

That's Not Safe!

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Contact Lens Safety in the Literature

- The most common CL complications are discomfort, dry eye, corneal infiltrates, and giant papillary conjunctivitis.
- Serious complications that are less common but may threaten vision include corneal neovascularization (d/t hypoxia), corneal abrasion, and infectious keratitis.^{1, 2}
- When surveyed, most patients report ignorance on their role in 'compliance'
 - One third of CL wearers aged ≥ 18 years recalled never hearing any lens wear and care recommendations. Fewer than half recalled hearing their provider recommend not sleeping in lenses at their last visit, and 19.8% recalled being told to avoid topping off their CL solution.³
- Risk associated to lens modality:
 - Incidence (per 10,000 wearers) of severe CL related MK:
 - RGP < hydrogel < Silicone hydrogel⁴
 - Soft lenses:
 - Hydrogel safer than Silicone hydrogel⁴
 - Daily safer than extended wear
 - OrthoK lenses:
 - Historically MK associated with orthoK was primarily in children; poor lens care procedures, noncompliance, and persisting in lens wear despite discomfort were identified as potential risk factors.⁵
 - New data shows an incidence of serious adverse events with orthokeratology is low when used as directed, likely attributed to improved lens designs with emphasis on safety and compliance; Recent safety studies have shown the risk of microbial keratitis with orthoK to be similar to that of daily soft lenses^{6, 7}
 - Scleral lenses:
 - Publications looking at safety and AE with scleral lenses are limited, however no significant adverse events or impacts from wearing ScL were reported in 8 papers assessing safety.
 - ScL are considered safe. Like other lens modalities, non-compliance with handwashing, solutions, and/or lens care was associated with microbial keratitis.^{8, 9}
- Risk associated to age
 - Depending on modality, age has different associated risk factors⁴
 - Teens and college age persons (those aged 15–25 years) have been associated with lower contact lens compliance and with higher risk for corneal inflammatory events¹⁰

Review of Contact Lens Market Trends

- Breakdown of market trend for each CL modality
 - Daily disposable prescribing has gone upward 15% in 2011 to 43% in 2021
 - In 2021, 48% doctors reported actively practicing myopia management with contact lenses compared to 25% in 2018¹¹
- Use of specialty lenses (including multifocal, ScL, hybrid, and orthoK) is increasing¹²:
 - Increased focus on myopia management in research, literature, continued education, and industry marketing
 - Led to increased use of CL in children
 - Advancements in tech, materials, manufacturing for custom and multifocal contact lenses to be able to fit a broader patient population
 - Looming growth opportunity with the recent FDA approval of CL medication delivery

Will increased specialty lens fitting open a can of worms?

- A can of worms (phrase): complicated set of problems that you discover.

- Challenges disseminating credible information to patients; digital world allows patients to find information of every quality
- If we start to see any increase in serious contact lens related complications (especially in children) safety concerns will understandably be raised by co-managing health providers
- Practicing from an evidence-based approach using current literature when fitting and managing contact lenses is essential to meet best practice safety standards and also to share credible information with other health professionals if concerns arise.

When misfortune strikes... Case Report Rapid Fire

- Topical burn on hand from Clear Care + BioTrue in case: caused chemical re
- Progressing KCN with stable hybrid fit: epithelial defect susceptible to infection
 - Steepening Ks always need to be considered with any form of discomfort
- Overuse of Bandage Contact Lenses: inappropriate CL use
 - When pain is being addressed with BCL, extreme caution and close followup must be used to see any signs of infection
- OrthoK Adhesion in presence of dry eye: lens induced unacceptable SPK
 - Chronic staining (especially centrally) is unacceptable; solutions and application/removal techniques must be critiqued often
- Neurotrophic corneal complications: severe central ulcer
 - Follow-up schedule needs to be conservative and educate patient about other warning signs besides pain - red eye, blurry vision
- Aggressive application and removal: acute corneal stress due to lens handling
 - Perforated cornea from harsh suction upon removal; can get abrasions from uncontrolled or forceful application
- Limbal touch/bearing with soft or scleral lenses: limbal stress case with sclerals
 - This is a dangerous scenario and must be evaluated early and often to avoid NV/LSCD; Provider needs to critically analyze fit and confidently advise refit when necessary
 - Ocular health compromised by lenses
- Water + Contact Lenses: acanthamoeba
 - Most severe safety concerns often related to showering, hand washing, and lack of hand drying – review these facts with patients

Tools to Improve Patient Health and Safety

- Governing body guidelines and resources: FDA, CDC
- Contact lens safety in the workplace: CCOHS
- Providing patient education at every visit
 - Analyze patient's application and removal techniques
 - Provide written instruction for handling care including prescribing solutions

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References

1. <https://jamanetwork.com/journals/jama/fullarticle/2779826>
2. <https://pubmed.ncbi.nlm.nih.gov/33771951/>
3. https://www.cdc.gov/mmwr/volumes/68/wr/mm6832a2.htm?s_cid=mm6832a2_w
4. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8075116/>
5. <https://pubmed.ncbi.nlm.nih.gov/28514244/>

6. <https://pubmed.ncbi.nlm.nih.gov/16163011/>
7. https://journals.lww.com/claojournal/Fulltext/2021/07000/Pediatric_Microbial_Keratitis_With_Overnight.7.aspx
8. [https://www.contactlensjournal.com/article/S1367-0484\(20\)30061-8/fulltext](https://www.contactlensjournal.com/article/S1367-0484(20)30061-8/fulltext)
9. <https://www.revieweducationgroup.com/ce/scleral-lens-fitting-once-rare>
10. <https://pubmed.ncbi.nlm.nih.gov/32932400/>
11. <https://www.clspectrum.com/issues/2022/january-2022/contact-lenses-2021>
12. <https://www.clspectrum.com/issues/2021/october-2021/gp-and-custom-soft-annual-report-2021>
13. <https://www.fda.gov/consumers/consumer-updates/focusing-contact-lens-safety>
14. https://www.ccohs.ca/oshanswers/prevention/contact_len.html
15. <https://www.cdc.gov/contactlenses/water-and-contact-lenses.html>
16. <https://www.cdc.gov/contactlenses/protect-your-eyes.html>