

Contact Lens Update

CLINICAL INSIGHTS BASED IN CURRENT RESEARCH

Contact Lens Wearer Demographics and Risk Behaviors for Contact Lens-Related Eye Infections

October 26, 2018



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Microbial keratitis (MK) is a serious ocular condition, with the potential to cause serious vision loss if not treated appropriately. Contact lens wear is the single largest risk factor for developing MK, but the risk increases with failure to clean, disinfect or store contact lenses appropriately, overnight wear or wear beyond the recommended wearing schedule.¹ However, not all cases of inappropriate contact lens use and care result in MK. They may also be associated with contact lens-related inflammatory responses such as corneal infiltrative events (CIE). In 2010, contact lens-related disorders, including episodes of infectious and non-infectious keratitis in the US cost an estimated \$175 million USD in direct health care expenditures and 250,000 hours of clinical chair time.² Thus, public health initiatives aimed at reducing the economic burden of keratitis require quantifying the demographics of contact lens wearers at risk of developing keratitis.

As part of the annual Contact Lens Health Week in 2015, the Centre for Disease Control and Prevention (CDC) released a report estimating the number of contact lens wearers in the US in 2014.

Cope JR, Collier SA, et al. Contact Lens Wearer Demographics and Risk Behaviors for Contact Lens-Related Eye Infections - United States, 2014. MMWR Morb Mortal Wkly Rep 2014, 64(32): 865-870.

Estimating the number of contact lens wearers

Cope and colleagues used a population-based survey to estimate the number of adult contact lens wearers. 4,269 people responded to an online survey and statistical weighting was used to model respondents as representative of the US population. An estimated 40.9 million US adults (≥ 18 years) wore contact lenses, equating to 17% of the US population over the age of 18 years. Ninety-three percent of wearers wore soft contact lenses and wearers were more likely to be younger, female, and of white non-Hispanic race/ethnicity compared to non-contact lens wearers. Rigid contact lens wearers did not differ significantly in age compared to non-contact lens wearers, whereas daily disposable soft contact lens wearers and overnight wearers were significantly younger.

Describing the prevalence of contact lens hygiene-related risk behaviours

Approximately 1,000 contact lens wearers responded to a separate online survey using an adapted version of the Contact Lens Risk Survey (CLRS).³ Respondents were mostly female (82%) and over 40 years of age (62%). Ninety-nine percent reported at least one contact lens hygiene risk behaviour previously associated with eye infection and inflammation, while a third of wearers reported having a previous contact lens-related red eye or painful eye requiring a doctor's visit. Commonly reported risk behaviours that wearers had exhibited at least once included:

- 50% sleeping overnight in contact lenses.
- 8% napping in contact lenses
- 55% topping off (topping up) the disinfecting solution.
- 50% extending the recommended replacement frequency of lenses and 82% extending the replacement frequency of the lens case
- 85% showering while wearing lenses
- 61% swimming while wearing lenses
- 36% washing their contact lenses with water
- 17% storing their contact lenses in tap water
- Specifically for rigid contact lens wearers: 91% rinsing their lenses in water and 33% storing their contact lens in water.

Conclusion

This report demonstrated that there are a large number of wearers in the US who have an increased risk of developing keratitis due to their contact lens wear and care habits. The CLRS sought to assess associations between age and a range of risk factors that may lead to a corneal infiltrative event in young, soft contact lens wearers.³ The survey used here was an adaptation of the original CLRS and respondents were predominantly females over the age of 40. Whilst it may be difficult to draw definitive conclusions from the survey, it is concerning that 99% of respondents reported at least one risky behaviour.

Furthermore, the actual prevalence of risk behaviours may be lower than estimated in the report. Recent studies suggest that younger (particularly those between 15-29 years) male lens wearers are more likely to develop a CIE due to their higher risk-taking behaviours.⁴ Alarmingly, a significant proportion of contact lens wearers are at risk of Acanthamoeba keratitis (AK) by exposing their lenses to water through rinsing, storing, showering and swimming with lenses. A recent study reported an outbreak of AK in south east England, and whilst no risk factor was isolated,⁵ it does highlight the ever present risk of infection for contact lens wearers, should they not follow proper management of their lenses.

The CDC report highlights the large number of people in the US alone who are exposed to increased risk of adverse events with their contact lens wear through poor compliance. A more recent estimate of those US numbers adds in adolescents aged 12-17, taking the overall number up to 45 million.⁶ With these numbers of wearers, the burden for education around safe wearing practices falls not only on the eye care professional. Public health initiatives centred on correct hygiene practices, appropriate lens use and regular visits to eye health professionals would be beneficial to help keep contact lens wearer's eyes healthy.

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