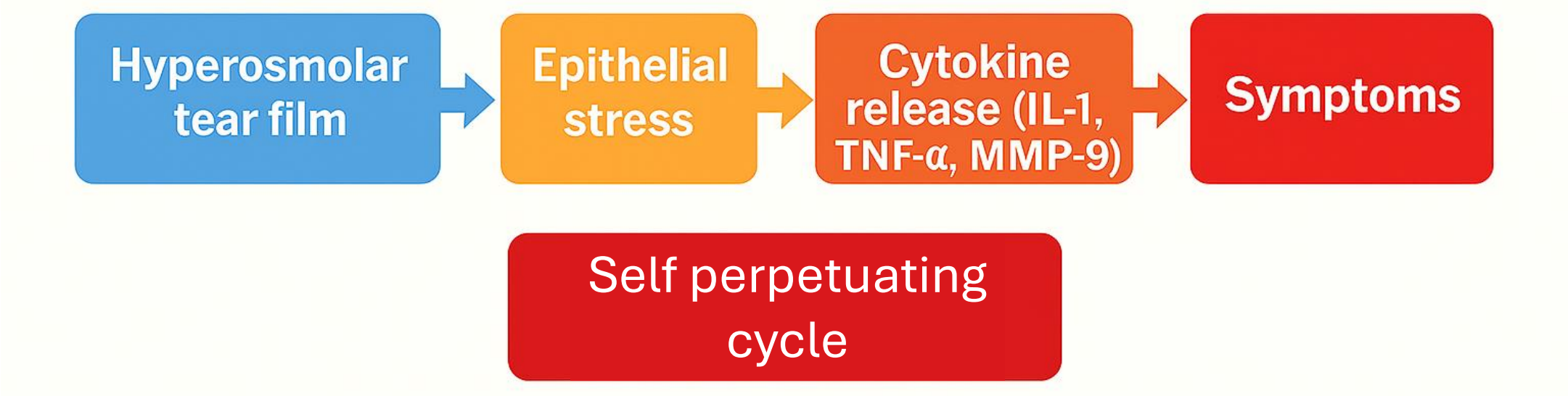
Hyperosmolarity → inflammation

Hyperosmolar stress drives:

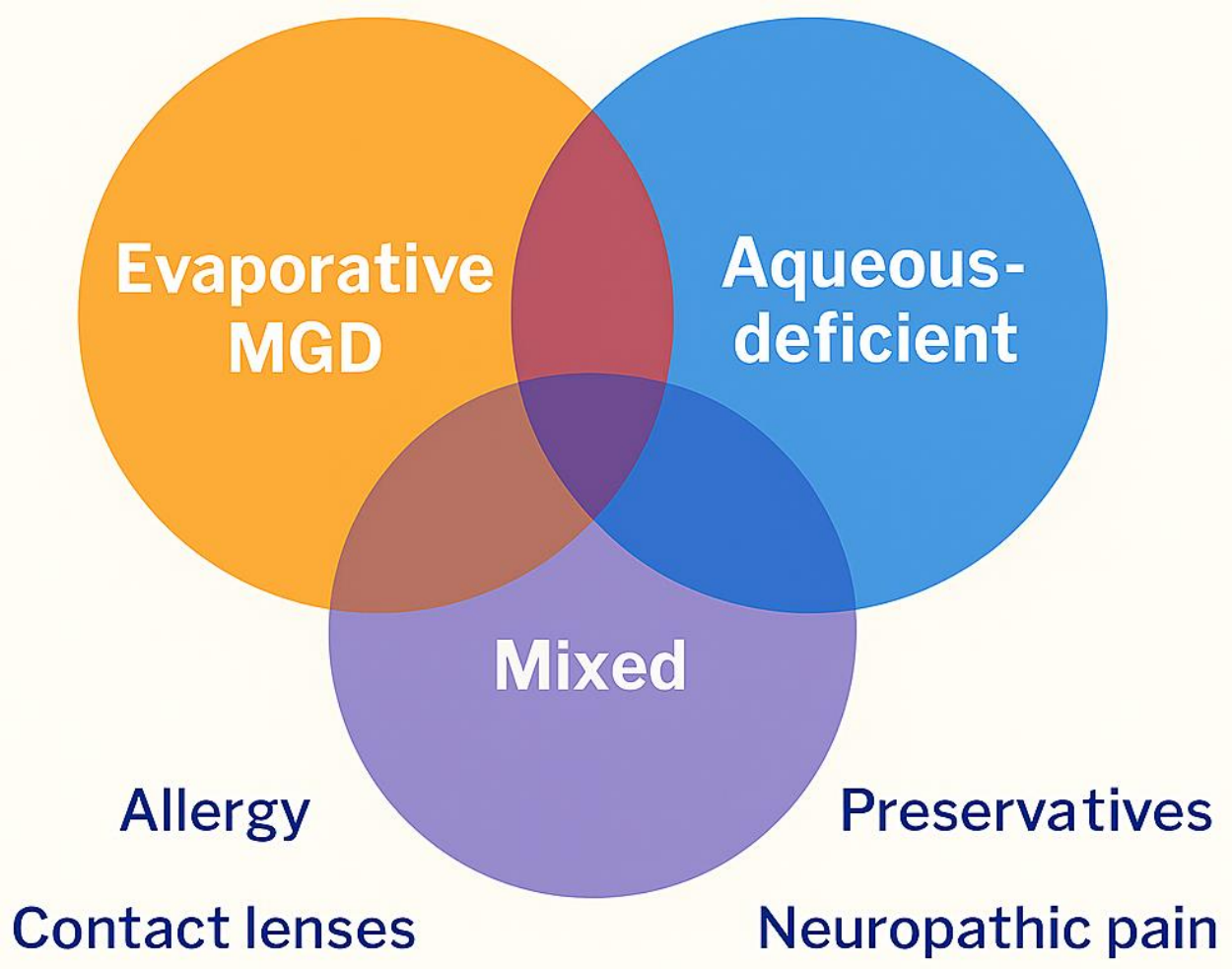
- Epithelial injury + barrier dysfunction
- Inflammatory mediators (e.g., IL-1, TNF-α), MMP-9
- Goblet cell loss / mucin deficiency
- Possible neurosensory dysfunction

Clinical correlates

- Punctate epithelial staining
- Reduced TBUT
- Burning, foreign body sensation, fluctuating vision



Phenotyping



DED phenotypes (often mixed):

- Evaporative (commonly MGD)
  - Rapid tear break-up; tear volume often near-normal
  - Lid margin disease; rosacea association
- Aqueous-deficient
  - Low tear volume / low tear meniscus
  - Consider Sjögren's/autoimmune or lacrimal dysfunction
- Modifiers
  - Allergy, exposure, contact lens, preservative toxicity, neuropathic pain

Risk factors

Table 3-4 Risk Factors for Dry Eye Disease

	Consistent [a]	Probable [b]	Inconclusive [c]
Nonmodifiable	Aging Female sex Asian race Meibomian gland dysfunction Connective tissue diseases Sjögren syndrome	Diabetes Rosacea Viral infection Thyroid disease Psychiatric conditions Pterygium	Hispanic ethnicity Menopause Acne Sarcoidosis
Modifiable	Androgen deficiency Computer use Contact lens wear Hormone replacement therapy Hematopoietic stem cell transplantation Environment: Pollution, low humidity, sick building syndrome Medications: Antihistamines, antidepressants, anxiolytics, isotretinoin	Low fatty acids intake Refractive surgery Allergic conjunctivitis Medications: Anticholinergic medications, β-blockers, diuretics	Smoking Alcohol Pregnancy Demodex infestation Botulinum toxin injection Medications: Multivitamins, oral contraceptives

History

- History:
  - Dryness/burning/grit; fluctuating vision; reflex tearing
  - Worse with screen time/reading/driving; aircon/fans; CPAP leak
- Systemic:
  - Rosacea, dermatitis, dry mouth, arthralgia, fatigue, thyroid disease
  - Known history of associated conditions
- Medication:
  - Antihistamines, SSRIs/SNRIs, anticholinergics, isotretinoin

Associated systemic conditions

Table 3-7 Systemic Diseases and Other Conditions Associated With Dry Eye

Autoimmune disorders
- Primary Sjögren syndrome
- Secondary Sjögren syndrome associated with:
  - Rheumatoid arthritis
  - Systemic lupus erythematosus
  - Progressive systemic sclerosis (scleroderma)
  - Polymyositis and dermatomyositis
  - Primary biliary cirrhosis
- Graft-vs-host disease
- Immune reactions after radiation to head and neck

Infiltrative processes
- Amyloidosis
- Hemochromatosis
- Lymphoma
- Sarcoidosis

Infectious processes
- HIV-diffuse infiltrative lymphadenopathy syndrome
- Trachoma

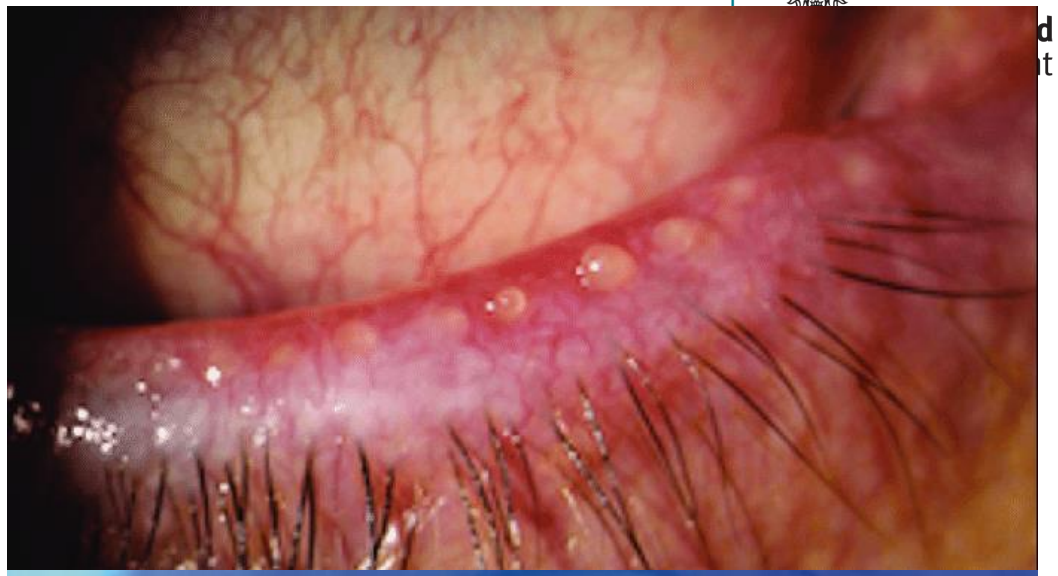
Neuropathic dysfunction
- Alzheimer disease
- Cranial neuropathies (Bell palsy, vasculitis)
- Multiple sclerosis
- Parkinson disease

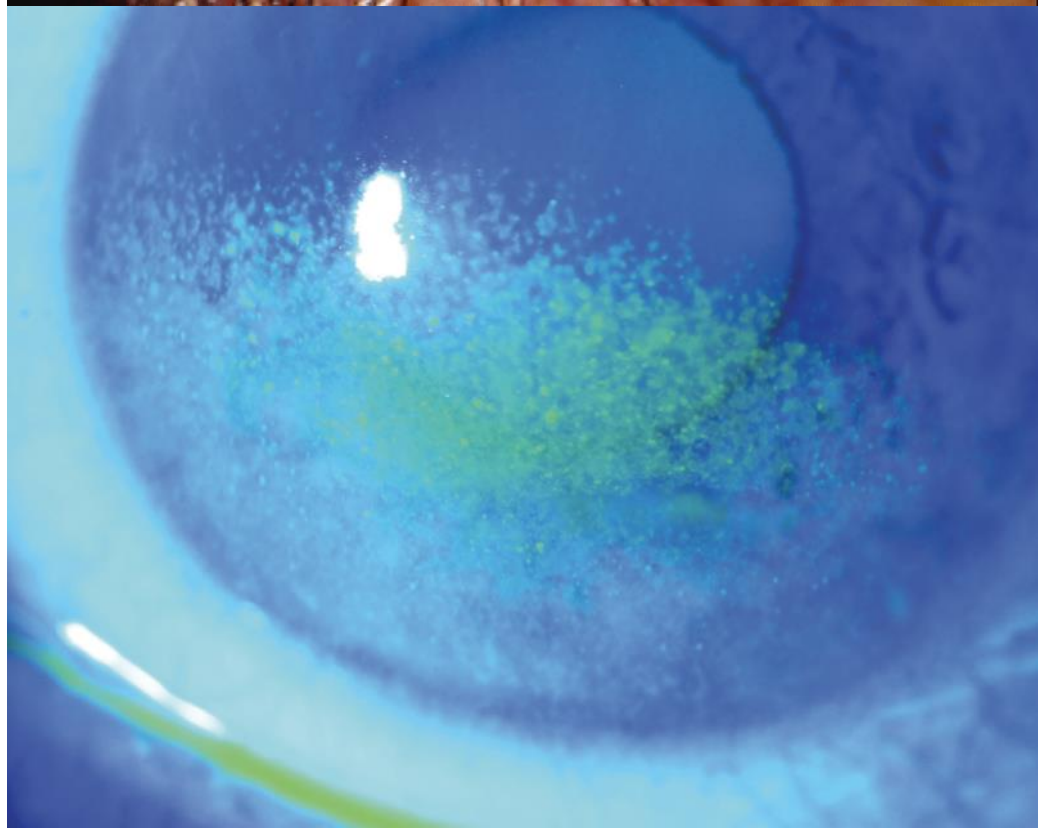
Endocrine dysfunction
- Androgen deficiency

