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Collagen Crosslinking using HPMC versus Dextran Riboflavin Solutions

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Purpose

- Compare clinical outcomes of CXL between HPMC and dextran-based riboflavin solutions in eyes with keratoconus and post-refractive surgery ectasia



Comparing HPMC and Dextran

- Dextran thins the cornea^{1,2,5}
 - Endothelial cell damage
- HPMC speeds diffusion rate of riboflavin⁴
- HPMC is more convenient⁶
 - Ships at 25° Celsius and can be autoclaved
- Conflicting measurements of precorneal film thickness⁵

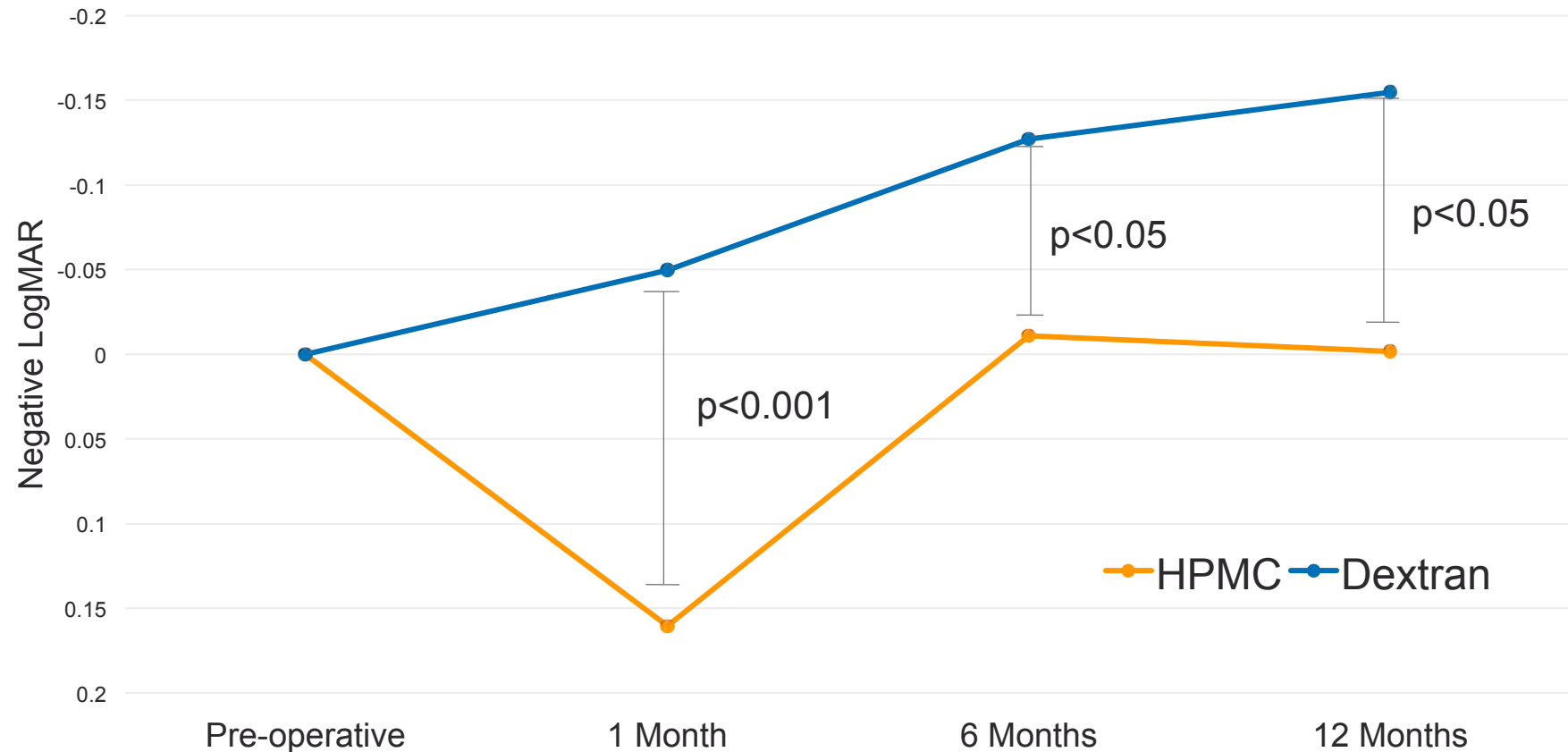


Methodology

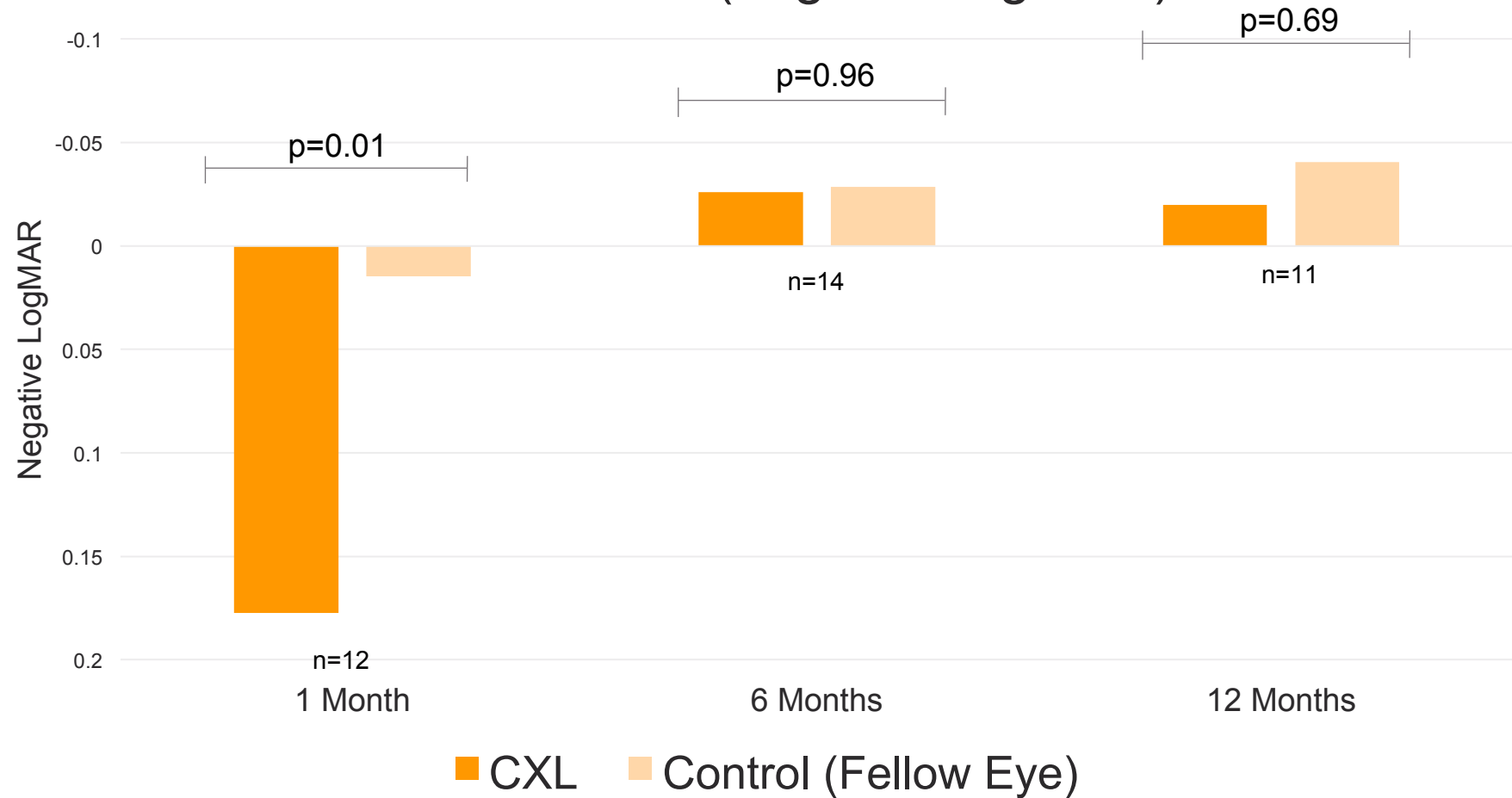
- Standard Dresden protocol
- Dextran-treated group (Sep. 2010-Jan. 2014)
 - 20% dextran solution with 0.1% riboflavin
 - 37 eyes of 33 patients
- HPMC-treated group (Jan. 2014-Aug. 2015)
 - 1.1% HPMC solution with 0.1% riboflavin
 - 19 eyes of 19 patients



