

# Acute angle-closure Glaucoma (AACG)

[Disclaimer](#)

## **COVID-19 note**

The Royal Australian and New Zealand College of Ophthalmologists (RANZCO) and The Royal Australian College of General Practitioners (RACGP) have made recommendations regarding eye examination during the COVID-19 pandemic. See RANZCO – [COVID-19: Practical Guidance for General Practitioners Performing Eye Examinations](#).

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## Red Flags

- Unilateral red eye
- Vision loss and blindness may occur quickly

## Background – About Acute angle-closure Glaucoma (AACG)

- Angle-closure glaucoma is a form of glaucoma characterised by narrowing or closure of the anterior chamber angle, with blockage of the drainage canals, and a rapid rise of intraocular pressure.
- Symptoms and signs often occur in the evening, when lower light levels cause relative dilatation of the pupils and folds of the peripheral iris block the narrow angle.

## Assessment

### Practice Point

#### Assess and treat urgently

Acute angle-closure glaucoma is an ophthalmic emergency, as vision loss and blindness may occur quickly.

1. Take a history. Check symptoms:
  - Reduced vision
  - **Haloes (rainbow rings around lights)**
    - *Caused by corneal oedema and is a common presenting symptom, typically experienced in the evening when the pupil is dilated, and may be associated with a mild headache. If sudden onset haloes are associated with a red painful eye it is strongly suggestive of AACG.*
    - *Most haloes are due to cataract or refractive error. These are not associated with a painful red eye and are not sudden in onset.*
      - *Red eye*
      - *Severe pain, which patient may describe as a severe headache or retro-ocular*
      - *Photophobia*
      - *Often associated with nausea and vomiting*
      - *Usually unilateral, unless patient has had both pupils dilated pharmacologically*
  - 2. Consider non-specific symptoms in older patients, as they may present with general, "unwell" symptoms such as nausea and vomiting, and a red eye that can be overlooked.

3. Identify any **risk factors**.

**Risk factors**

- Family history of angle-closure glaucoma
- Age > 60 years
- Female
- Long-sighted
- Certain medications e.g., anticholinergics, steroids
- Certain ethnicities e.g., African or Asian populations

4. Perform examination:

- Measure **visual acuity**.

**Visual acuity**

1. Ask if the patient has distance glasses with them, and if either eye has had known poor vision i.e., a lazy eye.
2. Test their distance vision in each eye, while wearing glasses, using a 3 or 4 m chart.
3. Check each eye separately, with distance glasses if worn.
4. If acuity is subnormal, check with a pinhole.
5. If vision improves with a pinhole, and no cataract is present, then the patient requires a review of their glasses.
6. If unable to read any letters on chart, assess the following in descending order:
  - Finger counting
  - Hand movements
  - Light perception
7. Test near vision while patient is wearing reading glasses.

- Check pupil response to light.
- Check for **red reflex** with ophthalmoscope.

**Red reflex examination**

- Dim lights.
- Ask patient to look to a high point on the wall, a picture, door, or window frame.
- Look through ophthalmoscope at arm's length to see red reflex.
- Decreased red reflex is due to hazy cornea.

- Check for **signs**.

**Signs**

- The patient is often very uncomfortable and unwell.
- Markedly decreased visual acuity. (very poor i.e., 6/60 or less)
- Cloudy cornea i.e., the iris details are indistinct or completely absent.
- Marked redness.
- Mid-dilated, poorly responsive pupil.
- The affected eye is very tender and tense to palpation through eyelid.

- Consider **differential diagnosis**.

Differential diagnosis of the red eye				
	Conjunctivitis	Iritis	Acute glaucoma	Keratitis (foreign body abrasion)
<i>Discharge</i>	Marked	None	None	Slight or none
<i>Photophobia</i>	None	Marked	Slight	Slight
<i>Pain</i>	None	Slight to marked	Marked	Marked
<i>Visual acuity (VA)</i>	Normal	Reduced	Reduced	Varies with site of lesion
<i>Pupil</i>	Normal	Smaller or same	Large oval and fixed	Same or smaller



Source: NSW Health – [Eye Education For Emergency Clinicians: Red Eye](#)

## Management

1. Refer for [immediate ophthalmology referral or admission](#) if:
  - sudden loss of vision associated with raised intraocular pressure.
  - suspected acute angle-closure glaucoma, including patients with:
    - unilateral red, painful eye.
    - loss of vision.
    - photophobia.
    - poor red reflex and hazy cornea.
    - fixed mid-dilated, not responding to light stimulus.
    - general malaise, nausea, or vomiting.
2. Start treatment as soon as possible. If > 1 hour from ophthalmic care, or any other concerns, seek immediate ophthalmology advice and consider:
  - oral or intravenous (IV) [acetazolamide](#) 500 mg or IV [mannitol](#), if available in urgent care setting.
  - drops e.g., **timolol** 0.5% immediately (if not contraindicated), **pilocarpine** 2% immediately, and dexamethasone 0.1% immediately.

## **Pilocarpine**

Contraindications:

- *Acute iritis*

Common side-effects:

- *Miosis*
- *Hypersensitivity*
- *Reduction in visual acuity*

## **Timolol**

Contraindications:

- *Asthma*
- *COPD*
- *Bronchospasm*
- *Bradycardia*
- *Cardiac Failure*
- *Heart block*

Common side-effects:

- *Eye irritation*
- *Visual disturbance*
- *Cardiovascular effects*
- *Respiratory effects*
- *Nausea*
- *Nightmares*

- pain relief (opioid).
  - antiemetics (metoclopramide).
3. If patient has coloured haloes around lights at night-time, hazy vision, and headaches in the evening:
    - refer for [optometry assessment](#), or private [urgent or routine ophthalmology referral](#).
    - advise the patient if these symptoms worsen later to seek immediate medical or optometrist assessment, as this can indicate an impending attack.
  4. Provide patient information, including possible restrictions on driving.

## Referral

- Refer for [immediate ophthalmology referral or admission](#) if:
  - sudden loss of vision associated with raised intraocular pressure.
  - suspected acute angle-closure glaucoma, including patients with:
    - unilateral red, painful eye.
    - loss of vision.
    - photophobia.
    - poor red reflex and hazy cornea.
    - mid-dilated, poorly responsive pupil.
    - general malaise, nausea, or vomiting.
- Seek immediate ophthalmology advice if suspected acute-angle closure glaucoma and:
  - > 1 hour from ophthalmic care.
  - any other concerns.

- If patient with coloured haloes around lights at night-time, hazy vision, and headaches in the evening, refer for:
  - [optometry assessment](#), or
  - [urgent or routine ophthalmology referral](#).

## Information

### For health professionals

#### Further information

- National Prescribing Service – [The Medical Treatment of Glaucoma](#)
- National Health and Medical Research Council – [A Guide to Glaucoma for Primary Health Care Providers](#)
- NSW Agency for Clinical Innovation – [Eye Emergency Manual: Red Eye](#)
- RACGP – [Guidelines for Preventive Activities in General Practice: Glaucoma](#)

### For patients

- Better Health Channel – [Eyes: Glaucoma](#)
- Glaucoma Australia – [Brochures and Fact Sheets](#)

### [Disclaimer](#)

Last updated: June 2020