Miscellaneous
- Adie syndrome
- Anhidrotic ectodermal dysplasia
- Congenital alacrima
- Familial dysautonomia (Riley-Day syndrome)
- Shy-Drager syndrome (idiopathic autonomic dysfunction with orthostatic hypotension and multiple system atrophy)

Examination

- Lids:
  - Blepharitis, meibomian gland disease
- Conjunctiva:
  - Redness
  - Keratinisation
- Tear film:
  - Low tear meniscus
  - Particles/debris in tear film
- Cornea:
  - Punctate epithelial erosions
  - Filaments, mucous plaques





Dry Eye Severity Grading

Table 3-5 Dry Eye Severity Grading Scheme

Signs and Symptoms	Dry Eye Severity Level 1	2	3	4[a]
Discomfort, severity, and frequency	Mild and/or episodic; occurs under environmental stress	Moderate episodic or chronic, stress or no stress	Severe frequent or constant without stress	Severe and/or disabling and constant
Visual symptoms	None or episodic mild fatigue	Annoying and/or activity-limiting, episodic	Annoying, chronic and/or constant, limiting activity	Constant and/or possibly disabling
Conjunctival injection	None to mild	None to mild	+/–	+/++
Conjunctival staining	None to mild	Variable	Moderate to marked	Marked
Corneal staining (severity/location)	None to mild	Variable	Marked central	Severe punctate erosions
Corneal/tear signs	None to mild	Mild debris, ↓ tear meniscus	Filamentary keratitis, mucus clumping, ↑ tear debris	Filamentary keratitis, mucus clumping, ↑ tear debris, ulceration
Eyelid/meibomian glands	MGD variably present	MGD variably present	MGD frequently present	Trichiasis, keratinization, symblepharon
TBUT (seconds)	Variable	≤10	≤5	Immediate
Schirmer score (mm wetting after 5 min)	Variable	≤10	≤5	≤2

MGD = meibomian gland dysfunction; TBUT = fluorescein tear breakup time; ↓ = reduced; ↑ = increased.
[a] Must have signs and symptoms.

Investigations

- Tear film break up time
- Schirmer test
- Ocular surface staining – fluorescein, rose Bengal, lissamine green

- Fluorescein disappearance test
- Tear film osmolarity
- Tear constituent
- Impression cytology

Treatment principles + safety net

- Treat driver(s): evaporation, inflammation, aqueous deficiency, exposure
- Reduce triggers + improve adherence (technique matters)
- Prefer preservative-free lubricants if frequent use
- Escalate if staining/significant symptoms persist

- Red flags:
  - Marked pain, photophobia, reduced vision
  - Contact lens wearer with pain/redness
  - Focal infiltrate/ulcer concern

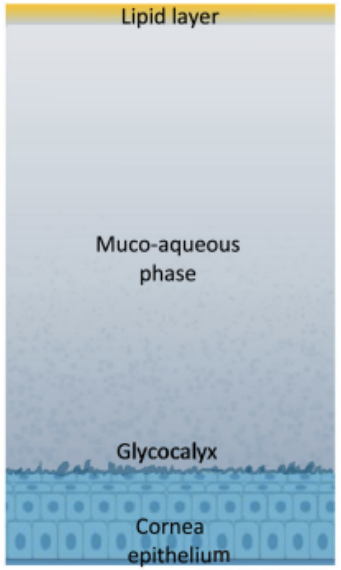
TFOS DEWS III Management and Therapy Algorithms

Metro North Health | Queensland Government

ALGORITHM #1

ETIOLOGIC DRIVER TESTS
Lipid
Tear film lipid layer thickness / interferometry
Meibomian gland expressibility
Meibum quality
Aqueous
Tear meniscus height
Meniscometry / Schirmer[†] / phenol red thread test[*]
Mucin / glycocalyx
Lissamine green / rose bengal staining
Conjunctival impression cytology

TEAR FILM DEFICIENCIES



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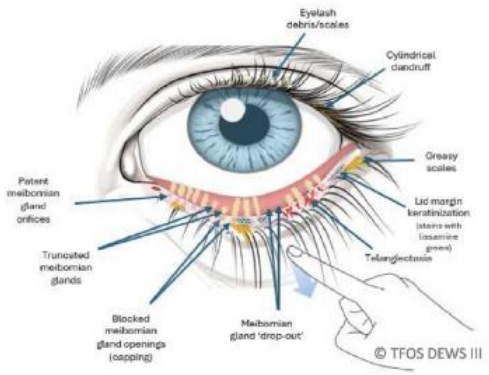
EVIDENCE-BASED INTERVENTIONS
Lipid
Tear supplementation / stabilization (lipomimetics)
Tear conservation devices (moisture-retaining spectacles)
Pharmacological tear stimulation / restoration
Device tear stimulation / restoration
Blink therapies
Topical lid hygiene
Aqueous
Oral nutrition (Omega 3)
Tear supplementation / stabilization
Tear conservation devices
Pharmacological / device tear stimulation / restoration
Topical anti-inflammatories
Ocular surface regenerators
Surgical options
Mucin / glycocalyx
Tear supplementation / stabilization (HP guar)
Topical anti-inflammatories
Pharmacological tear stimulation
Device tear stimulation (neurostimulation)

ALGORITHM #2

ETIOLOGIC DRIVER TESTS
Blinking / lid closure
Incomplete blinking
Anterior blepharitis
Eyelid biomicroscopy - greasy (seborrheic) or flaky (staphylococcal)
Eyelash base - cylindrical dandruff - *Demodex*
Meibomian gland dysfunction
Pouting, missing, displaced gland orifices
Meibomian gland expressibility
Meibography – truncated, dilated glands, 'drop out'
Telangiectasia
Lid margin keratinization

EYELID ANOMALIES



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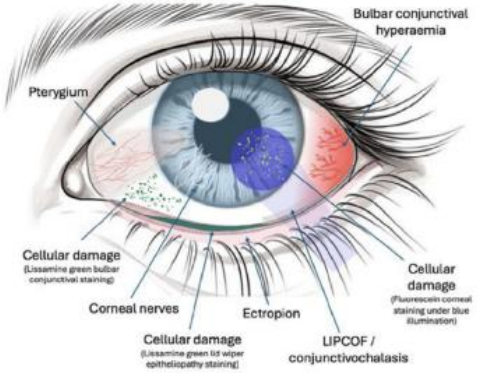
EVIDENCE-BASED INTERVENTIONS
Blinking / lid closure
Blink exercises
Anterior blepharitis
Topical lid hygiene
Oral antibiotics
Meibomian gland dysfunction
Oral nutrition (vitamin D3)
Tear supplementation / stabilization (lipid-based, androgen)
Pharmacological tear stimulation / restoration (topical azithromycin, selenium sulfide)
Device tear stimulation / restoration (internal and external lid heating; IPL; LLLT; QMR; radio-frequency
Lid margin debridement for significant keratinization
Oral antibiotics

ALGORITHM #3

ETIOLOGIC DRIVER TESTS
Anatomical misalignment
Biomicroscopy e.g. pterygium, LIPCOF / conjunctivochalasis, ectropion / entropion, lagophthalmos
Neural dysfunction
Corneal sensation
In vivo confocal microscopy
Cellular damage / disruption
Cornea (fluorescein)
Bulbar Conjunctiva (lissamine green)
Lid wiper epitheliopathy (lissamine green)
Inflammation / oxidative stress
Bulbar conjunctival hyperemia
Inflammatory markers

OCULAR SURFACE ABNORMALITIES



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EVIDENCE-BASED INTERVENTIONS
Anatomical misalignment
Surgical options
Neural dysfunction
Tear supplementation / stabilization
Surgical options (punctal occlusion)
Cellular damage / disruption
Oral nutrition (vitamin D3)
Tear supplementation / stabilization
Pharmacological tear stimulation / restoration
Device tear stimulation / restoration
Topical lid hygiene
Topical anti-inflammatories
Ocular surface regenerators
Surgical options (punctal occlusion)
Inflammation / oxidative stress
Oral nutrition (omega 3 / vitamin D3)
Tear supplementation / stabilization
Pharmacological tear stimulation / restoration
Device tear stimulation / restoration (IPL)
Topical lid margin hygiene / debridement
Topical anti-inflammatories
Ocular surface regenerators (amniotic membrane)
Surgical options (punctal occlusion)

Education + environment + lubricants

- Blink training; screen breaks; increase ambient humidity
- Avoid direct airflow; check CPAP mask leak
- Review contributing medications where feasible
- Lubricants
  - Start preservative-free drops; increase frequency as needed
  - Gel/ointment at night if nocturnal symptoms

MGD foundation (heat–massage–clean)

- MGD care (core for evaporative DED)
  - Heat + massage: consistent technique > intensity
  - Lid hygiene: manage blepharitis

- Practical regimen
  - Heat 5–10 min → gentle lid massage → lid margin cleanse
  - 1-3 times a day for 2–4 weeks, then maintenance

Evaporative/MGD escalation

- At-home:
  - Lipid-containing lubricants / liposomal spray
  - Treat rosacea/dermatitis triggers
- Prescription (selected patients):
  - Oral doxycycline (anti-inflammatory effect) or alternatives where appropriate
    - Avoid in pregnancy, children; counsel photosensitivity/oesophagitis
- In-office options:
  - Manual gland expression
  - IPL (often helpful with rosacea/MGD)
  - Thermal pulsation

Blepharitis handout for patients

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- Patients
- Eye Conditions
- What is an Ophthalmologist?
- The Future of Ophthalmology
- Useful Links
- Making a Complaint

Home > Patients > Eye Conditions > **Blepharitis**

Blepharitis

Blepharitis is inflammation of the margins of the eyelids. Blepharitis can occur in children and adults of any age.

- a feeling of "something in the eye"
- excessive or frothy tears
- itchiness
- excessive blinking
- photophobia (sensitivity to light)
- crusty or sticky eyelashes, particularly in the morning.

- Your ophthalmologist will ask you about your symptoms and carefully examine your eyes.
- The examination may include a vision test and an assessment with a special microscope called a slit lamp.
- If the inflammation looks unusual or does not respond to treatment, a laboratory "culture" of the eyelid margin may be needed to identify any bacteria.
- In rare cases, the ophthalmologist may advise that a biopsy be taken. A tiny piece of the eyelid margin is removed and examined under a microscope.

The aim of treatment is firstly to get rid of the infection. Your ophthalmologist may prescribe antibiotic ointment. Oral antibiotics can be useful in severe cases. Secondly, any underlying condition (such as dry eye syndrome) needs to be treated.

Treatment may take weeks or months before the condition is controlled. Blepharitis is often an ongoing condition. Symptoms may recur. Regular long-term treatment usually helps to control the symptoms.

Further information

- Download a brief guide to Blepharitis for patients.
- More information is available from your ophthalmologist.

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BLEPHARITIS
ONLINE PATIENT ADVISORY

This leaflet is intended to provide you with general information. It is not a substitute for advice from your ophthalmologist. You are encouraged to discuss the benefits and risks of treatment with your ophthalmologist. This is an abridged version of the RANZCO patient education pamphlet: Blepharitis: a guide for patients. The complete pamphlet with treatment details is available from your ophthalmologist.

Blepharitis is inflammation of the margins of the eyelids. Both eyes are usually affected. The condition appears in two forms: anterior (or front) and posterior (or back) of the eyelid margins. The most common cause is bacterial infection in the glands of the eyelids and eyelash follicles. Blepharitis can occur in children and adults of any age. Signs and symptoms include:

- a feeling of "something in the eye"
- excessive or frothy tears
- itchiness
- excessive blinking
- photophobia (sensitivity to light)
- crusty or sticky eyelashes, particularly in the morning.

Diagnosis

- Your ophthalmologist will ask you about your symptoms and carefully examine your eyes.
- The examination may include a vision test and an assessment with a special microscope called a slit lamp.
- If the inflammation looks unusual or does not respond to treatment, a laboratory "culture" of the eyelid margin may be needed to identify any bacteria.
- In rare cases, the ophthalmologist may advise that a biopsy be taken. A tiny piece of the eyelid margin is removed and examined under a microscope.

Your medical history

Your ophthalmologist needs to know your medical history to plan the best treatment. Tell your ophthalmologist about any health problems you have. Some may interfere with treatment.

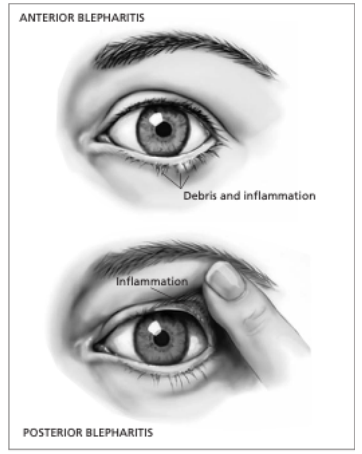
Treatment

The aim of treatment is firstly to get rid of the infection. Your ophthalmologist may prescribe antibiotic ointment. Oral antibiotics can be useful in severe cases. Secondly, any underlying condition (such as dry eye syndrome) needs to be treated.

