Policy Name	Clinical Policy – Medically Necessary Contact Lenses
Policy Number	1309.00
Department	Clinical Product & Development
Subcategory	Medical Management
Initial Approval Date	02/06/2018
Current MPC/CCO Approval Date	07/10/2024
Current Effective Date	11/01/2024

Company Entities Supported (Select All that Apply):

_ Superior Vision Benefit Management
X Superior Vision Services
X Superior Vision of New Jersey, Inc.

(Collectively referred to as 'Versant Health' or 'the Company')

ACRONYMS or DEFINITIONS	
n/a	

PURPOSE

To provide the medical necessity criteria for contact lenses. Applicable procedure and material codes for medically necessary contact lenses are also defined.

POLICY

A. Background

Medically necessary contact lenses are required to correct reduced vision caused by specific eye conditions as outlined below.

B. Medically Necessary

1. Contact lenses, including scleral lenses, and contact lens fittings, may be medically necessary for the following conditions and clinical findings when spectacle lenses cannot adequately correct or improve the visual acuity or decreased visual function.

    a. Keratoconus, corneal ectasia, and related corneal pathologies with the following clinical findings:[1]
        i. Corneal topography demonstrating irregular, asymmetric corneal curvature; or,
        ii. Keratometric readings with irregular distorted mires and steepening with values greater than 48.7 diopters.[2] [3]

    b. History of full thickness penetrating keratoplasty and post-op radial keratotomy with supporting clinical findings.

    c. Irregular astigmatism demonstrated on corneal topography.

    d. High ametropia[4] including high myopia, high hypermetropia, or regular astigmatism, with the clinical finding that eyeglass prescription is equal to or greater than 8 diopters of ametropia in any meridian.

    e. Anisometropia, with the clinical finding of 3 or more diopters difference in eye glass prescription between the right and left eyes, in any meridian, when there is functional vision in both eyes.

    f. Aphakia[5]

    g. Aniridia,[6] coloboma of the iris, tonic iris or congenital malformation of the iris.

    h. Thygeson's superficial punctate keratitis with the following clinical findings:[7]

        i. Persistent punctate keratitis; and,
        ii. Failure to respond to topical corticosteroids and cyclosporine; or,
        iii. Documented contraindication or intolerance to a trial of corticosteroids or cyclosporine.

2. Additional indications for scleral lenses and associated lens fitting, include:

    a. Moderate to severe dry eye and related conditions including Sicca syndrome and Sjogren's Syndrome;
    b. Exposure keratopathy;

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[1] Saraç, 2019
[2] Cavas-Martinez, 2016
[3] Maeda, 1994.
[4] Jonas, 2021
[5] Jacobs, 2021
[6] Vasquez, 2021
[9] Harthan, 2018.

c. Limbal stem cell deficiency;[8]
d. Neurotrophic keratoconjunctivitis.[9]

3. Prior to scleral lenses (and fittings) to be considered as medically necessary for the treatment of moderate to severe dry eye and related conditions (including Sicca syndrome and Sjogren's Syndrome), a documented failure to respond or comply to a comprehensive trial of therapies should be completed. These therapies include:[10]

   a. Punctal plugs; or,
   b. Non-preserved artificial tears, and a second agent, including one of the following:
      i. Non-corticosteroid immunomodulary agents (e.g., cyclosporine); or,
      ii. LFA-1 antagonists (e.g., lifitegrast); or,
      iii. Topical secretagogue's; or,
      iv. Oral macrolide and/or tetracycline antibiotics.

   These initial treatment trials are not required for the use of scleral lenses to treat exposure keratopathy, limbal stem cell deficiency,[11] or neurotrophic keratoconjunctivitis.[12] [13]

4. Dual-focus contact lenses (V2525-MiSight Contact Lenses) may be medically necessary with the following indications:[14]

   a. At the initiation of treatment, the patient age is 8-12 years old; and,[15],[16]
   b. The patient has a current myopia refractive error of -.75D to -4.00D.

5. Hydrophilic soft (bandage) contact lenses are therapeutic bandages which may be medically necessary for the treatment of acute or chronic corneal pathology.