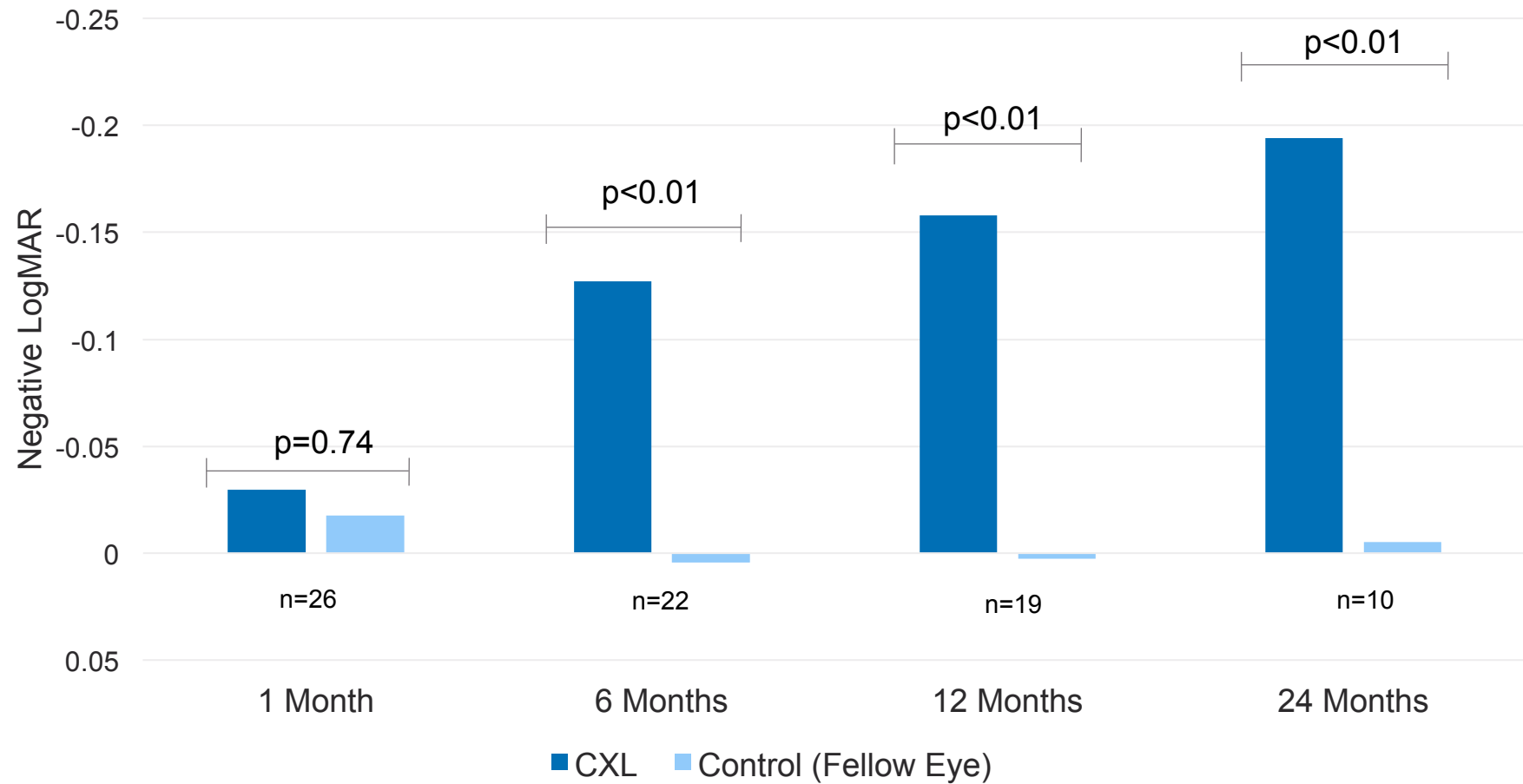
Change in BSCVA with HPMC vs. Dextran (negative logMAR)