Treatment may take weeks or months before the condition is controlled. Blepharitis is often an ongoing condition. Symptoms may recur. Regular long-term treatment usually helps to control the symptoms.

Eye cleaning routine

Long-term care of the eyelids is the main treatment for blepharitis. Eyelid care may be required for life.



The cleaning routine recommended by your ophthalmologist should be carried out once or twice daily until the inflammation is controlled. It can then be done twice weekly. The cleaning routine generally includes:

- massage of the eyelid toward the eyelid margin
- cleaning of the eyelid using a tissue or cotton bud and warm water (or special eyelid cleaner)
- application of a warm compress to the eyelid margin for several minutes to loosen the crusts.

Avoid eye irritants

Eye shadow, eyeliner and other cosmetics around the eye should be discontinued during treatment. Contact lenses should NOT be worn until the condition is under control.

A decision to have treatment

As you make the decision whether to have treatment, make sure that you understand the risks, benefits and limitations of treatment. If you do not have treatment, your symptoms and the condition may continue to worsen. If you have any questions, ask your ophthalmologist.

Possible risks and complications

Treatment of blepharitis is safe but does have risks of complications for some patients. Diagnosis and treatments are more fully outlined in the complete RANZCO patient education pamphlet and should be discussed with your ophthalmologist.

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Search: Blepharitis RANZCO
https://ranzco.edu/wp-content/uploads/2019/06/OPA-RANZCO-Blepharitis-ed2.pdf

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Blepharitis

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Key facts

- Blepharitis is when the edges of your eyelids become inflamed.
- Blepharitis can cause dry, itchy, burning eyes, and swollen, red and crusty eyelids.
- Blepharitis can be caused by different problems, such as infections, allergies and skin conditions.
- Your doctor can diagnose blepharitis by asking about your symptoms and checking your eyes.
- To treat blepharitis, keep your eyelids clean and use medicines prescribed by your doctor.

On this page

What is blepharitis?

Blepharitis is when the edges of your eyelids are inflamed. This means they become red, swollen and irritated. It often affects both eyes and can affect different parts of the eyelids.

Blepharitis is often a long-term condition that can recur. Regular treatment usually helps manage symptoms.

Resources and support

Visit The Royal Australian and New Zealand College of Ophthalmologists for more information on eye conditions such as blepharitis.

Read the Royal Victorian Eye and Ear Hospital information page on blepharitis.

Learn more about self-care by visiting the Sydney Eye Hospital blepharitis fact sheet.

You can also call the healthdirect helpline on 1800 022 222 (known as NURSE-ON-CALL in Victoria). A registered nurse is available 24 hours a day, 7 days a week.

Sources:

The Royal Australia and New Zealand College of Ophthalmologists *(Blepharitis)*, MSD Manual *(Blepharitis)*, MSD Manual *(Blepharitis)*, The Royal Australian College of General Practitioners, AJGP *(When the eyes are dry - An algorithm approach and management in general practice)*, SESLHD - Sydney Eye Hospital *(Blepharitis)*, Clinical Optometry (Auckland) (Dove Medical Press) *(Diagnosis and management of blepharitis: an optometrist\u2019s perspective)*

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Last reviewed: July 2024

Need more information?

These trusted information partners have more on this topic.

General search results | Results for medical professionals

Top results

Blepharitis | Children's Health Queensland

Blepharitis (inflammation of the eyelids) is a lifelong problem, but you can manage it with good eye hygiene.

→ Read more on Queensland Health website

Chalazion | Children's Health Queensland

A chalazion is a lump that forms when oil glands along your child's eyelid become blocked.

→ Read more on Queensland Health website

Kids Health Info : Ptosis (drooping eyelid)

→ Read more on Royal Children's Hospital website

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Eye Conditions

You can read brief information about common eye conditions in this section. This is general information for patients and the public and is not a substitute for advice from your ophthalmologist. If you have specific questions or concerns about various eye conditions, please visit your local GP.

EYE CONDITIONS	DESCRIPTION	FURTHER INFORMATION*
Blepharitis	Inflammation of the margins of the eyelids. It can occur in children and adults of any age.	What is Blepharitis?

Video: What Can I Do About Blepharitis?

Blepharitis Treatment

Unfortunately, there is not a cure for blepharitis, but there are a number of things you can do to help control the symptoms. Treatments include:

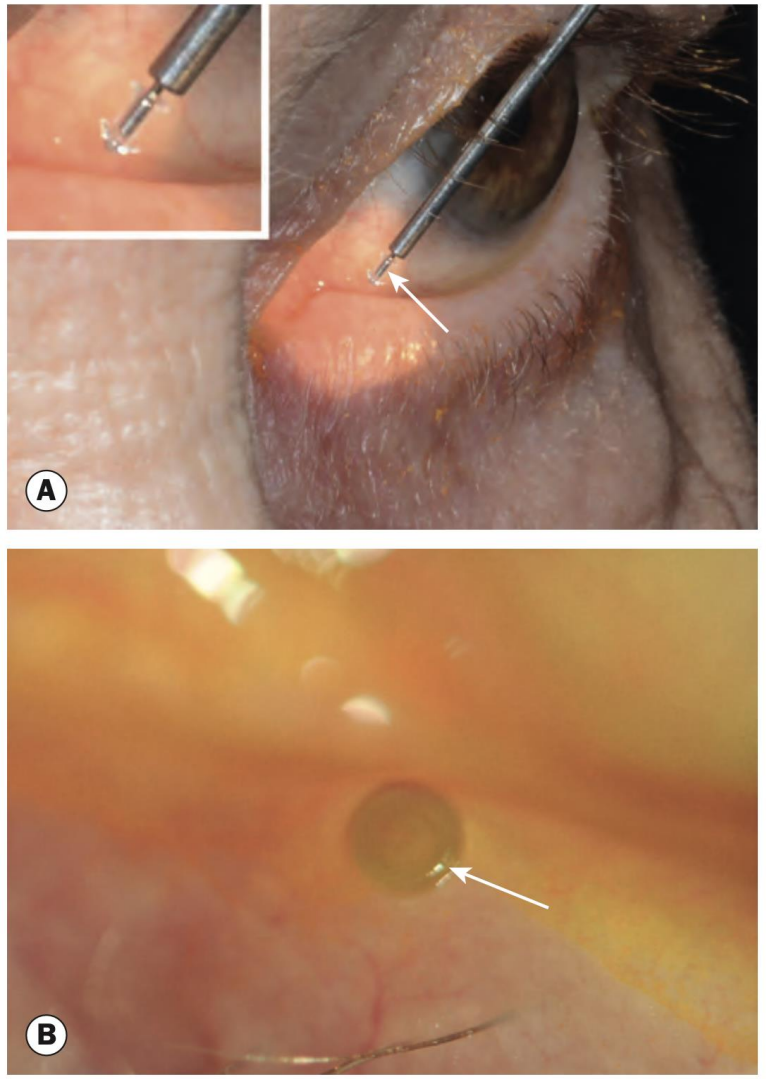
Anti-inflammatory therapy (break the cycle)

- Treat inflammation:
  - Short course topical steroid (monitor IOP; ensure not infective e.g. HSV)
- Maintenance:
  - Topical ciclosporin (weeks to benefit; improves long-term control)
- Consider:
  - Allergy overlap and preservative toxicity

Tear conservation + serum tears + exposure

Moderate/severe or refractory:

- Tear conservation:
  - Punctal plugs (usually after inflammation controlled)
- Biologic tears:
  - Autologous serum tears (severe ocular surface disease)
- Address exposure:
  - Nocturnal lagophthalmos: ointment, taping; assess lids
  - Consider thyroid eye disease, facial nerve palsy



Specialist referral

- Persistent epithelial defect / filamentary keratitis
- Significant corneal staining or vision impact despite stepwise therapy
- Suspected Sjögren's/autoimmune disease
- Contact lens wearer with pain/redness, concern of keratitis

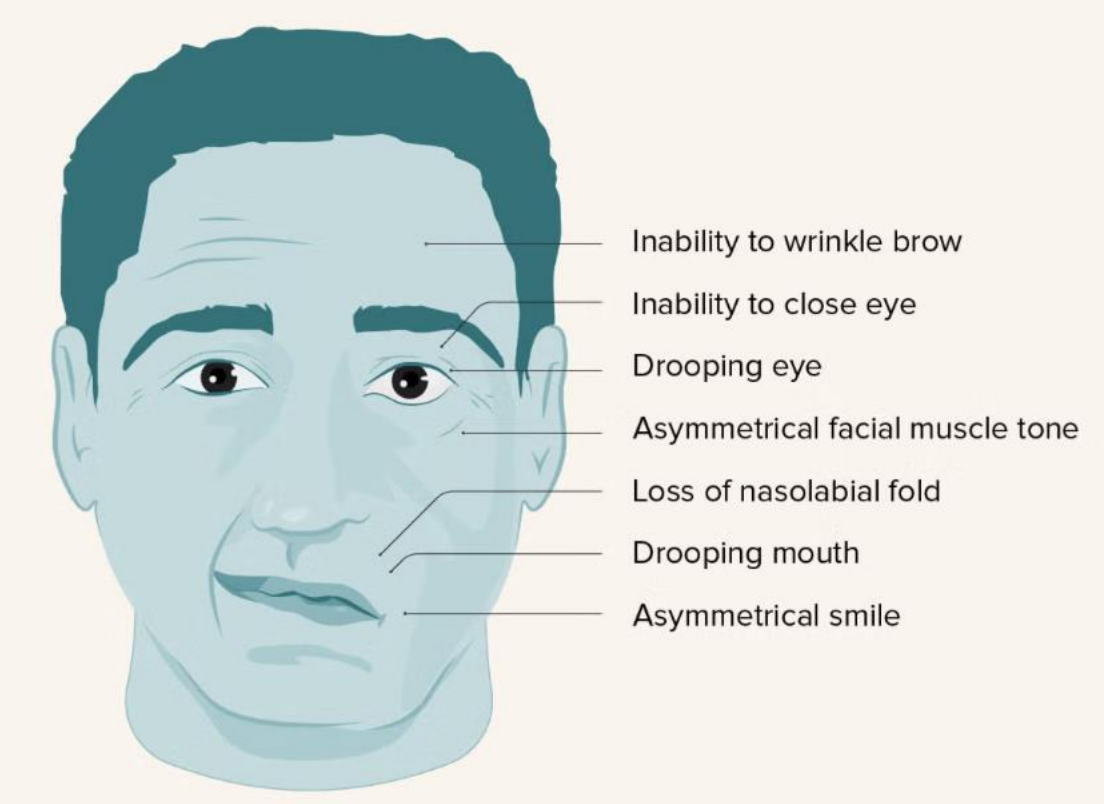
Sjögren's: when to suspect + GP workup + referral

Sjögren's syndrome (aqueous-deficient DED):

- When to suspect:
  - Marked dryness + dry mouth, dental caries
  - Fatigue, arthralgia, parotid swelling
  - Very low tear meniscus / severe staining
  - Other autoimmune disease history
- Systemic workup:
  - ENA (anti-Ro/SSA, anti-La/SSB), ANA, RF
  - ESR/CRP, FBC, U&E/LFTs (baseline)
  - Consider coeliac/thyroid screening if clinically indicated
- Referral:
  - Ophthalmology (ocular surface severity)
  - Rheumatology if systemic features / positive serology / high suspicion

Important conditions affecting the ocular surface – Facial nerve palsy

- including Bell's palsy/Ramsay Hunt (V. Zoster)



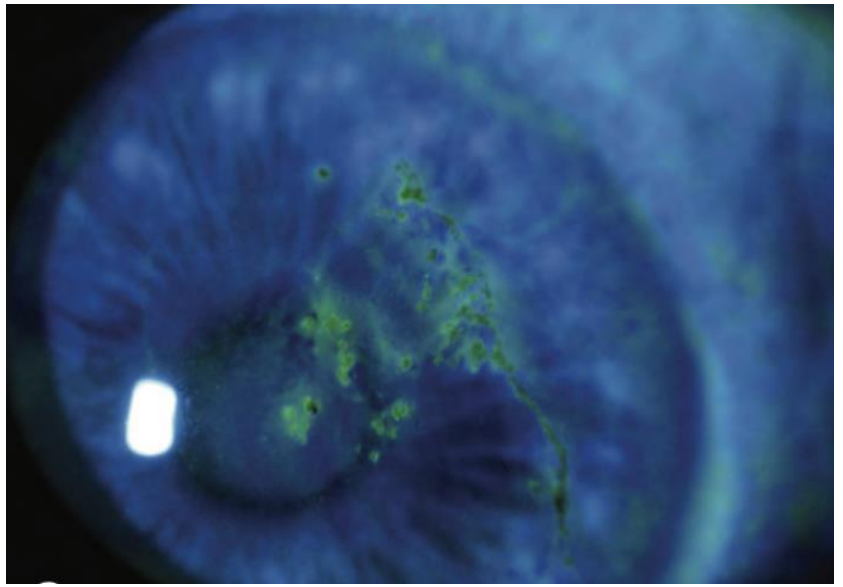
- Visual acuity
- Corneal sensation
- Assess lagophthalmos/blink/Bell's reflex
- Staining with fluorescein – ? evidence of exposure keratopathy

