

# Ultraviolet keratopathy

(Photokeratitis, Welder's flash, Arc eye, Thermal keratopathy)

Disclaimer: This Clinical Practice Guideline ('CPG') was written for use in The Royal Victorian Eye and Ear Hospital Emergency Department. It should be used under the guidance of an Ophthalmology or ENT registrar. If clinical advice is required, please contact the Eye and Ear Admitting Officer for assistance: EYE: +61 3 9929 8033; ENT: +61 3 9929 8032. Links to internal Eye and Ear documents cannot be accessed from the website CPG.

## Description:

Acute exposure to ultraviolet (UV) B and C radiation causing a painful punctate keratopathy.

## Red Flags:

- Ensure no corneal or subtarsal foreign body

## How to Assess:

### History:

- Exposure to ultraviolet radiation (wavelengths 295-400 nm) without eye protection
  - Artificial sources – welding, halogen lamps, sun tanning booths
  - Sunlight, especially at high altitude/highly reflective surfaces, e.g. snow
- Symptoms
  - Severe, bilateral eye pain, foreign body sensation, watery eye, redness, photophobia, blurred vision
  - Delayed onset, 6-12 hours post exposure

### Examination:

- Diffuse, punctate, epithelial erosions typically in interpalpebral distribution
- May also have:
  - Conjunctival injection
  - Mild corneal oedema and anterior chamber reaction
  - Eyelid oedema
- Check for other causes of epithelial keratopathy – evert lid for foreign body, check pH if history suggestive of chemical injury, check for lagophthalmos and floppy eyelids

## Acute Management:

- Supportive treatment – epithelium heals within 72 hours of injury
  - Ice pack – covered with cloth
  - Ocular lubricants
  - Chloramphenicol drops or ointment– consider qid for 4 days
- Oral analgesia
- No clear evidence for cycloplegic drops or eye pressure patching
- Patient education regarding eye protection

## Follow up:

- Not necessary in most cases
- Review if symptoms not improving in 72 hours or aetiology unclear

## Evidence Table

Author(s)	Title	Source	Level of Evidence (I – VII)
	Wills Eye Manual		
Cullen A.	Photokeratitis and other phototoxic effects on the cornea and conjunctiva	Int J Toxicol. 2002;21(6):455-64	V
Daxecker F, Blumthaler M, Ambach	W. Ultraviolet exposure of cornea from sunbeds	Lancet. Sep 24 1994; 344 (8926) : 886	VI
Oliva M and Taylor H.	Ultraviolet radiation and the eye	International Ophthalmology Clinics 2005; 45(1):1-17.	V
Spector J and Fernandez W.	Chemical, thermal and biological ocular exposures	Emerg Med Clin N Am. 2008;26:125-136.	V
Yen YL, Lin HL, Lin HJ, et al.	Photokeratoconjunctivitis caused by different light sources	Am J Emerg Med. Nov 2004;22(7):511-5	IV

## The Hierarchy of Evidence

The Hierarchy of evidence is based on summaries from the National Health and Medical Research Council (2009), the Oxford Centre for Evidence-based Medicine Levels of Evidence (2011) and Melynck and Fineout-Overholt (2011).

- I) Evidence obtained from a systematic review of all relevant randomised control trials.
- II) Evidence obtained from at least one well designed randomised control trial.
- III) Evidence obtained from well-designed controlled trials without randomisation.
- IV) Evidence obtained from well-designed cohort studies, case control studies, interrupted time series with a control group, historically controlled studies, interrupted time series without a control group or with case series.
- V) Evidence obtained from systematic reviews of descriptive and qualitative studies.
- VI) Evidence obtained from single descriptive and qualitative studies.
- VII) Expert opinion from clinician, authorities and/or reports of expert committees or based on physiology.

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