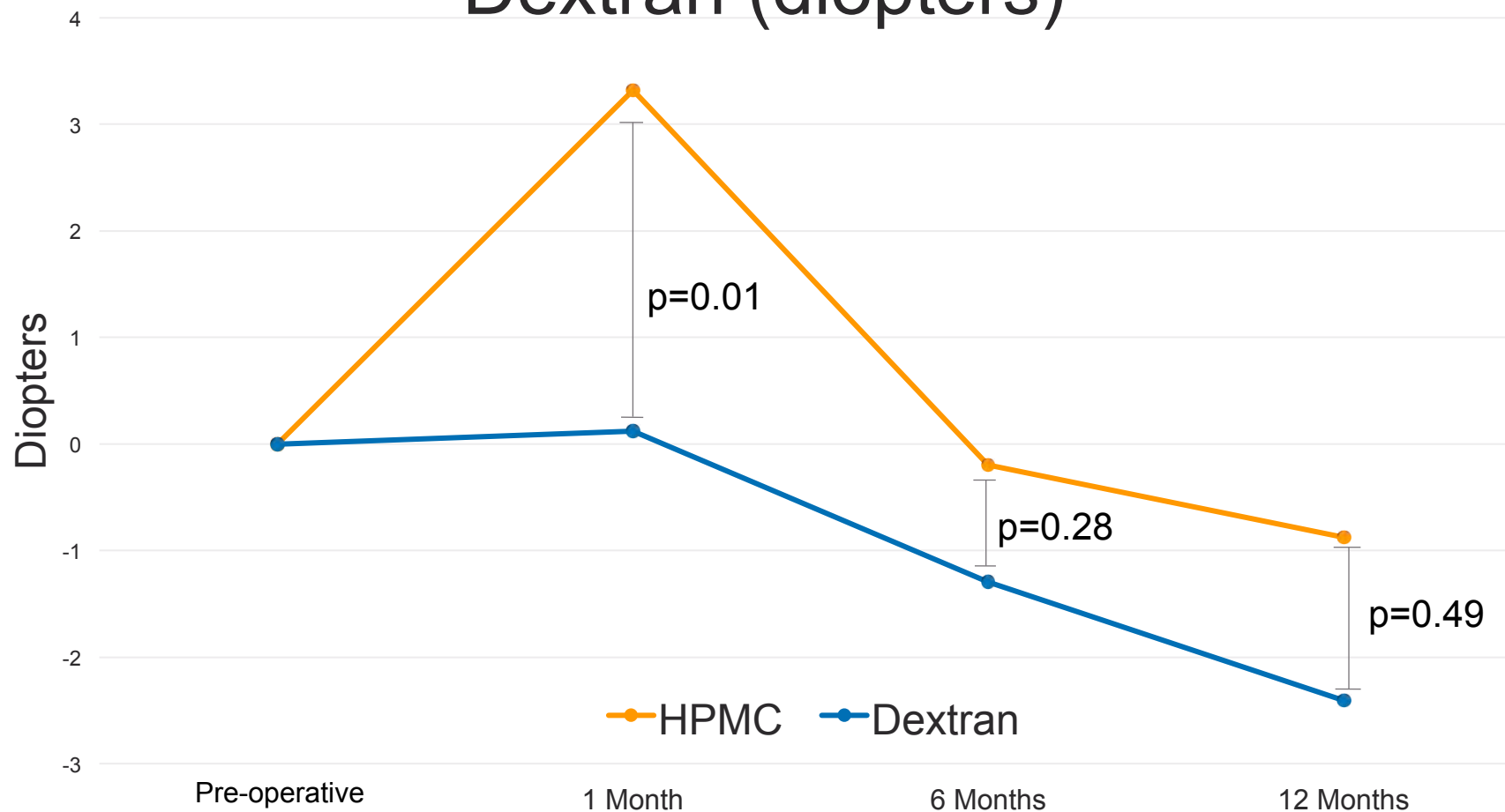
Change in BSCVA Compared to Fellow Eye HPMC-treated (negative logMAR)