Management:

- Q1hrly preservative free tear lubricants + ointment nocte or QID ointment + tear lubricants
- Lid taping overnight

- Optometry referral → Ophthalmology referral if concerns → potential procedural/surgical Mx

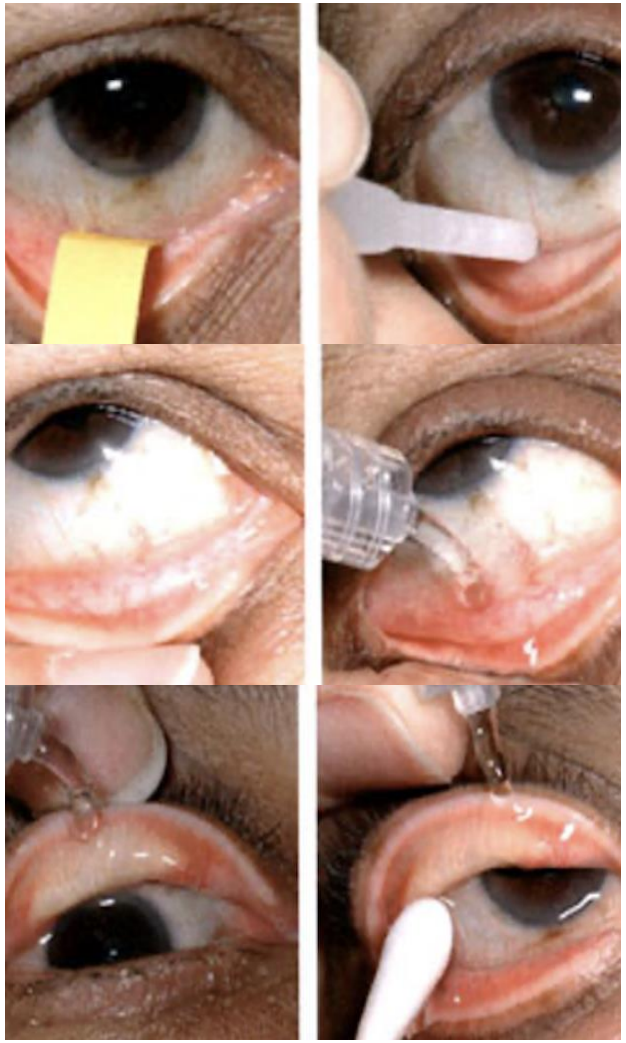
Important conditions affecting the ocular surface – Herpes Zoster Ophthalmicus



- Visual acuity, Corneal sensation
- Staining with NaFl – ? Pseudodendrites

- Valaciclovir 1g TDS PO
- Occ. chloramphenicol QID + preservative free carmellose sodium 5mg/ml drops Q1hrly
- Optometrist/Ophthalmology review for anterior and posterior segment examination within 24hrs

Important conditions affecting the ocular surface – Chemical injury



1. Check pH of both eyes (urine dipstick)
2. Topical anaesthetic – repeat q10min while irrigating
3. IRRIGATE, IRRIGATE, IRRIGATE!
   - 0.9% normal saline or Hartmann's by staff

     (NOT patient self irrigating)
   - EVERT LIDS & SWEEP FORNICES
   - Simple continuous irrigation with IV stand & giving set - does not require Morgan lenses
   - Never use acids/bases to neutralise
4. Wait 5-10 min after irrigation to retest PH
   - pH should be read immediately
5. Rinse and repeat until neutralised
6. Check 30min post to confirm stable
7. Refer to ED

Summary

- DED is multifactorial, though the majority is evaporative
- GP management:
  - Environmental/nutrition
  - Treat MGD – warm compresses
  - Preservative free tear lubricants
  - +/- PO Doxycycline
  - + Optometry follow-up
- Sjogren's: Ophthalmology/Rheumatology referral
- Facial nerve palsy: assess for exposure keratopathy → lubricants/lid taping → Optometry/Ophthalmology follow-up
- HZO: timely referral to Optometry/Ophthalmology, particularly to exclude posterior segment involvement (dilated fundus exam)
- Chemical injury: time critical → saline flush +++ until pH normalises

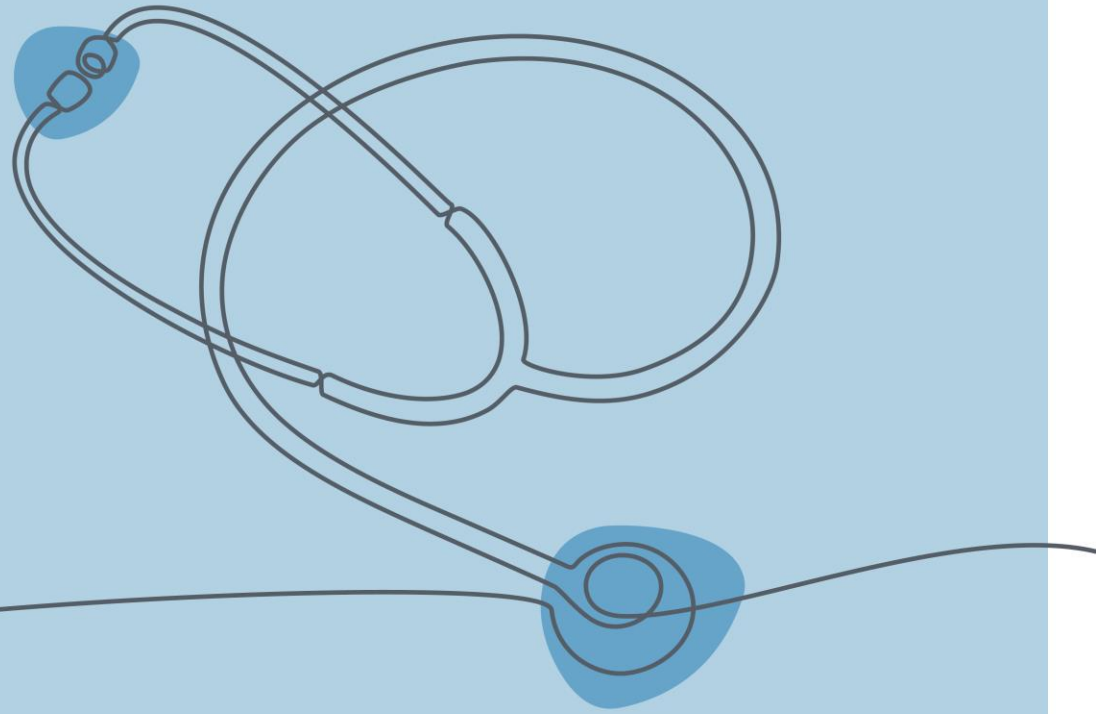
References

- DEWS III 2025
- TFOS DEWS II Definition and Classification Report. Ocular Surface. 2017.
- TFOS DEWS II Diagnostic Methodology Report. Ocular Surface. 2017.
- TFOS DEWS II Management and Therapy Report. Ocular Surface. 2017.
- AAO Preferred Practice Pattern: Dry Eye Syndrome (most recent update).
- Kanski Clinical Ophthalmology
- RANZCO

General Practice Liaison Officer Program presents

Championing Generalism Workshop

A collaborative, multi-disciplinary and multi-specialty learning opportunity for GPs covering conditions commonly managed in primary care



Case study: Virtual Ward

Dr Allison Moore | GP with Special Interest, Metro North Virtual Ward

phn BRISBANE NORTH
An Australian Government Initiative

Queensland Government
Metro North Health

Metro North Hospital & Health Service

Virtual Ward Case Series

Metro North Health's vision
Creating healthier futures together—where innovation and research meets compassionate care and community voices shape our services.

Metro North Health | Queensland Government

Metro North Health acknowledges the Traditional Custodians of the land upon which we live, work and walk, and pay our respects to Elders past and present.

Metro North Health

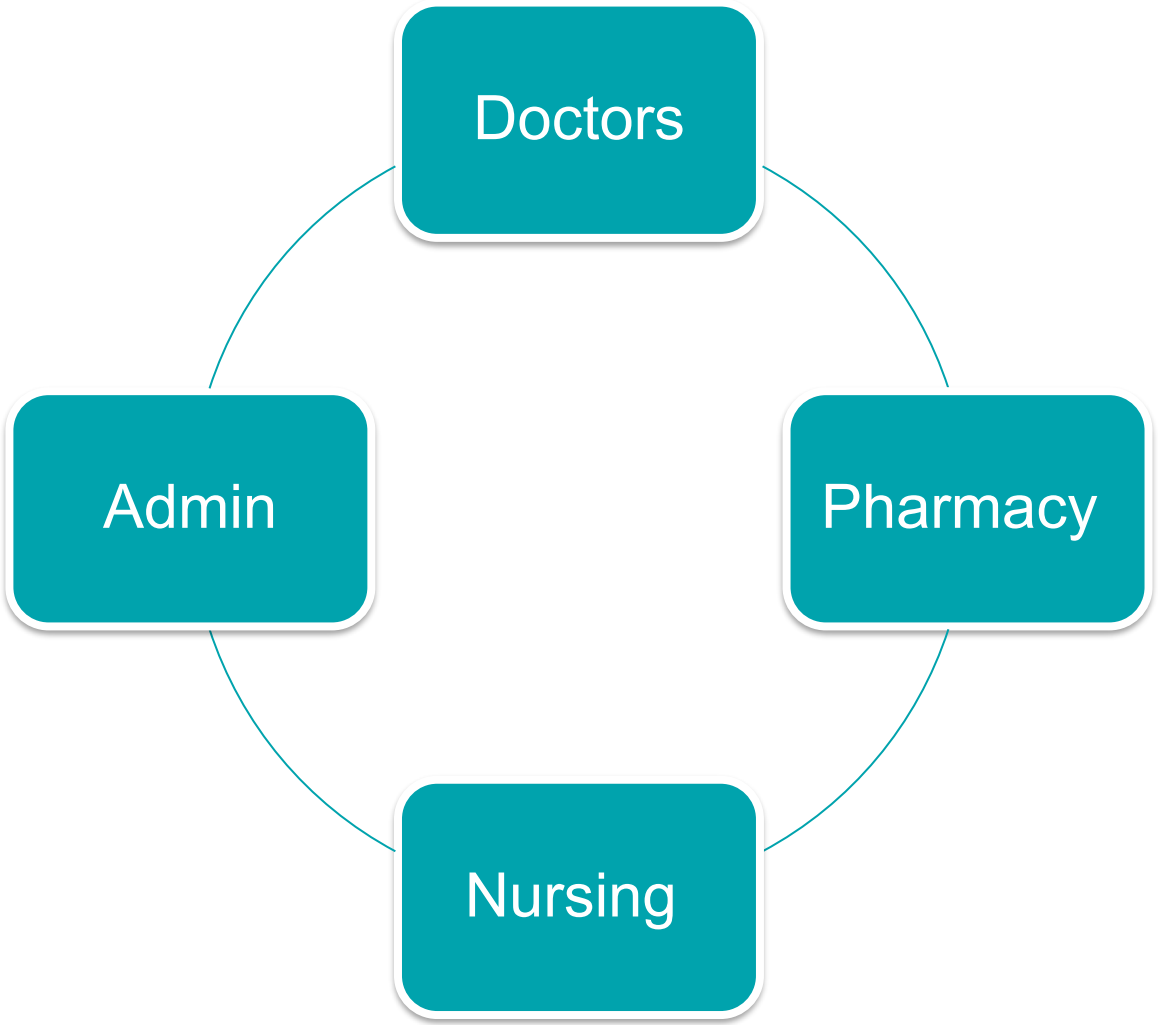
Queensland Government

What is the Virtual Ward?

Provides timely access to acute virtual care in the community for adult patients

Provides acute, admitted, inpatient-level care for patients in their own home via telehealth

Who are we?



Virtual Ward Eligibility

Patients who are experiencing an **acute illness** or an **acute exacerbation of a chronic condition** that requires ongoing monitoring and treatment as **an alternative to hospital presentation,** such as:

- Patients who require a **brief period of monitoring and treatment** which would otherwise require them to stay in hospital
- Patients **at risk of deterioration**, which if detected early, can be managed at home with the aim that hospital admission be avoided

What can Virtual Ward provide?

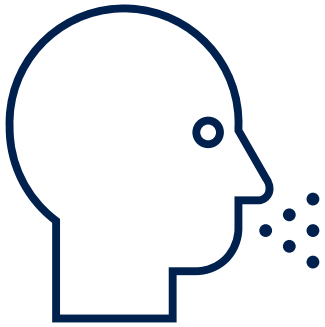
Monitoring determined by patient's primary illness and co–morbidities.

