

Hydrogen Peroxide Contact Lens Care Systems: A Collaboration for Success

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Contact Lens Care Solutions

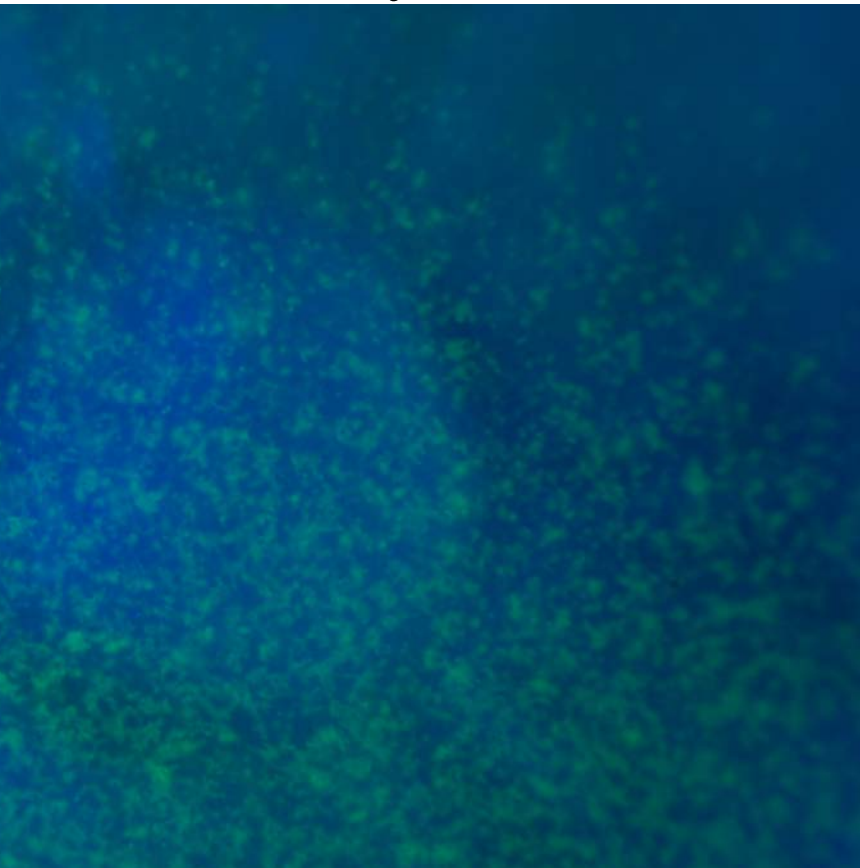
- Multipurpose Disinfection Solution (MPS)
- Multi-step Care System
 - Boston (Bausch + Lomb)
 - Optimum (Lobob)
 - Progent (Menicon)
- Hydrogen Peroxide Care System
- Enzymatic Cleaners

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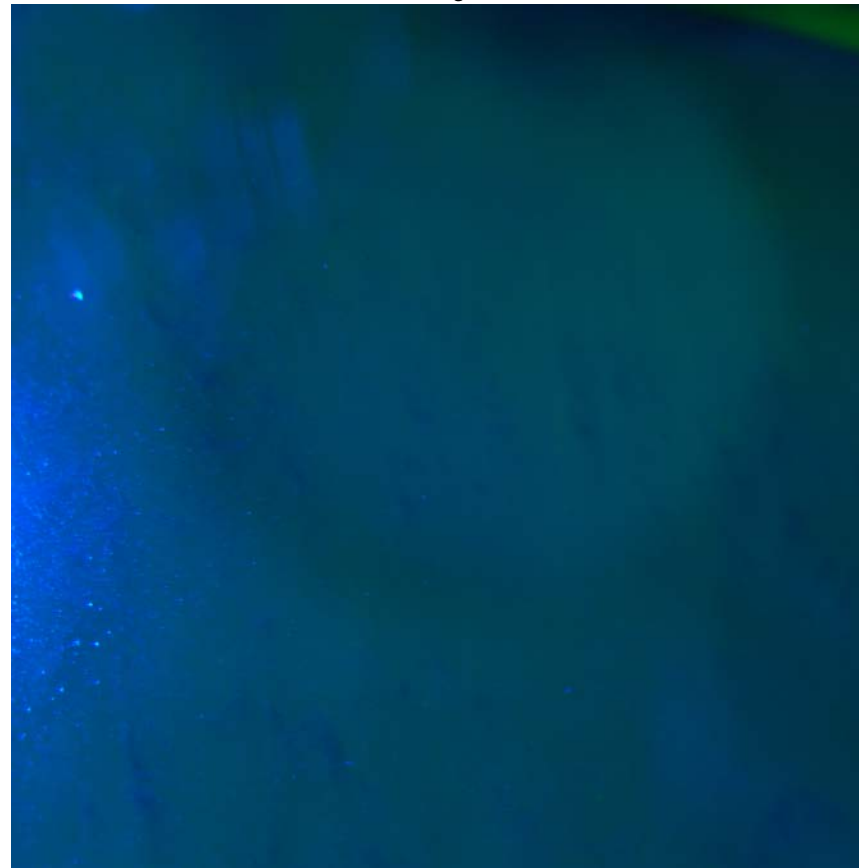
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Keratitis Secondary to Optimum CDS