C. Documentation

Reimbursement must be supported by adequate and complete documentation in the patient's medical record that describes the procedure and the medical rationale. All items must be available upon request to initiate or sustain previous payments. For retrospective reviews the full operative report and medical care plan are required.

Every page of the record must be legible and include appropriate patient identification information (e.g., complete name, date(s) of service). Services provided/ordered must be authenticated by the physician; stamped signatures are not acceptable.

[8] Harthan, 2018
[9] Vilares 2023
[10] Chaudhary, 2023
[11] Harthan, 2018
[12] Craig, 2017
[13] Vilares 2023
[14] Chamberlain, 2019
[15] FDA Pre-market approval, November 15, 2019
[16] Chamberlain, 2023.

D. **Procedural Detail**

(This coding detail does not dictate which codes are covered for a state or LOB, nor do they represent coverage or benefit determination codes.*Indicates CPT code represents a service that is not a covered service under Indiana Medicaid policies)

CPT Codes	
92071	Fitting of contact lens for treatment of ocular surface disease (bandage lens)
92072	Fitting of contact lens for management of keratoconus, initial fitting
92310	Prescription of optical and physical characteristics of and fitting of contact lens, with medical supervision of adaptation; corneal lens, both eyes, except for aphakia
92311	Prescription of optical and physical characteristics of and fitting of contact lens, with medical supervision of adaptation; corneal lens for aphakia, 1 eye
92312	Prescription of optical and physical characteristics of and fitting of contact lens, with medical supervision of adaptation; corneal lens for aphakia, both eyes
92313	Prescription of optical and physical characteristics of and fitting of contact lens, with medical supervision of adaptation; corneoscleral lens
92314	Prescription of optical and physical characteristics of contact lens, with medical supervision of adaptation and direction of fitting by independent technician; corneal lens, both eyes except for aphakia
92315	Prescription of optical and physical characteristics of contact lens, with medical supervision of adaptation and direction of fitting by independent technician; corneal lens for aphakia, 1 eye
92316	Prescription of optical and physical characteristics of contact lens, with medical supervision of adaptation and direction of fitting by independent technician; corneal lens for aphakia, both eyes
92317	Prescription of optical and physical characteristics of contact lens, with medical supervision of adaptation and direction of fitting by independent technician; corneoscleral lens
92325	Modification of contact lens (separate procedure), with medical supervision of adaptation
92326	Replacement of contact lens
HCPCS CODES	
***S0512**	Daily wear specialty contact lens, per lens

***S0514**	Color contact lens, per lens
***S0515**	Scleral lens, liquid bandage device, per lens
***S0592**	Comprehensive contact lens evaluation
V2500	Contact lens, PMMA, spherical, per lens
V2501	Contact lens, PMMA, toric or prism ballast, per lens
V2502	Contact lens PMMA, bifocal, per lens
V2503	Contact lens, PMMA, color vision deficiency, per lens
V2510	Contact lens, gas permeable, spherical, per lens
V2511	Contact lens, gas permeable, toric, prism ballast, per lens
V2512	Contact lens, gas permeable, bifocal, per lens
V2513	Contact lens, gas permeable, extended wear, per lens
V2520	Contact lens, hydrophilic, spherical, per lens
V2521	Contact lens, hydrophilic, toric, or prism ballast, per lens
V2522	Contact lens, hydrophilic, bifocal, per lens
V2523	Contact lens, hydrophilic, extended wear, per lens
V2524	Contact lens, hydrophilic, spherical, photochromic additive, per lens
V2525	Contact lens, hydrophilic, dual focus, per lens
V2530	Contact lens, scleral, gas impermeable, per lens (for contact lens modification, see 92325)
V2531	Contact lens, scleral, gas permeable, per lens (for contact lens modification, see 92325)
V2599	Contact lens, other type

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RELATED POLICIES	
1316	Eye Exams
1328	Keratoconus and Related Corneal Ectasias

DOCUMENT HISTORY		
Approval Date	***Revision***	***Effective Date***
02/06/2018	Initial Policy	02/06/2018
10/18/2019	Clarified indication of high ametropia, regardless of best corrected visual acuity; clarified irregular astigmatism, with measurement of 2.00 diopters of astigmatism in either eye	01/01/2020
10/18/2019	Administrative correction to documentation requirements 02/11/2020.	01/01/2020
06/03/2020	Criteria changes to all sections.	09/01/2020