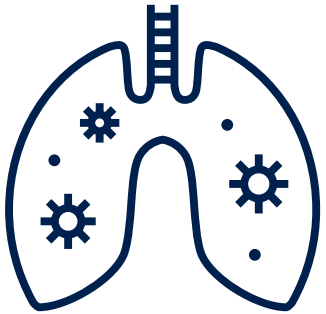
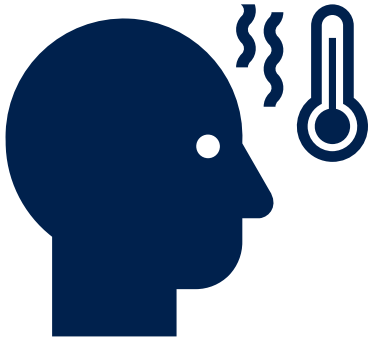
Where required, patients will be provided with the following monitoring equipment free of charge and delivered to their home:

- Oxygen saturation probe
- Blood pressure monitor
- Thermometer
- Scales
- Facilitation of relevant investigations i.e.- Blood tests, medical imaging including MRI, ECG, Echo
- Facilitation of Specialist opinion
- Pharmacy review
- Referral to Allied Health

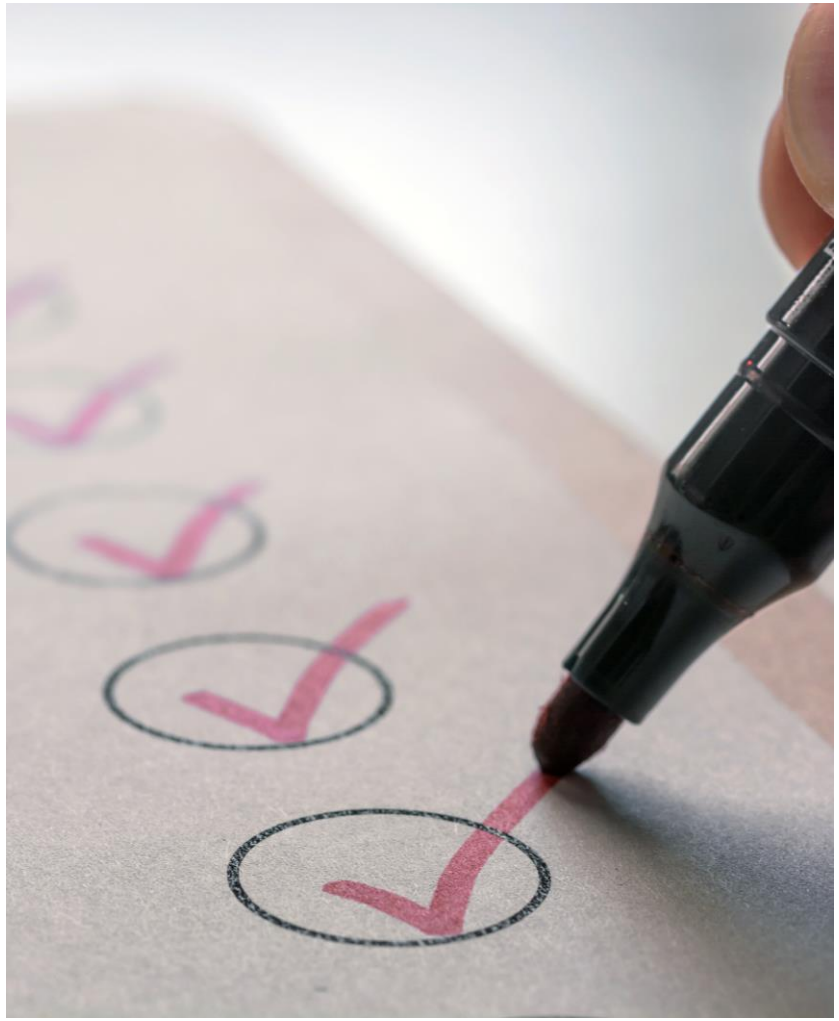
Conditions that may be suitable include:

- infective exacerbations of asthma and other chronic obstructive airway conditions.
- community acquired pneumonia.
- soft tissue, skin infections.
- urinary tract infection.
- severe hypertension without neurological red flags for short term monitoring, medication adjustment.
- high blood sugar without ketoacidosis for short term monitoring, medication adjustment
- High-risk COVID patients or moderate risk patients of concern



Exclusions



- The service will not accept referrals for patients if:
  - patients aged under 16 years.
  - patients residing in a residential aged care home (RACH)
  - Patient who are unable to interact with the VW due to
    - technological barriers
    - severe cognitive/communication deficits

Case 1

- 79M
- Presents with wife
- Slightly confused, unsteady on feet
- Increased thirst, headaches for last 1 week
- Wife measures tablets into dosette box, noticed had only taken half last week
- She thinks he is taking his insulin each night, which he measures and administers himself
- Checks blood glucose on glucometer once daily in the morning with readings 14-22 in the last week

Past Medical History

- PAF
- Restless legs
- B12 deficiency
- IHD – previous stents
- GORD
- Dyslipidaemia
- Glaucoma
- Hypertension
- Chronic low back pain
- Osteoarthritis
- T2DM
- Anxiety/Depression
- Mild cognitive impairment
- Obstructive sleep apnoea
- Chronic pancreatitis

Medications

- Paracetamol 665mg
- Insulin degludec/aspart 70/30 80 units evening
- Metformin
- Sitagliptin
- Latanoprost/Timolol drops
- Pantoprazole
- Vitamin B12 injections
- Amiodarone
- Candesartan
- Vitamin D
- Pancrelipase
- Atorvastatin
- Metoprolol

Case 1

- BP 122/70, HR 65, Temp 36.7, Sats 98%
- Hyperglycaemia BSL = 19, no Ketones
- Nil localising on exam
- Cognitive impairment - Baseline MMSE 25/30; MMSE today 20/30
- Urine dipstick NAD
- Electrolytes, FBE normal, Glucose 24
- CT Brain NAD

Admission to Virtual Ward

- 4/7 admission to Virtual Ward
- BP monitor supplied to patient
- Daily medical review & BGL/insulin titration
  - Insulin degludec/aspart 70/30 80 units nocte changed to 40 mane + 60 nocte
- Pharmacy review of medications – identified CHADSVASc 5 to consider anticoagulation
- Social Work review – ACAT re-assessment for increased home services
- Referred to PACS (Post-Acute Care Service) on discharge from Virtual Ward for physio

Case 2

- 87F
- Cognitively intact, but generally frail
- Lives alone
- S/b GP on Tuesday with R lower leg cellulitis in setting of skin tear
- Collected swabs + commenced on PO Flucloxacillin
- Reviewed again by GP on Thursday – increasing area of cellulitis
- Low-grade temp 37.7, obs otherwise normal
- Otherwise feeling well, normal oral intake
- Swab sensitivities – MRSA, sensitive to Trimethoprim/Sulfamethoxazole

Case 2 - Admission to Virtual Ward

- 4 day admission
- Monitoring equipment including BP machine & thermometer provided by courier on day of admission
- Daily clinical review including daily interval photos of the wound
- Monitoring of vital signs & clinical status
- Discharge back to GP with discharge summary completed on the day of discharge

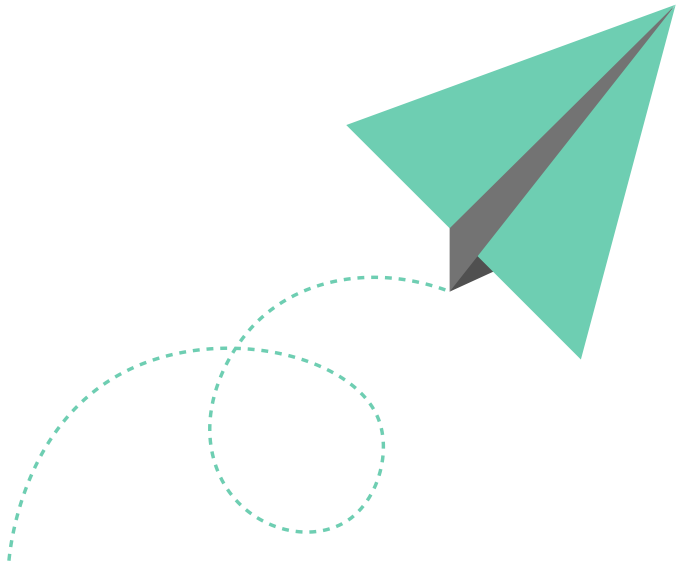
Case 3

- 59F
- Returns from two week trip to Bali, had forgotten tablets at home
- Increasing fatigue, bilateral lower limb swelling, SOBOE
- PMHx: HFrEF with EF 37%, due to previous chemotherapy induced cardiomyopathy; Previous breast cancer
- Medications: Frusemide 40mg mane, Bisoprolol 2.5mg mane, Perindopril 10mg mane, Rosuvastatin 5mg nocte, Dapagliflozin 10mg mane, Spironolactone 12.5mg mane
- BP 149/89, HR 84 bpm, Sats 96%, T 36.4, RR 20
- Weight: 120 kg, previously documented dry weight of 106kg
- Breathing comfortably at rest
- Elevated JVP 3cm, bibasal creps, HS dual no murmurs, pitting oedema to below knee bilaterally
- ECG = Sinus, no ischaemic changes

Admission to Virtual Ward

- 7 day admission to Virtual Ward
- Same day courier of O2 sats probe, scales and blood pressure monitor
- Monitoring of vital signs, fluid balance on fluid restriction of 1.5L daily and daily weight
- Medication adjustment & titration of Frusemide
- Daily clinical review of symptoms
- Pathology monitoring of renal function and electrolytes
- Pharmacy review of medications
- Discharged with medications change of increased Bisoprolol to 5mg daily and increased Spironolactone to 25mg daily

How to Refer



Phone **1300 001 966** in hours (0800-1700hrs) or phone RBWH switchboard out of hours on (07) 3646 8111 and ask to speak to the Virtual Ward Consultant.

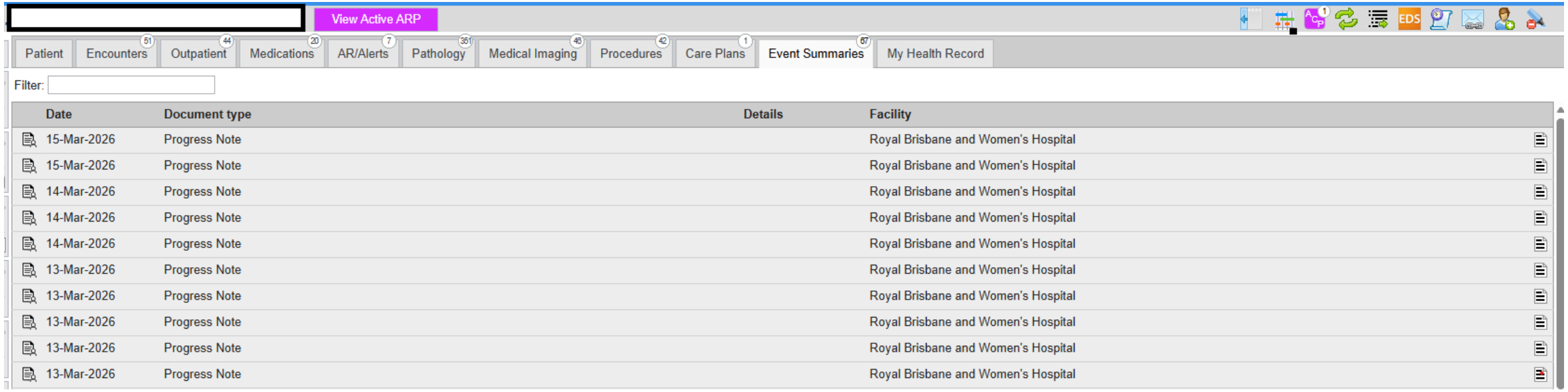
If your patient is accepted by the Virtual Ward Consultant please complete an **electronic referral** using Virtual Ward specific, Best Practice or Medical Director, referral templates which can be accessed from the Brisbane North PHN website.

Information for the Patient

- About the Virtual Ward | Metro North Health

Communication

- You can review your patient's daily progress via the **Health Provider Portal/ Viewer**
- A discharge summary will be sent at the end of the admission.
- If you would like to contribute further information at any stage about your patient, please phone the Virtual Ward Consultant on 1300 001 966.



Summary: When should I think about Virtual Ward?