- Day 1



- Day 3



3% Hydrogen peroxide (H₂O₂)

- Efficacious microbial disinfectant¹⁻³
- Essential product for many different types of contact lenses
- Mainstay on the market for 3 decades
- Over the years, the contact lens industry has simplified the use of this type of care system, increasing safety while maintaining efficacy

1. Shoff ME, Joslin CE, Tu EY, Kubatko L, Fuerst PA. Efficacy of contact lens systems against recent clinical and tap water *Acanthamoeba* isolates. *Cornea*. Jul 2008;27(6):713-719.

2. Johnston SP, Sriram R, Qvarnstrom Y, et al. Resistance of *Acanthamoeba* Cysts to Disinfection in Multiple Contact Lens Solutions. *J Clin Microbiol* Apr 29 2009.

3. Hughes R, Kilvington S. Comparison of hydrogen peroxide contact lens disinfection systems and solutions against *Acanthamoeba* polyphaga. *Antimicrob Agents Chemother* 2001;45:2038–2043.

3% Hydrogen peroxide (H₂O₂)

- Still, the potential for noncompliance remains
- FDA has received some medical device reports directly from consumers
 - “most often because (consumers) failed to read and follow directions for use”⁴

4. FDA Consumer Health Information/U.S. Food and Drug Administration. February 2016.

Potential for noncompliance:

- Existing H₂O₂ patient inadvertently applies solution to contact lens or eye
→ rare
- Multipurpose solution (MPS) patient “borrows” H₂O₂ from friend or family member (and uses his/her own flat case, rather than the basket-type case used with H₂O₂)
→ rare
- MPS patient inadvertently purchases H₂O₂ and uses it with flat case
→ rare

Potential for noncompliance:

- H_2O_2 is incompletely neutralized after 6 hour cycle → with current products, rare
 - Before 1 particular product and after its recall → rare
 - New case/disc with each solution purchase
 - Residual H_2O_2 after neutralization 15 +/- 8 ppm⁵
 - >100 ppm: stinging response⁶
 - Levels as high as 800 ppm do not disrupt the corneal or conjunctival epithelial surface⁶
 - I have heard patients complain of this, but they then use a rinsing solution prior to insertion; I have never personally seen a damaging keratitis from this

5. Chen H. et al. Residual hydrogen peroxide after neutralization of the Clear Care lens care system and a novel peroxide system. ARVO, May 2015.

6. Paugh et al. Ocular response to hydrogen peroxide. *Amer J Opt Phys Optics* 1988;65(2):91-98.

Potential for noncompliance:

- Inadvertent purchase of **private label** H₂O₂ by **private label** MPS users
 - Most frequent
 - A primary weakness of the entire H₂O₂ conversation is the labeling of generic H₂O₂
 - No outside red cap on some of these products
 - Instructions regarding cases and package labeling are not clear enough
 - Generic sellers are allowed to sell products with labels that are too similar
 - Global labelling issue affects ALL generic products, not just H₂O₂
 - “If you like OptiFree, try me!”

Solutions:

- Practitioners (or their staff) need to completely understand the features of all care systems, prescribe the one optimal for their patient, instruct them to not deviate from it (i.e. no generics), and properly communicate product instructions
- Collaboration is essential for proper product utilization

Collaboration:

- Should include, but not be limited to:
 - More specific labelling by the contact lens industry, particularly for private label products
 - Improved practitioner and staff education on the product's mechanism of action and how to best communicate its use (from FDA or industry)
 - FDA vigilance to ensure the proper use of H₂O₂ and all contact lens care products
 - Full patient compliance with practitioner and label instructions and guidelines

Conclusions: Hydrogen peroxide

- Safe, effective contact lens disinfectant
- The benefits of its thorough disinfection and preservative-free composition far outweigh the rare complications associated with this care system.

Thank you for your time and attention.