04/07/2021	Criteria for high ametropia metrics restated as applying to any meridian rather than spherical equivalent.	09/01/2021
10/06/2021	Added new indication, (Thygeson's superficial punctate keratitis) for extended wear contact lenses. Revised criteria for Keratoconus and related corneal ectasias to be standalone ("or") instead of combined ("and").	04/01/2022 (superseded)
01/05/2022	Removed requirements for greater than 2.5 diopters of keratometric astigmatism; reorganized policy by procedural codes; deleted diagnoses codes within body of policy.	04/01/2022
07/06/2022	Criteria changes: add disease specific criteria; delete criteria and HCPCS tables for materials and fittings; add CPT codes for hydrophilic lenses.	01/01/2023
7/12/2023	Add myopia and other vision indications when spectacles are unable to correct vision; add to indication of irregular astigmatism the requirement for measurement via keratometry or corneal topography; define unstable keratoconus with progressive measures; simplified scleral lens requirements.	01/01/2024
07/25/2023	2nd review and approval by MPC required. Deleted requirement of 2 D or more for irregular astigmatism.	01/01/2024
07/10/2024	For MNCL and scleral lenses, remove indication for keratoconus to be unstable or progressive; add indications of corneal pathology. For scleral lens only, add indications of exposure keratopathy, limbal stem cell deficiency, and neurotrophic keratoconjunctivitis. Add criteria and indications for hydrophilic soft bandage contact lens. Add criteria and indications for dual focus contact lenses.	11/01/2024
01/17/2025	Legal review and administrative change: CareSource IN Revision. 1/17/25	n/a

REFERENCES and SOURCES

1. Asimellis G, Kaufman EJ. Keratoconus. 2020 Aug 13. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2020 Jan–. PMID: 29262160.
2. Aslan MG, Fındık H, Okutucu M, et.al. The impact of hybrid contact lenses on keratoconus progression after accelerated transepithelial corneal cross-linking. Int Ophthalmol. 2020 Aug 27. doi: 10.1007/s10792-020-01551-w. Epub ahead of print. PMID: 32856196.
3. Bullimore MA, Johnson LA. Overnight orthokeratology. Cont Lens Anterior Eye. 2020 Aug;43(4):322-332. doi: 10.1016/j.clae.2020.03.018. Epub 2020 Apr 22. PMID: 32331970.
4. Bullimore MA. The Safety of Soft Contact Lenses in Children. Optom Vis Sci. 2017;94(6):638–646. doi:10.1097/OPX.0000000000001078.
5. Cavas-Martínez F, De la Cruz Sánchez E, Nieto Martínez J, et.al. Corneal topography in

