

## **Information Statement Extended Wear of Contact Lenses May 2013**

### **Background**

Extended wear and continuous wear are synonymous terms that describe a modality of overnight contact lens wear, usually for a period of one to four weeks. Soft hydrogel lenses, including the latest highly gas-permeable silicone hydrogel lenses, and rigid gas permeable lenses have been used for extended wear. Extended wear lenses have proven popular because of their convenience. However, concerns regarding the relative safety of soft hydrogel lenses for extended wear prompted several studies to examine the rate of adverse reactions among users of such contact lenses.

In a series of studies<sup>1-7</sup> the risk of developing ulcerative keratitis with soft hydrogel lenses was:

- a) Ten to 15 times greater in extended wear versus daily wear users;
- b) Nine times greater in elderly patients using extended wear lenses for correction of aphakia;
- c) Twelve times greater in individuals misusing daily wear lenses for overnight wear;
- d) Proportionally greater with increased consecutive days of extended wear lens wear before removal;
- e) Less with more frequent lens removal, lens care, and especially with frequent contact lens case cleaning.

Overnight wear, regardless of contact lens type, increases the likelihood of corneal infection.<sup>3, 5, 6, 8-11</sup> A small percentage of patients that were fitted with gas-permeable soft silicone hydrogel contact lenses developed sterile inflammatory peripheral corneal infiltrates within one year of use.<sup>12</sup> A study of patients using silicone hydrogel contact lenses continuously for up to 30 days concluded that the overall rate of microbial keratitis was similar to that of conventional soft extended wear lenses.<sup>8</sup> These lenses are FDA approved for 30 days of extended wear.

### **Recommendations**

The FDA recommends that overnight wear soft hydrogel lenses be removed and not worn overnight at least once a week for overnight cleaning and disinfection. Disposable lenses for extended wear should also be discarded on a regular basis consistent with manufacturers' recommendations or the specific instructions of their eye care professional.

Disposable (or programmed replacement) contact lenses do not reduce the risk of ulcerative keratitis with extended wear. Overnight wear of contact lenses is the main risk factor for all types of ulcerative keratitis, whether or not the lenses are disposable.<sup>3-6</sup> The requirements for user compliance with contact lens and lens case cleaning and disinfection regimes, scheduled lens and lens case replacement, and follow-up must be emphasized when discussing the risks of overnight wear with patients.

*Acanthamoeba* keratitis is an infrequent but serious microbial infection among contact lens wearers. Several FDA-mandated clinical studies carried out into the late 1990s have confirmed that overnight wear of contact lenses is the most important risk factor for microbial keratitis. The incidence of microbial keratitis is similar whether disposable or conventional soft contact lenses are used for overnight wear. However, disposable lenses are more often associated with relatively benign peripheral infiltrates than with the aggressive central microbial keratitis, which is common with conventional soft lenses used for overnight wear.<sup>6, 7, 13</sup> Also, due to the increased risk of *Acanthamoeba* keratitis among individuals using homemade saline solutions for lens care, the FDA has banned the sale of salt tablets for such solutions. Red eye and discomfort may signal early infection with *Acanthamoeba* keratitis or another microorganism. Any individual using extended wear contact lenses that develops symptoms should remove the lens and see an ophthalmologist promptly.

Note: Environmental risk factors and hygiene practices, such as no-rub cleaning, topping off to reuse solutions, contaminated lens cases, exposure to tap water, wearing contact lenses in hot tubs, and changes in water supply are emerging as possible risk factors for the increases in *Acanthamoeba* and fungal keratitis in association with contact lens use in the past decade.<sup>14-35</sup>

Patients should be instructed that rubbing is an important part of the cleaning step before disinfection for any lens that will be re-worn. Rubbing the contact lens enhances the cleaning performance of the solution, likely by removing loosely bound deposits. Lens intolerance associated with these deposits, including giant papillary conjunctivitis, is higher in extended wear soft lens users. These conditions may necessitate changing the lens or discontinuing the use of soft contact lenses. Hydrogen peroxide systems may be superior to preserved disinfecting solutions in reducing pathogen binding and cysticidal disinfection, but they require more complex care regimens.<sup>36-39</sup> Patients should be instructed to use only sterile products that are commercially prepared specifically for contact lens care and to replace these at the intervals recommended by the manufacturers.<sup>40</sup> Specifically, patients should be instructed not to rinse contact lenses or lens cases with nonsterile water (e.g., tap water or bottled water).<sup>41</sup> Patients should also be instructed to clean and replace contact lens cases frequently, because they can be a source of lens contamination.<sup>29, 40, 41</sup> Patients should be instructed to replace the solution in contact lens cases each time the lenses are disinfected (i.e., the old solution should not be topped off).<sup>42</sup>

## **Conclusion**

The American Academy of Ophthalmology recognizes that the extended wear of contact lenses can be a useful and safe method of correcting refractive errors in properly selected and carefully monitored users. However, the extended wear of contact lenses has the potential for causing severe ocular damage when there is inadequate instruction, lack of user compliance, and insufficient professional supervision. Although there are lenses approved by the FDA for extended wear, the risks, benefits, and alternatives should be presented to patients considering this mode of contact lens wear. The incidence of complications, particularly infectious keratitis, is higher with extended wear soft hydrogel lenses. Studies confirm the importance of good education, hygiene, and compliance for safe and successful extended contact lens wear. Practitioners, such as ophthalmologists, who have the professional training and experience to recognize and treat potential complications should fit extended wear contact lenses and monitor patients.

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