- Consider referral when a patient:
  - Needs **daily monitoring**
  - Condition is **treatable with oral therapy / monitoring / medication titration**
  - Is **clinically stable**
  - Has **safe home environment**
  - **Would otherwise require short hospital admission**

General Practice Liaison Officer Program presents

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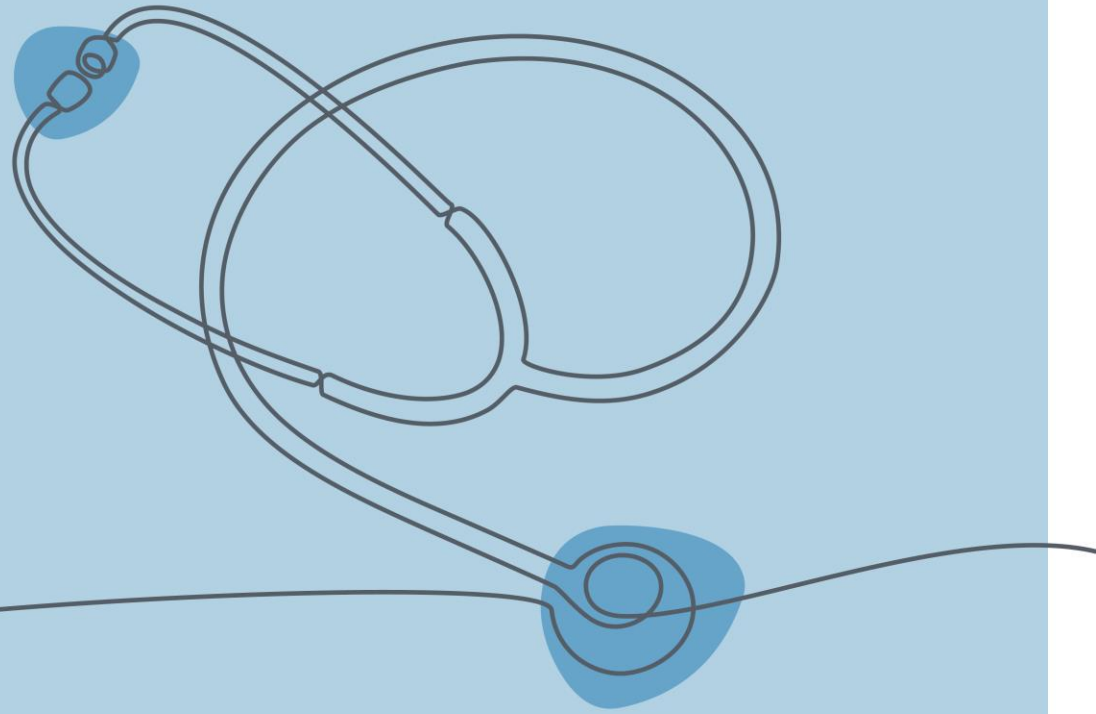


Case Study: Asthma

Dr Hervey Lau | Director of Thoracic Medicine, RBWH

phn BRISBANE NORTH
An Australian Government Initiative

Queensland Government
Metro North Health

Championing Generalism

Dr Hervey Lau

Director Thoracic Medicine

Royal Brisbane and Women's Hospital

21 March 2026

Key Messages

- **1. Confirm the diagnosis**
  Asthma requires objective evidence where possible.

- **2. Avoid SABA-only treatment**
  All asthma needs ICS containing therapy.

- **3. Before escalating, check the basics**
  Most uncontrolled asthma is adherence or technique.

Janet

- 41-year-old lady
- Non-smoker
- Diagnosed with asthma 10 years ago
- On an ICS – LABA and PRN salbutamol

Presentation

- Persistent breathlessness
- Minimal wheeze
- Poor response to inhalers
- Increasing fatigue

Examination

- BMI 31 kg/m^2
- Normal respiratory examination
- No wheeze

Spirometry

- FEV1 92% predicted
- FEV1 / FVC normal
- No bronchodilator responsiveness

Question 1

- Does Janet have asthma?

Question 2

- Could there be other underlying causes?

Question 3

- What would you do next?

Query

- How readily can you access spirometry in your current practice?

Michael

- 62-year-old man
- 30 pack-year smoking history
- Chronic cough
- Intermittent wheeze
- On a LAMA only

Presentation

- Symptoms vary day-to-day
- Worse with viral infections
- Childhood eczema
- Occasional nocturnal symptoms

Investigations

- FEV1 68% predicted
- FEV1 / FVC reduced
- BD responsiveness 18% / 350 ml

- Blood eosinophils 0.42 x 10^9

Question 1

- COPD or asthma?

Question 2

- What would you prescribe?

Query

- What access do you have to smoking cessation services?

Eleanor

- 24-year-old university student
- Non-smoker
- Diagnosed with asthma age 16
- Prescribed as-needed salbutamol only

Presentation

- Uses salbutamol on most days
- Exercise symptoms
- 1 prednisolone course last year
- No hospitalisations
- Feels “well controlled”

Spirometry

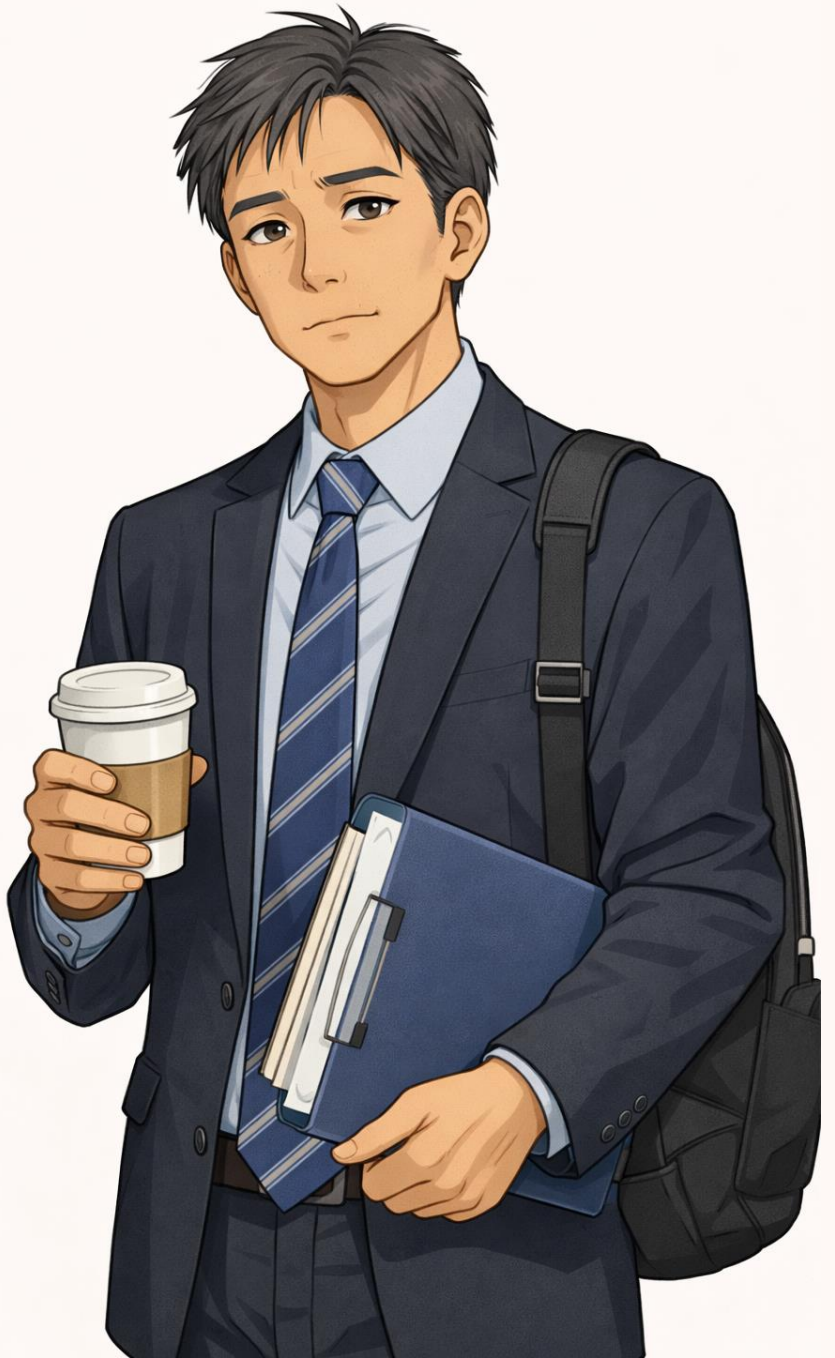
- FEV1 94%
- FEV1 / FVC reduced

Question

- Would you
  - A) Continue SABA
  - B) Change to PRN ICS – formoterol
  - C) Start maintenance ICS
  - D) No change needed