keratoconus: state of the art. Eye Vis (Lond). 2016 Feb 22; 3:5. doi: 10.1186/s40662-016-0036-8. PMID: 26904709; PMCID: PMC4762162.
6. Chamberlain P, Peixoto-de-Matos SC, Logan NS, et.al. A 3-year Randomized Clinical Trial of MiSight Lenses for Myopia Control. Optom Vis Sci. 2019 Aug;96(8):556-567. doi: 10.1097/OPX.0000000000001410. PMID: 31343513.
7. Chamberlain P, Bradley A, Arumugam B, et.al. Long-term Effect of Dual-focus Contact Lenses on Myopia Progression in Children: A 6-year Multicenter Clinical Trial. Optom Vis Sci. 2022 Mar 1;99(3):204-212. doi: 10.1097/OPX.0000000000001873. PMID: 35086120.
8. Chaudhary S, Ghimire D, Basu S, et.al. Contact lenses in dry eye disease and associated ocular surface disorders. Indian J Ophthalmol. 2023 Apr;71(4):1142-1153. doi: 10.4103/IJO.IJO_2778_22. PMID: 37026246; PMCID: PMC10276711.
9. Craig JP, Nichols KK, Akpek EK, Caffery B, Dua HS, Joo CK, Liu Z, Nelson JD, Nichols JJ, Tsubota K, Stapleton F. TFOS DEWS II Definition and Classification Report. Ocul Surf. 2017 Jul;15(3):276-283. doi: 10.1016/j.jtos.2017.05.008. Epub 2017 Jul 20. PMID: 28736335.
10. de Luis Eguileor B, Acera A, Santamaría Carro A, et.al. Changes in the corneal thickness and limbus after 1 year of scleral contact lens use. Eye (Lond). 2020 Sep;34(9):1654-1661. doi: 10.1038/s41433-019-0729-z. Epub 2019 Dec 10. PMID: 31822857; PMCID: PMC7608222.
11. Downie LE, Lindsay RG. Contact lens management of keratoconus. Clin Exp Optom. 2015;98(4):299–311. doi:10.1111/cxo.12300.
12. Forstot SL, Binder PS. Treatment of Thygeson's superficial punctate keratopathy with soft contact lenses. Am J Ophthalmol. 1979 Aug;88(2):186-9. doi: 10.1016/0002-9394(79)90464-1. PMID: 474689.
13. Gu T, Du B, Bi H, et al. Meibomian Gland Dropout, not Distortion, Can Distinguish Dry Eyes from Normal Eyes in Contact Lens Wearers. Curr Eye Res. 2020 Aug;45(8):897-903. doi: 10.1080/02713683.2020.1731829. Epub 2020 Mar 2. PMID: 32066267.
14. Guzman-Aranguez A, Fonseca B, Carracedo G, et.al. Dry Eye Treatment Based on Contact Lens Drug Delivery: A Review. Eye Contact Lens. 2016;42(5):280–288. doi:10.1097/ICL.0000000000000184.
15. Harthan JS, Shorter E. Therapeutic uses of scleral contact lenses for ocular surface disease: patient selection and special considerations. Clin Optom (Auckl). 2018 Jul 11; 10:65-74. doi: 10.2147/OPTO.S144357. PMID: 30319297; PMCID: PMC6181806.
16. Ihnatko R, Eden U, Fagerholm P, et.al. Congenital Aniridia and the Ocular Surface. Ocul Surf. 2016;14(2):196–206. doi: 10.1016/j.jtos.2015.10.003
17. Jacobs DS, Carrasquillo KG, Cottrell PDet.al. CLEAR - Medical use of contact lenses. Cont Lens Anterior Eye. 2021 Apr;44(2):289-329. doi: 10.1016/j.clae.2021.02.002. Epub 2021 Mar 25. PMID: 33775381.
18. Jiang N, Montelongo Y, Butt H, et.al. Microfluidic Contact Lenses. Small. 2018;14(15): e1704363. doi:10.1002/smll.201704363.
19. Jonas JB, Ang M, Cho P, et.al. IMI Prevention of Myopia and Its Progression. Invest Ophthalmol Vis Sci. 2021 Apr 28;62(5):6. doi: 10.1167/iovs.62.5.6. PMID: 33909032; PMCID: PMC8083117.
20. Kazanskiy NL, Khonina SN, Butt MA. Smart Contact Lenses-A Step towards Non-Invasive Continuous Eye Health Monitoring. Biosensors (Basel). 2023 Oct 18;13(10):933. doi: 10.3390/bios13100933. PMID: 37887126; PMCID: PMC10605521.
21. Kaluzny BJ, Stachura J, Mlyniuk P, et.al. Change in the geometry of positive- and negative-powered soft contact lenses during wear. PLoS One. 2020 Nov 9;15(11): e0242095. doi: 10.1371/journal.pone.0242095. PMID: 33166364; PMCID: PMC7652269.
22. Koppen C, Kreps EO, Anthonissen L, et.al. Scleral Lenses Reduce the Need for Corneal

