

Soft hydrogel and rigid gas-permeable bifocal or multifocal contact lenses can be used to address presbyopia. Another option for the management of presbyopia with contact lenses is monovision. Generally, the dominant eye is corrected for distance and the nondominant eye for near. Patients wearing monofocal contact lenses may benefit from eyeglasses worn over the contact lenses while driving, especially at night, or for critical visual needs to correct the near eye for distance and thereby improve depth perception. Modified monovision is the use of a bifocal or multifocal contact lens in one eye and a distance contact lens in the fellow eye.

Polymethylmethacrylate hard contact lenses are now rarely fitted to correct refractive errors because they have a very limited ability to transmit oxygen to the corneal surface.

### Method/Modality of Wear

Disposable soft contact lenses, rigid gas-permeable contact lenses, and silicone hydrogel contact lenses are available for either daily or extended wear. Daily wear is defined as less than 24 hours of continuous wear. Extended wear is defined as under closed eyelids, but to the lay person it means overnight wear.

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. Fifty to seventy-five percent of the risk of microbial keratitis can be attributed to overnight wear. Generally speaking, the longer the duration of continuous wear, the greater the chance of developing microbial keratitis. The risk for those who used daily wear contact lenses and sometimes wore them overnight was estimated to be approximately 12 times the risk of those who used daily wear lenses and did not wear them overnight. Extended-wear users who wear their contact lens overnight have a 10- to 15-fold risk over conventional daily wear lens users who do not sleep in their contact lens.<sup>203</sup> Reports from the United Kingdom,<sup>220</sup> Australia<sup>221</sup> and France in 2020<sup>452</sup> confirmed substantial increased risk of microbial keratitis with overnight wear regardless of lens type.

The increased risk of corneal infections with overnight contact lens wear should be discussed with patients who are considering this modality of vision correction. If patients choose overnight wear, they should be instructed to use only lenses specifically approved for extended wear.

## CONTACT LENS CARE

Proper contact lens care involves a combination of cleaning, disinfecting, rinsing, and wetting solutions.<sup>284</sup> Surfactant cleaning solutions act like detergents to solubilize debris that is not chemically bonded to the contact lens. Rubbing the contact lens enhances the cleaning performance of the solution, likely by removing loosely bound deposits.<sup>253, 258, 453</sup> Enzymatic cleaners remove deposits that are chemically bonded to the surface. Disinfecting solutions reduce the number of microorganisms carried on the contact lens. Wetting solutions make a water-repellant lens surface hydrophilic. Many manufacturers combine these agents into multipurpose solutions.

Patients should also be instructed to clean and replace contact lens cases every 3 months because they can be a source of lens contamination,<sup>222, 255, 283, 454</sup> and damaged or cracked cases should be discarded. Patients should be instructed to eliminate all water exposure in their wear-and-care regimens to reduce risk of *Acanthamoeba* keratitis.<sup>282</sup>

The American Academy of Ophthalmology ([www.aao.org/store](http://www.aao.org/store)) and the Contact Lens Association of Ophthalmologists ( [www.claa.org/publications](http://www.claa.org/publications)) have patient information brochures for contact lens care. Also, the FDA and CDC have issued recommendations.<sup>284, 454</sup>

### Daily Wear Soft Contact Lenses

Daily disposable soft contact lenses should not be worn longer than manufacturers' recommendations, nor should they be reused. Standard daily wear soft contact lenses (non-daily disposable) should be cleaned with a contact lens cleaner or multipurpose solution daily at time of removal from the eye to remove biofilm and deposits from the lens surface. Rubbing the contact lenses during cleaning and rinsing with contact lens solution is necessary for removal of deposits.<sup>246, 253, 453</sup> Contact lenses should be disinfected using either a chemical or peroxide