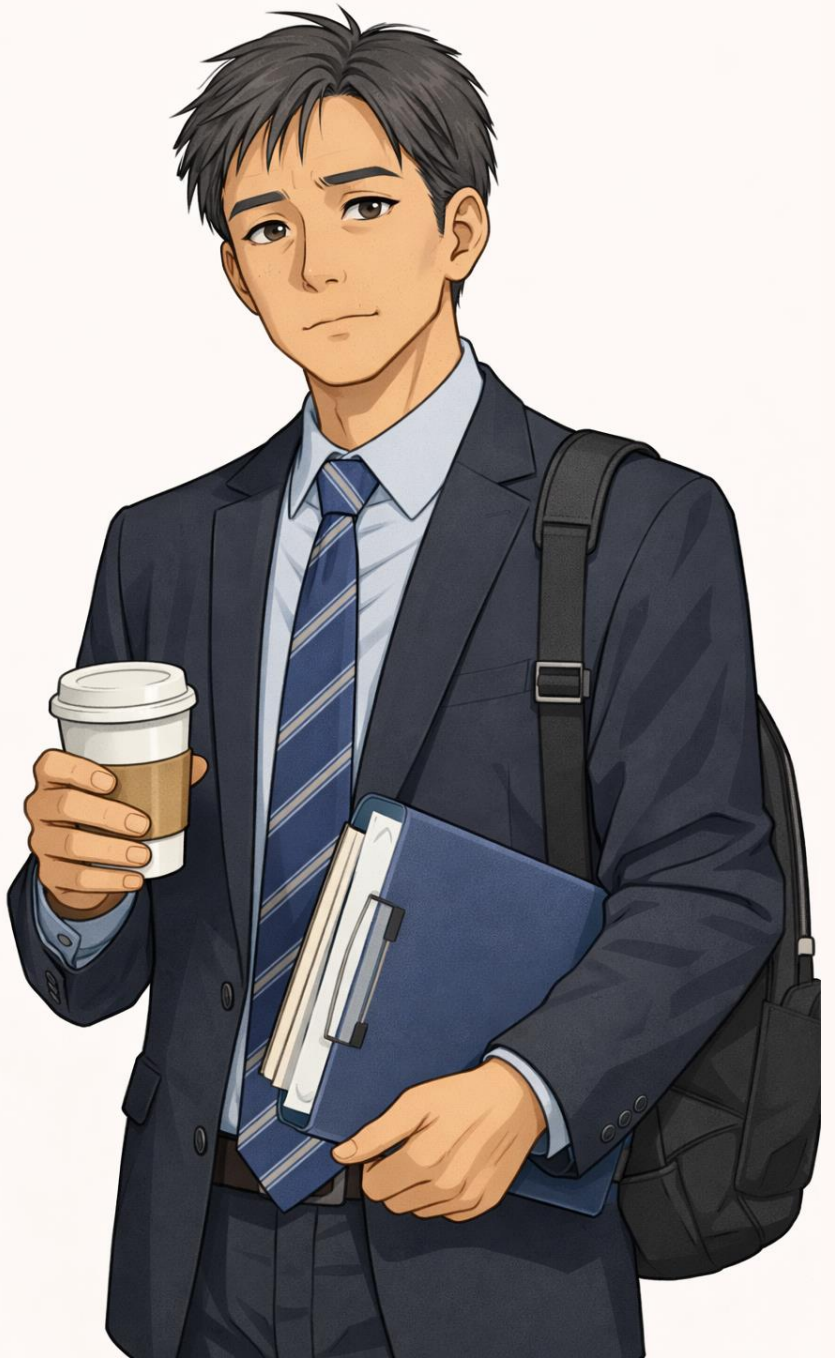
Jason

- 52-year-old man
- Asthma 20 years
- On high dose ICS and LABA
- PRN salbutamol



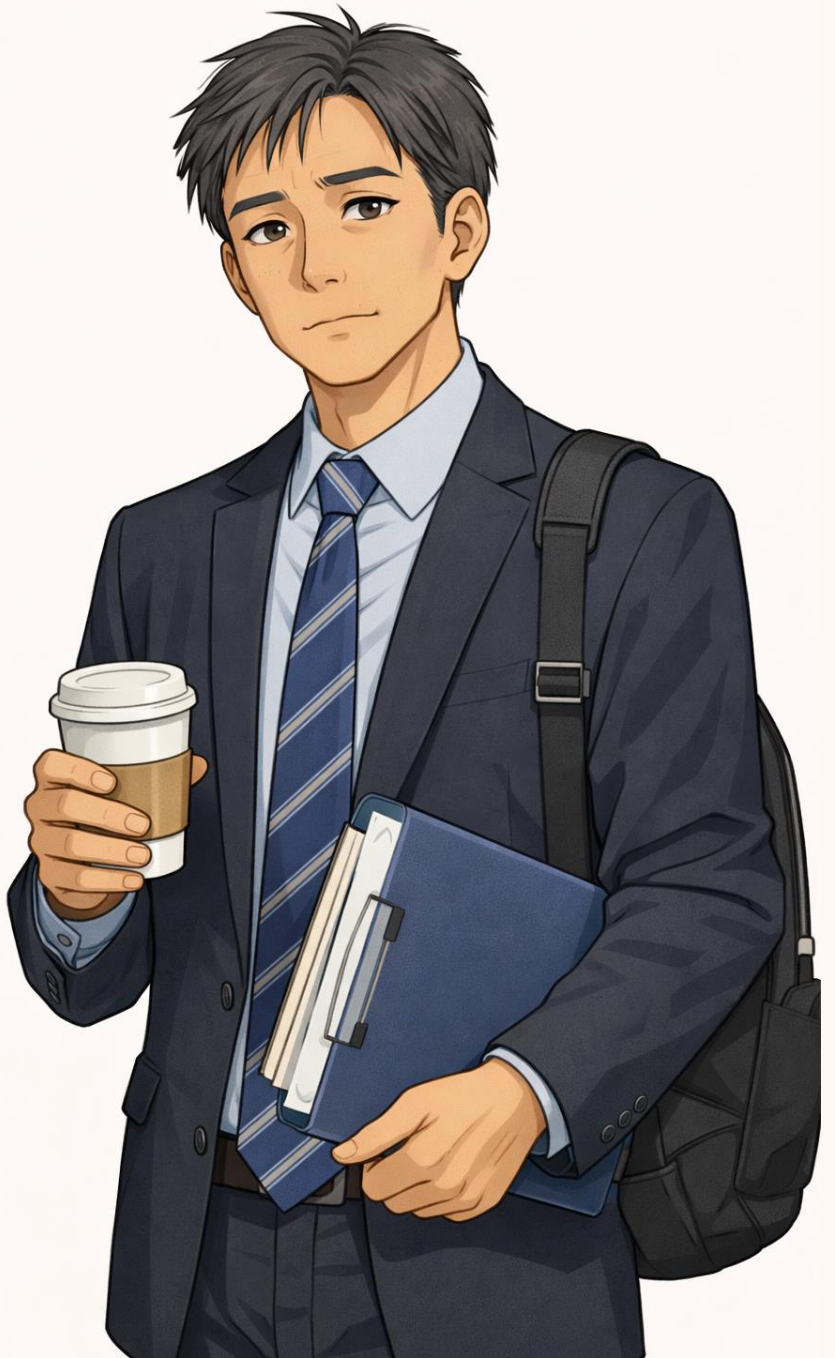
Presentation

- Daily symptoms
- Night waking weekly
- 3 steroid courses in the last year



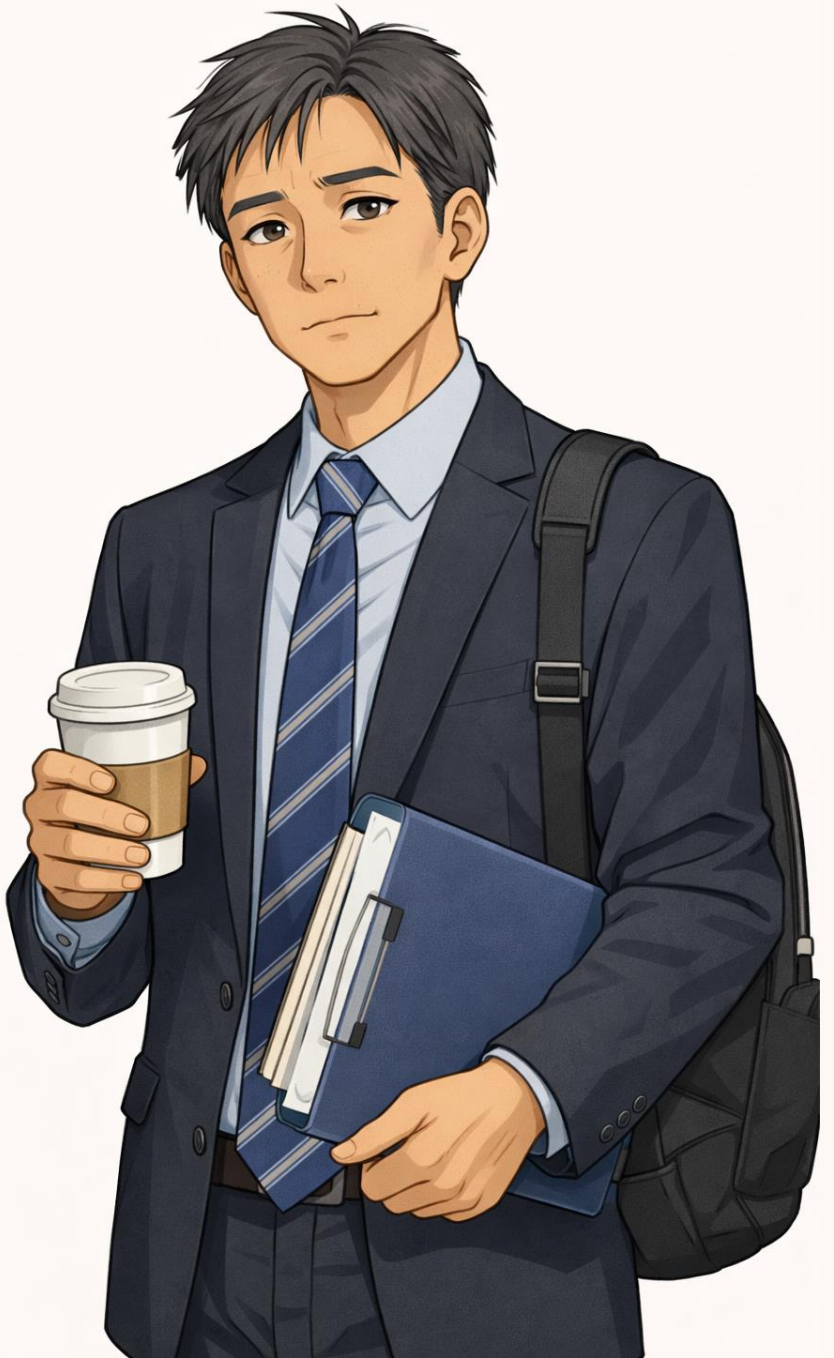
Question

- What would you do next?
  - A) Increase ICS dose
  - B) Add another agent
  - C) Refer specialist
  - D) Something else



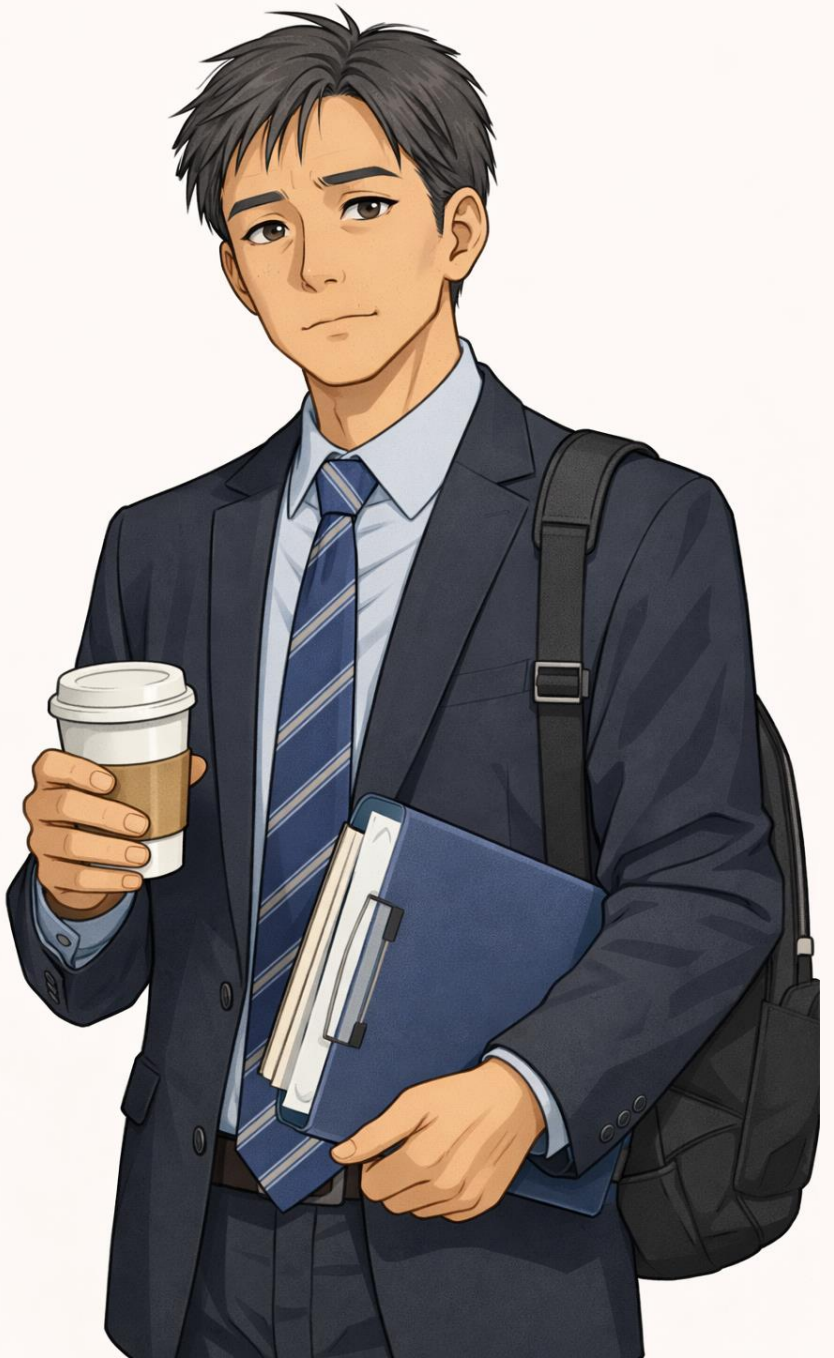
My Health Record

- Pharmacy data
  - ICS / LABA – 3 inhalers dispensed last 12 mon
  - SABA – 14 inhalers dispensed last 12 months



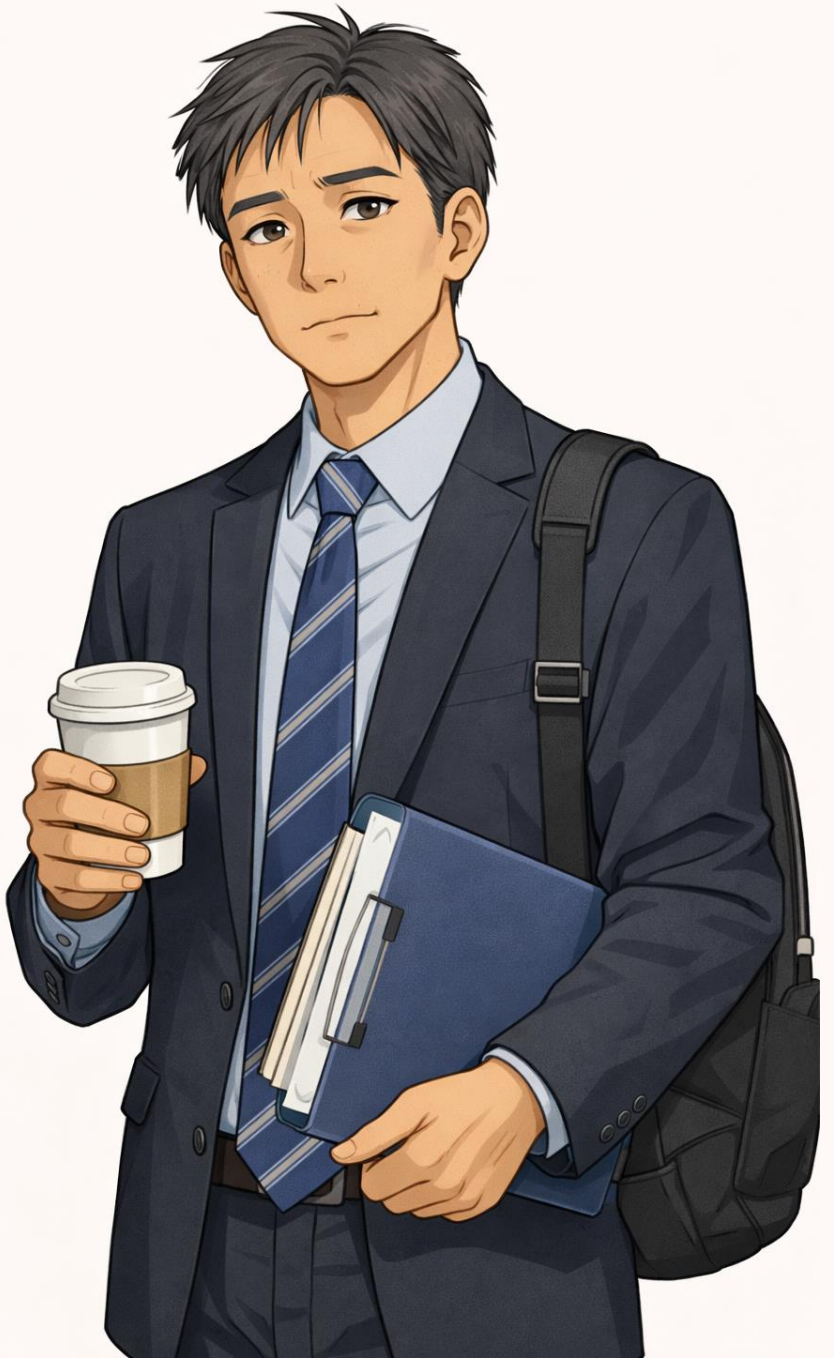
Technique Check

- Patient coughs after inhalation of ICS / LABA



Query

- How do you access asthma education and inhaler technique support for your patients?