Transplants in Severe Keratoconus. Am J Ophthalmol. 2018 Jan; 185:43-47. doi: 10.1016/j.ajo.2017.10.022. Epub 2017 Nov 16. PMID: 29103959.
23. Kumar B, Chandler HL, Plageman T, et.al. Lens Stretching Modulates Lens Epithelial Cell Proliferation via YAP Regulation. Invest Ophthalmol Vis Sci. 2019 Sep 3;60(12):3920-3929. doi: 10.1167/iovs.19-26893. PMID: 31546253; PMCID: PMC7043215.
24. Lambert SR, Aakalu VK, Hutchinson AK, et al. Intraocular Lens Implantation during Early Childhood: A Report by the American Academy of Ophthalmology. Ophthalmology. 2019;126(10):1454–1461. doi: 10.1016/j.ophtha.2019.05.009.
25. Li SM, Kang MT, Wu SS, et.al. Studies using concentric ring bifocal and peripheral add multifocal contact lenses to slow myopia progression in school-aged children: a meta-analysis. Ophthalmic Physiol Opt. 2017;37(1):51–59. doi:10.1111/opo.12332.
26. Lim EWL. Current perspectives in the management of keratoconus with contact lenses. Eye (Lond). 2020 Dec;34(12):2175-2196. doi: 10.1038/s41433-020-1065-z. Epub 2020 Jul 8. PMID: 32641797; PMCID: PMC7784906.
27. Lin JJ, Mian SI, Stein JD, et al. Impact of Scleral Contact Lens Use on the Rate of Corneal Transplantation for Keratoconus. Cornea. 2021 Jan;40(1):39-42. doi: 10.1097/ICO.0000000000002388. PMID: 32452985; PMCID: PMC7686092.
28. Lipson MJ, Curcio LR. Fitting of Orthokeratology in the United States: A Survey of the Current State of Orthokeratology. Optom Vis Sci. 2022 Jul 1;99(7):568-579. doi: 10.1097/OPX.0000000000001911. Epub 2022 Jun 3. PMID: 35657355.
29. McNeill S, Bobier WR. The correction of static and dynamic aniseikonia with spectacles and contact lenses. Clin Exp Optom. 2017;100(6):732–734. doi:10.1111/cxo.12516.
30. Nagra PK, Rapuano CJ, Cohen EJ, et. al Thygeson's Superficial Punctate Keratitis, Ophthalmology 2004; 111:34-37.
31. Nilagiri VK, Metlapally S, Kalaiselvan P, et.al. LogMAR and Stereoacuity in Keratoconus Corrected with Spectacles and Rigid Gas-permeable Contact Lenses. Optom Vis Sci. 2018 Apr;95(4):391-398. doi: 10.1097/OPX.0000000000001205. PMID: 29554011; PMCID: PMC5968352.
32. Porcar E, Montalt JC, España-Gregori E, et.al. Corneo-scleral contact lenses in an uncommon case of keratoconus with high hyperopia and astigmatism. Cont Lens Anterior Eye. 2017 Oct;40(5):351-356. doi: 10.1016/j.clae.2017.07.004. Epub 2017 Jul 13. PMID: 28712891.
33. Prousali E, Haidich AB, Fontalis A, et.al. Efficacy and safety of interventions to control myopia progression in children: an overview of systematic reviews and meta-analyses. BMC Ophthalmol. 2019 May 9;19(1):106. doi: 10.1186/s12886-019-1112-3. PMID: 31072389; PMCID: PMC6506938.
34. 9;19(1):106. doi: 10.1186/s12886-019-1112-3. PMID: 31072389; PMCID: PMC6506938.
35. Rathi VM, Mandathara PS, Dumpati S. Contact lens in keratoconus. Indian J Ophthalmol. 2013 Aug;61(8):410-5. doi: 10.4103/0301-4738.116066. PMID: 23925325; PMCID: PMC3775075.
36. Remón L, Pérez-Merino P, Macedo-de-Araújo RJ, et.al. Bifocal and Multifocal Contact Lenses for Presbyopia and Myopia Control. J Ophthalmol. 2020 Mar 27; 2020:8067657. doi: 10.1155/2020/8067657. PMID: 32318285; PMCID: PMC7152962.
37. Ruiz-Pomeda A, Villa-Collar C. Slowing the Progression of Myopia in Children with the MiSight Contact Lens: A Narrative Review of the Evidence. Ophthalmol Ther. 2020 Dec;9(4):783-795. doi: 10.1007/s40123-020-00298-y. Epub 2020 Sep 11. PMID: 32915454; PMCID: PMC7708530.
38. Sankaridurg P. Contact lenses to slow progression of myopia. Clin Exp Optom. 2017;100(5):432–437. doi:10.1111/cxo.12584.