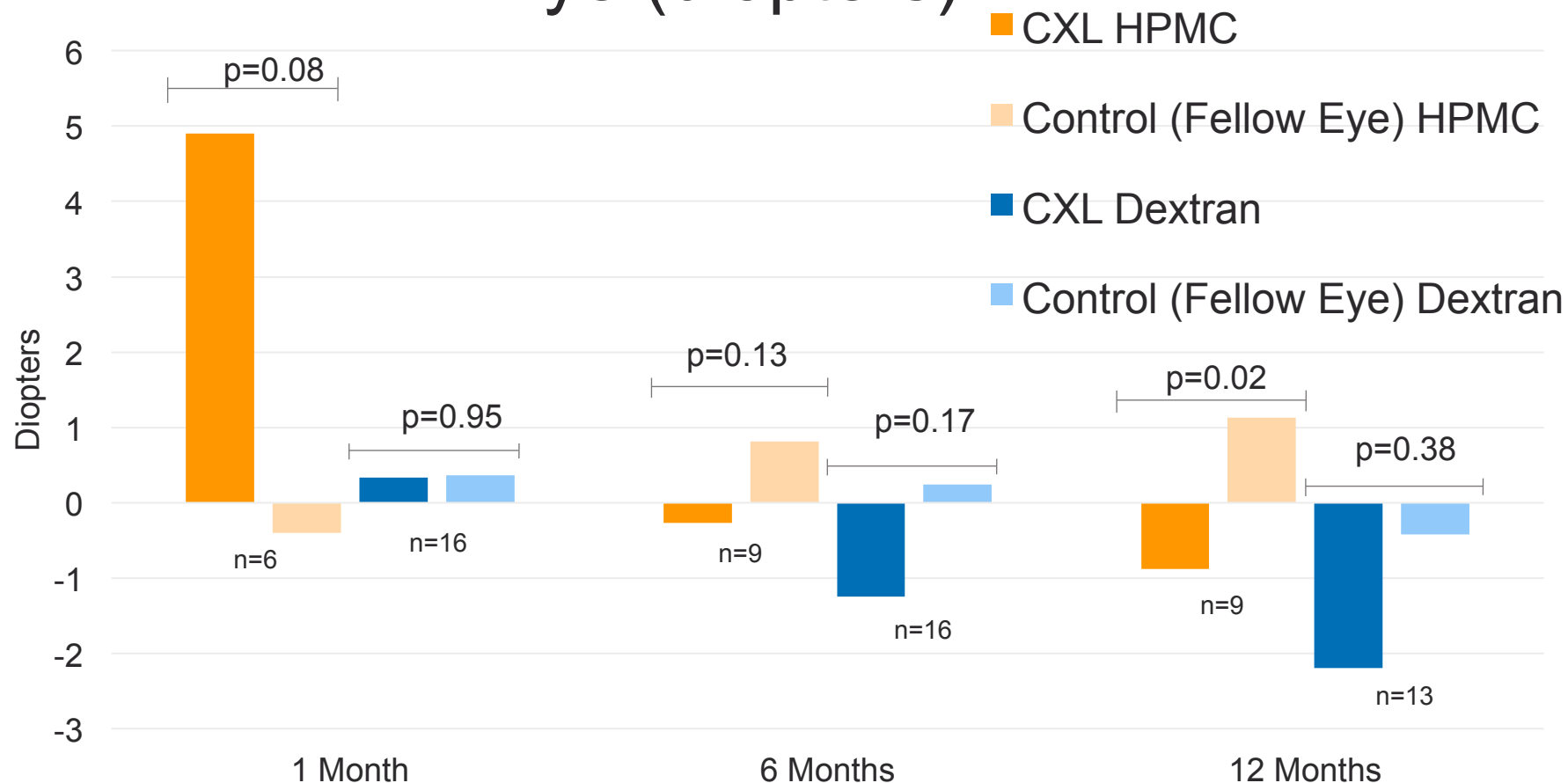
Change in BSCVA Compared to Fellow Eye Dextran-treated (negative logMAR)



Change in Kmax with HPMC vs. Dextran (diopters)



Change in Kmax Compared to Fellow Eye (diopters)



Conclusions and Future Directions

- Dresden protocol shows better visual outcomes using dextran-riboflavin solution compared to an HPMC-riboflavin solution
- Dresden protocol shows greater stability in Kmax at 1 month in dextran compared to HPMC
- HPMC and dextran both stabilized keratoconus
- Apparently these solutions do not have an identical photochemical response
- Larger population and more long-term data needed

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