



**W**hen the conjunctiva becomes irritated the bold vessels within it dilate and flush with blood – the eye then looks red. The stimulus can be physical or chemical and the presence of a contact lens or care product may lead to redness and wearer dissatisfaction.

## How do I see it?

Observe with the naked eye, pen torch or slit lamp with low intensity, diffuse or wide beam of white light and low magnification. Examine the bulbar conjunctiva, especially at the lens edge, the area under the lens, the limbal vessels, the bulbar conjunctival covered by the lids and the exposed interpalpebral areas. To examine the limbal areas, set the illumination arm at about 30°, use a narrow beam from the pupil side reflecting off the iris behind the limbal arcades and view them at 16-25X in retro-illumination.

## Symptoms

Wearers may accept redness as a normal part of contact lens wear so may not report any concerns. They may report their eyes looking tired or even yellow (low grade hyperaemia can give the conjunctiva a yellow tinge). If only the limbal vessels are affected they may not even notice.

Close questioning is the key:

- Do your eyes go red when the lenses are applied?
- Do your eyes look as white in the evenings as they are earlier in the day?

## Signs

Increase in proportion of filled vessels in the conjunctiva and limbal arcades. In a non-lens wearing white eye only about 10 per cent of the limbal vessels are filled.

## Causes – contact lens-related

**Mechanical** – tends to be limited to areas around the lens:

- Lens edge
- Ill fitting lens (loose or tight)
- Damaged lens.

**Chemical** – can be generalised but is often worse, or limited to, the blood vessels under the lens

- Solution sensitivity (could be preservative, surfactant or wetting agent)
- Incorrect solution use, eg rigid lens solution on soft lens, un-neutralised hydrogen peroxide, inadequate rinsing after surfactant
- Reaction to drops is often localised to where drops first contact the conjunctiva.

# Two-minute guide to CLIH

**Andrew Elder Smith** continues his quick reference guide with a look at contact lens-induced hyperaemia



## Physiological

- Limbal hyperaemia driven by hypoxic stress from low dk (hydrogel or very thick tailor made silicone hydrogel) lenses

**Exposure** – the redness will tend to affect the areas not covered by the lens and is often worse nasally

- Contact lens wear leads to a reduction of frequency of blinking and an increase in the proportion of partial/incomplete blinks

- Both will lead to desiccation and associated hyperaemia eg 3&9 o'clock in RGP lenses or general nasal conjunctival injection in soft lens wearers.

**Inflammatory** – can be:

- Localised conjunctival hyperaemia involving limbal and conjunctiva close to limbus – look for corneal infiltrates in that area – pay close attention to limbal zone. See two-minute guide to CIE for more details
- General hyperaemia – could be allergy/sensitivity reaction OR infection
- Superior only – superior limbic keratoconjunctivitis can be CL- or solution-related or non-CL more common in menopausal and post menopausal women, can be linked with thyroid dysfunction
- Palpebral – consider CLPC.

## Causes - non-contact lens related

- Poor quality tear film
- Pingueculae/pterygium
- In growing lashes
- Environmental irritants and allergies
- Conjunctivitis/keratitis
- Uveitis/angle closure
- Medications/drugs
- Age.

## Management

- Rule out non-contact lens-related causes and sight-threatening pathology – particularly if injection is circumlimbal which could suggest uveitis.

**Mechanical**

- Replace damaged lens

- Refit with lower modulus soft lens or alter peripheral design and/or overall size of RGP.

## Physiological

- Increase oxygen transmission
- Use RGP if silicone hydrogel lens not available or if complex specification leads to a very thick SiH lens.

## Chemical

- Check usage and compliance with care systems

- Change solution system to preservative-free, eg hydrogen peroxide

- Refit to daily disposable lenses

- Check not environmental – check hobbies and work

- Wear goggles swimming.

## Exposure

- Optimise tear film – treat MGD

- Recommend frequent, regular use of rewetting/comfort drops, eg 0.1 per cent sodium hyaluronate

- Blinking exercises

- RGP – increase overall size and/or reduce edge clearance

## Inflammatory

- Remove inflammatory stimulus

- Manage CIE/CLPC as appropriate

- Recommend treatment for environmental allergies.

## Prognosis

Contact lens-related redness can be minimised by careful selection of lens material, design, replacement frequency and care systems. Wearers with poor quality tear film or who want to wear their lenses in air conditioning, hot air heating or dry, dusty or hot environments may need to use tear supplements to maintain a moist conjunctival surface and minimise redness. Advice on regular blinking and maintenance of tear film quality will help prevent desiccation.

## Differential diagnosis

It is essential to rule out non-contact-lens-related pathology such as iritis, ACG, keratitis and conjunctivitis. Contact lens-related redness should resolve soon after lens removal and will lack the tell tale symptoms of the more serious conditions. ●

- Optometrist **Andrew Elder Smith** runs Contact Solutions Consultants which offers in-practice training to team members from optometrists to front of house. Training is tailored, and covers clinical and non-clinical aspects of patient and customer care