39. Saraç Ö, Kars ME, Temel B, et.al. Clinical evaluation of different types of contact lenses in keratoconus management. Cont Lens Anterior Eye. 2019 Oct;42(5):482-486. doi: 10.1016/j.clae.2019.02.013. Epub 2019 Feb 23. PMID: 30808595.
40. Sauer A, Greth M, Letsch J, et.al. Contact Lenses and Infectious Keratitis: From a Case-Control Study to a Computation of the Risk for Wearers. Cornea. 2020 Jun;39(6):769-774. doi: 10.1097/ICO.0000000000002248. PMID: 31990844.
41. Shetty R, Kaweri L, Pahuja N, et.al. Current review and a simplified "five-point management algorithm" for keratoconus. Indian J Ophthalmol. 2015 Jan;63(1):46-53. doi: 10.4103/03014738.151468. PMID: 25686063; PMCID: PMC4363958.
42. Shi WY, Gao H, Li Y. [Standardizing the clinical diagnosis and treatment of keratoconus in China]. Zhonghua Yan Ke Za Zhi. 2019 Jun 11;55(6):401-404. Chinese. doi: 10.3760/cma.j.issn.0412-4081.2019.06.001. PMID: 31189269.
43. Smith EL, Hung LF, Arumugam B, et.al. Observations on the relationship between anisometropia, amblyopia and strabismus. Vision Res. 2017; 134:26–42. doi: 10.1016/j.visres.2017.03.004.
44. South J, Gao T, Collins A, et.al. Aniseikonia and Anisometropia: implications for suppression and amblyopia. Clin Exp Optom. 2019;102(6):556–565. doi:10.1111/cxo.12881.
45. Stokkermans TJ, Day SH. Aniseikonia. 2023 Aug 8. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan–. PMID: 36256755.
46. Tang M, Li Y, Chamberlain W, et.al. Differentiating Keratoconus and Corneal Warpage by Analyzing Focal Change Patterns in Corneal Topography, Pachymetry, and Epithelial Thickness Maps. Invest Ophthalmol Vis Sci. 2016;57(9): OCT544–OCT549. doi:10.1167/iovs.15-18938
47. Tay SA, Farzavandi S, Tan D. Interventions to Reduce Myopia Progression in Children. Strabismus. 2017 Mar;25(1):23-32. doi: 10.1080/09273972.2016.1276940. Epub 2017 Feb 6; PMID: 28166436.
76. Thulasi P, Djalilian AR. Update in Current Diagnostics and Therapeutics of Dry Eye Disease. Ophthalmology. 2017;124(11S): S27–S33. doi: 10.1016/j.ophtha.2017.07.022.
77. Tian M, Jian W, Zhang X, Sun L, Shen Y, Zhou X. Predictive factors of the accelerated transepithelial corneal cross-linking outcomes in keratoconus. BMC Ophthalmol. 2022 Jan 3;22(1):7. doi: 10.1186/s12886-021-02235-4. PMID: 34980018; PMCID: PMC8725418.
78. Tilia D, Diec J, Ehrmann K, et al. Visual Performance and Binocular/Accommodative Function of S.T.O.P. Contact Lenses Compared with MiSight. Eye Contact Lens. 2023 Feb 1;49(2):63-70. doi: 10.1097/ICL.0000000000000950. Epub 2022 Oct 19. PMID: 36282205; PMCID: PMC9875283.
79. Vaidyanathan U, Hopping GC, Liu HY, et.al. Persistent Corneal Epithelial Defects: A Review Article. Med Hypothesis Discov Innov Ophthalmol. 2019 Fall;8(3):163-176. PMID: 31598519; PMCID: PMC6778469.
80. Vaidyanathan U, Hopping GC, Liu HY, Somani AN, Ronquillo YC, Hoopes PC, Moshirfar M. Persistent Corneal Epithelial Defects: A Review Article. Med Hypothesis Discov Innov Ophthalmol. 2019 Fall;8(3):163-176. PMID: 31598519; PMCID: PMC6778469.
81. Vásquez Quintero A, Pérez-Merino P, Fernández García AI, et.al. Smart contact lens: A promising therapeutic tool in aniridia. Arch Soc Esp Oftalmol (Engl Ed). 2021 Nov;96 Suppl 1:68-73. doi: 10.1016/j.oftale.2021.01.004. Epub 2021 Jun 17. PMID: 34836591.
82. Vilares Morgado R, Moura R, Moreira R, Falcão-Reis F, Pinheiro-Costa J. New Promising Therapeutic Approach for Refractory Corneal Epithelial Defects. Cureus. 2023 May 22;15(5): e39324. doi: 10.7759/cureus.39324. PMID: 37351246; PMCID: PMC10283014.
83. Vincent SJ. The use of contact lenses in low vision rehabilitation: optical and therapeutic applications. Clin Exp Optom. 2017;100(5):513–521. doi:10.1111/cxo.12562.