Key Messages

- **1. Confirm the diagnosis**
  Asthma requires objective evidence where possible.

- **2. Avoid SABA-only treatment**
  All asthma needs ICS containing therapy.

- **3. Before escalating, check the basics**
  Most uncontrolled asthma is adherence or technique.

Asthma Presentation
Symptoms occur variability over time and vary in intensity
Symptoms are often worse at night or on waking
Symptoms are often triggered by exercise, laughter, allergens, cold air
Symptoms worsen after end-exercise
Symptoms often appear or worsen with viral infection

Asthma More Likely
Commencement of symptoms in childhood
History of allergic rhinitis or eczema
Family history of asthma or allergy

Asthma Less Likely
Chronic production of sputum
Associated dizziness, light-headedness, or paraesthesia
Chest Pain
Exercise-induced dyspnoea with noisy inspiration

Confirmation of Variable Expiratory Airflow	
Positive bronchodilator responsiveness with spirometry (or PEF)	Increase in FEV1 of >=12% and >=200 ml (or in PEF of >=20%)
Excessive variability in twice-daily PEF over 2 weeks	Average daily diurnal PEF variability >10%
Increase in lung function after 4 weeks of ICS treatment	Increase in FEV1 of >=12% and >=200 ml (or in PEF of >=20%) after 4 weeks of ICS treatment
Excessive variation in lung function between visits	Variation in FEV1 of >=12% and >=200 ml (or in PEF of >=20%) between visits
Positive bronchial provocation test	

Investigations
Allergy tests
Imaging Bronchiectasis Emphysema Lung nodules Airway wall thickening Gas trapping Sinuses
Fractional concentration of exhaled nitric oxide (FeNO)
Blood eosinophil count

Differential Diagnoses	
Dyspnoea, inspiratory wheezing (stridor)	Inducible laryngeal obstruction
Dizziness, paraesthesia, sighing	Dysfunctional breathing, hyperventilation
Productive cough, recurrent infections	Bronchiectasis
Cardiac murmurs	Heart disease
Sudden onset of symptoms	Inhaled foreign body
Dyspnoea with exertion, nocturnal symptoms, ankle oedema	Heart failure
Cough, sputum, dyspnoea on exertion, smoking or noxious exposure	Chronic obstructive pulmonary disease

Step Down ICS Treatment

- Reduce ICS dose by 25 – 50 %, or stop other maintenance medications if being used
- Review in 2 – 4 weeks for assessment of respiratory symptoms and lung function tests
- If symptoms increase or excessive variation in expiratory airflow confirmed, asthma diagnosis is confirmed
- If symptoms do not worsen and there is no evidence of variable expiratory airflow limitation, consider ceasing ICS and repeat assessment in 2 – 4 weeks
- Monitor patient for at least 12 months

Complex Populations
Persistent cough as only respiratory symptom Cough-variant asthma Chronic upper airway cough syndrome / postnasal drip Medications Gastro-oesophageal reflux disease Post-infectious cough Inducible laryngeal obstruction
Occupational or work-exacerbated asthma
Athletes
Pregnant women
Elderly

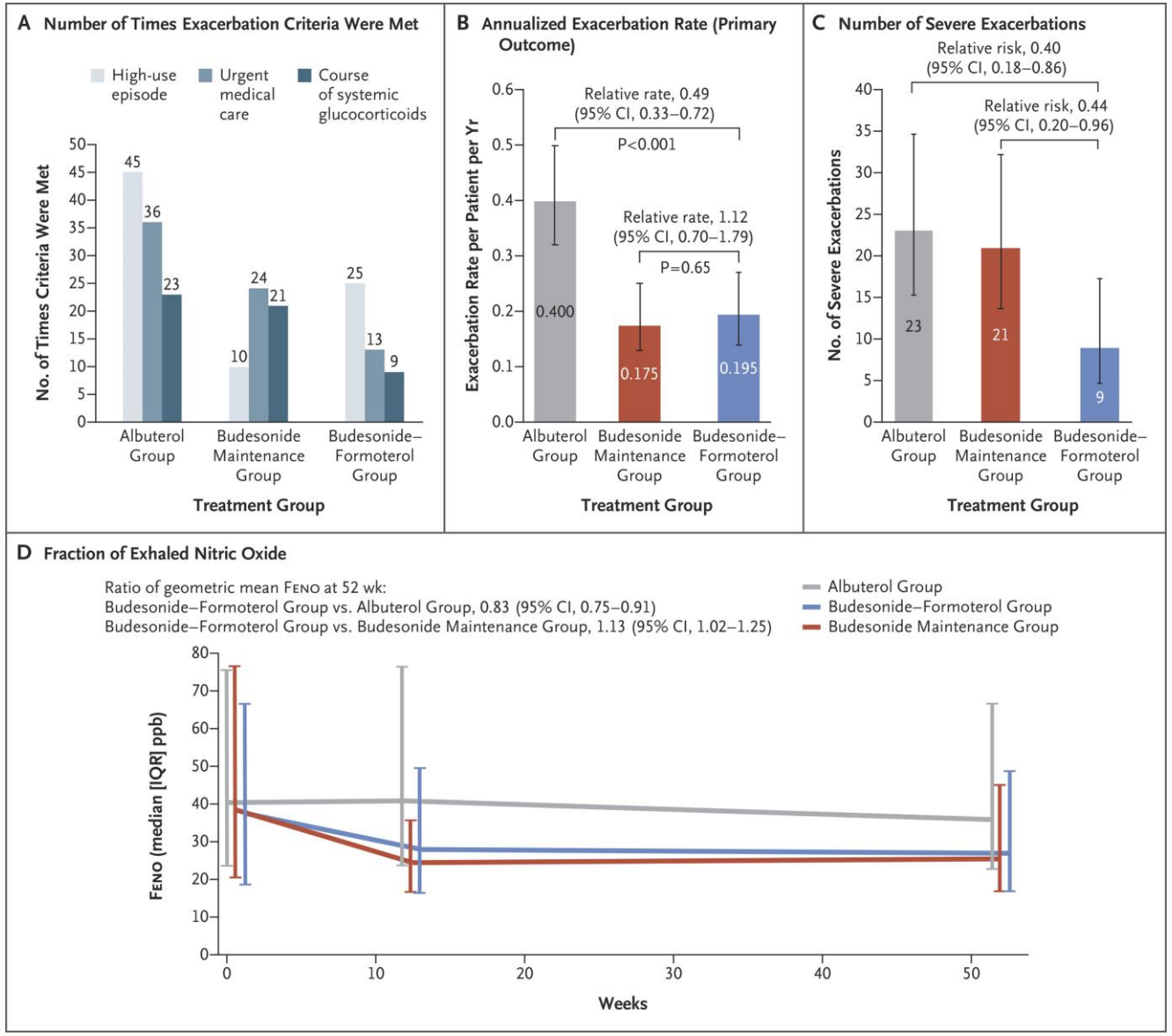
Asthma	COPD
Clinically important bronchodilator responsiveness	Low diffusion capacity
	Emphysema
	Environmental exposures such as smoking

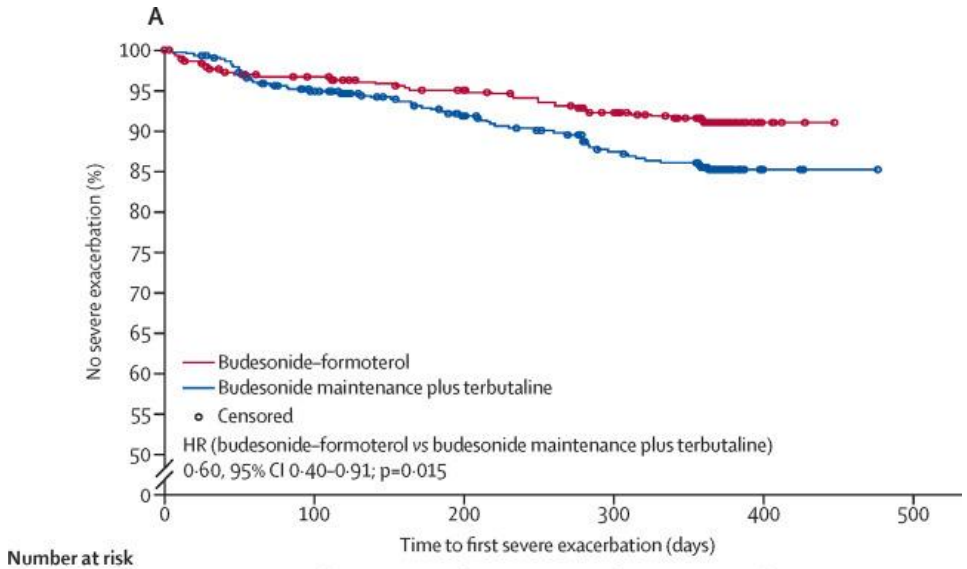
Asthma Control
Symptom control
Risk of exacerbation

Symptom Control
Frequency of symptoms
Presence of nighttime symptoms, including night waking
Activity limitation
Frequency of reliever use
Asthma Control Test (ACT)
Asthma Control Questionnaire (ACQ)

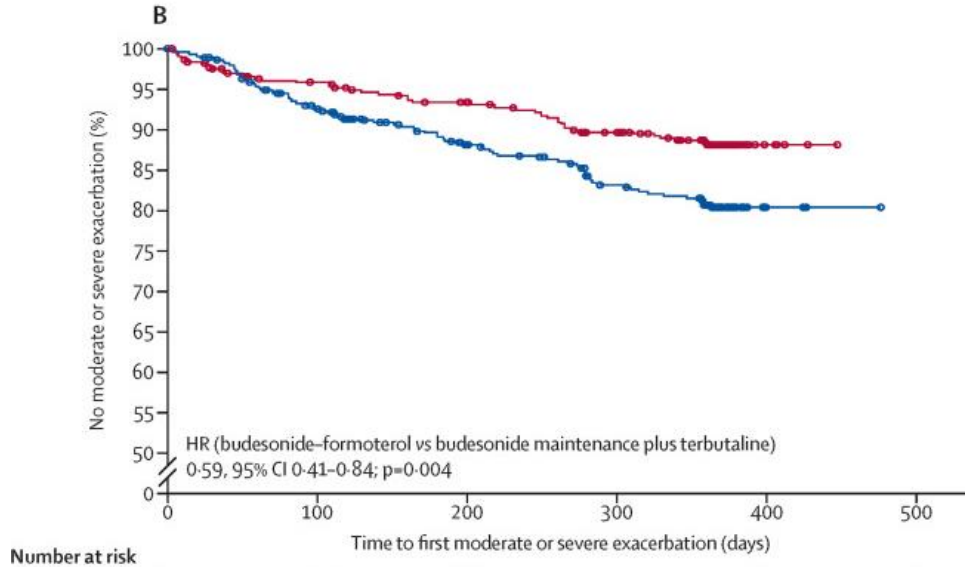
Risk of exacerbation
History of exacerbations in the previous year
SABA-only treatment
Over-use of SABA
Socioeconomic problems
Poor adherence
Incorrect inhaler technique
Low FEV1
Exposures, such as smoking

Assess Multimorbidity
Rhinitis, rhinosinusitis
Gastroesophageal reflux
Obesity
Obstructive sleep apnoea
Depression / anxiety


A Number of Times Exacerbation Criteria Were Met
High-use episode
Urgent medical care
Course of systemic glucocorticoids
No. of Times Criteria Were Met
45
36
23
10
24
21
25
13
9
Albuterol Group
Budesonide Maintenance Group
Budesonide–Formoterol Group
Treatment Group
B Annualized Exacerbation Rate (Primary Outcome)
Exacerbation Rate per Patient per Yr
Relative rate, 0.49 (95% CI, 0.33–0.72)
P<0.001
Relative rate, 1.12 (95% CI, 0.70–1.79)
P=0.65
0.400
0.175
0.195
Albuterol Group
Budesonide Maintenance Group
Budesonide–Formoterol Group
Treatment Group
C Number of Severe Exacerbations
Relative risk, 0.40 (95% CI, 0.18–0.86)
Relative risk, 0.44 (95% CI, 0.20–0.96)
No. of Severe Exacerbations
23
21
9
Albuterol Group
Budesonide Maintenance Group
Budesonide–Formoterol Group
Treatment Group
D Fraction of Exhaled Nitric Oxide
Ratio of geometric mean FENO at 52 wk:
Budesonide–Formoterol Group vs. Albuterol Group, 0.83 (95% CI, 0.75–0.91)
Budesonide–Formoterol Group vs. Budesonide Maintenance Group, 1.13 (95% CI, 1.02–1.25)
Albuterol Group
Budesonide–Formoterol Group
Budesonide Maintenance Group
FENO (median [IQR] ppb)
Weeks



Number at risk						
Budesonide–formoterol	437	406	385	362	6	0
Budesonide maintenance plus terbutaline	448	399	358	326	4	0



Number at risk						
Budesonide–formoterol	437	403	381	355	6	0
Budesonide maintenance plus terbutaline	448	391	346	313	4	0