

Prevention of Infection & Eye Injury

Keeping contact lenses free of microbial contamination takes work. Compliance with lens care instructions is essential to prevent infection and eye injury.

Author: **Judy Arbique**
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Infectious organisms capable of causing eye infections in contact lens wearers include bacteria, fungi, viruses, and environmental amoebae. Microorganisms live on our skin, on surfaces in our homes, and in soil and water. If microorganisms get on contact lenses, in lens cases, or in lens solutions, eye infection may follow.

Some microorganisms may result in serious infection in contact lens wearers.

Ulcerative microbial keratitis has increased by 400% since contact lenses became popular. Ulcerative keratitis is an eye infection with corneal lesions that may progress rapidly resulting in serious complications such as blindness. Contact lens wear is now the leading risk factor for ulcerative keratitis.

Whenever lenses are inserted or removed, the potential for microorganisms to enter the eyes is introduced. And, the presence of a contact lens on the eye causes changes that make the cells on the lens of the eye more susceptible to invasion.

Education and compliance is essential to reduce the risk of ulcerative keratitis. Unfortunately, people dislike repetitive processes, especially those with multiple steps. Steps are often missed or modified in an attempt to save money and/or simplify the process. And, many people become complacent when they get used to problem free lens wear. "If I have never been a problem, then my contact handling and care techniques are not an issue!" It is often not until there is a problem, sometimes a serious one, that contact lens wearers assess their care and handling techniques.

Contact lenses that are not cleaned regularly accumulate deposits of protein and lipid that build up and become more difficult to remove over time. Deposits lead to numerous problems, one of which is bacterial adhesion. The lens and eye can be exposed to bacteria as microorganisms are carried from the lens case to the eye, from the eye to the hand and/or to the case, and then back into the eye.

Contamination of lenses may occur:

- when lens cases are not cleaned regularly,
- when solutions are "topped up" instead of being replaced,
- when lenses are stored in the cases for long periods of time, when lenses are not thoroughly cleaned, microorganisms clinging to the lenses are allowed a chance to grow.

Disinfectants are effective but not perfect: certain microorganisms are more adept at invading the cornea than others:

- *Pseudomonas aeruginosa* commonly found in the environment,
- *Staphylococcus aureus* commonly found on human skin,
- *Acanthamoeba spp.*, an environmental amoebae commonly found in soil, water, sewage, and even dust, *Fusarium spp.*, a fungus commonly found in the environment.

Risks:

Contact lenses change eye physiology: oxygen reaching the cornea is decreased and the cornea swells causing cells under the contact to become larger, more fragile and vulnerable to invasion. As lens oxygen permeability decreases, the risk of bacteria adhering to corneal epithelial cells increases.

Contact Do's:

- **Do dispose of lenses and cases on schedule.**

Extended lens wear increases the susceptibility of the eye to physical changes, increased deposits, and longer periods of decreased oxygen supply.

Overnight lens wear: risks vary depending on lens composition. Rigid gas permeable lenses have the lowest risk.

Contact Do's:

- **Do** dispose of lenses and cases on schedule.
- **Do** carefully follow cleaning and handling instructions from eye care specialists.
- **Do** wash your hands before handling lenses.
- **Do** rub both sides of the lenses during cleaning to help remove deposits (cleaning lenses without rubbing has been compared to passing a dirty dish through soapy water without physically washing it).

Contact Don'ts:

- **Don't** top up or reuse solutions.
- **Don't** expose lenses or cases to tap water.
- **Don't** wear lenses longer than they're intended for.
- **Don't** use saliva to clean your contact lenses.

Source:

Drisdelle, Rosemary. "Preventing Infections with Proper Lens Care." *Optical Prism*. Mar (2007): 32-36.