84. Watson SL, Leung V. Interventions for recurrent corneal erosion. Cochrane Database Syst Rev. 2018;7(7):CD001861. Published 2018 Jul 9. doi: 10.1002/14651858.CD001861.pub4.
85. Weissbart SB, Ayres BD. Management of aniridia and iris defects: an update on iris prosthesis options. Curr Opin Ophthalmol. 2016 May;27(3):244-9. doi: 10.1097/ICU. Zhu Q, Liu Y, Tighe S, et al. Retardation of Myopia Progression by Multifocal Soft Contact Lenses. Int J Med Sci. 2019;16(2):198–202. Published 2019 Jan 1. doi:10.7150/ijms.30118.

SOURCES

1. American Academy of Ophthalmology - Preferred Practice Pattern, AAO PPP Cornea/External Disease Panel, Hoskins Center for Quality Eye Care. Cornea/External Disease Summary Benchmarks – 2023. https://www.aao.org/education/summary-benchmark-detail/cornea-external-disease-summary-benchmarks-2020. Accessed 4/2024.
2. American Academy of Ophthalmology - Preferred Practice Pattern, AAO PPP Cornea/External Disease Panel, Hoskins Center for Quality Eye Care. Cornea/External Disease Summary Benchmarks – 2023. https://www.aao.org/education/summary-benchmark-detail/cornea-external-disease-summary-benchmarks-2020. Accessed 4/2024.
3. American Academy of Ophthalmology - Preferred Practice Pattern, Corneal Edema and Opacification. 2023.. https://www.aao.org/education/preferred-practice-pattern/corneal-edema-opacification-ppp-2023. Accessed 4/2024.
4. American Academy of Ophthalmology - Preferred Practice Pattern-Dry Eye Syndrome, 2023. https://www.aao.org/education/preferred-practice-pattern/dry-eye-syndrome-ppp-2023. Accessed 4/2024.
5. American Academy of Ophthalmology. Preferred Practice Pattern. Corneal Ectasia. 2023. https://www.aao.org/education/preferred-practice-pattern/corneal-ectasia-ppp-2023. Accessed 4/2024.
6. American Optometric Association; Types of Contact Lenses. 2023.https://www.aoa.org/healthy-eyes/vision-and-vision-correction/types-of-contact-lenses?ct=bc17d5ba3680ccb9baeb8f90590e1a986e6f19ecccb71ba236c670a5c4f4f91ce9e69622e75bb427023fd18a7cb126e4707be7a7d4a43a65c72cbcc2f1841314. Accessed 4/2024.
7. CMS, “Hydrophilic Contact Lens For Corneal Bandage.” 80.1 NCD. https://www.cms.gov/medicare-coverage-database/view/ncd.aspx?NCDId=136&ver=1. Accessed 6/2024.
8. NIH Clinical Trial NCT01729208. “An Evaluation of the Effectiveness of Dual Focus Soft Contact Lenses in Slowing Myopia Progression.” Accessed 7/2024.
9. FDA. “FDA approves first contact lens indicated to slow the progression of nearsightedness in children.” https://www.fda.gov/news-events/press-announcements/fda-approves-first-contact-lens-indicated-slow-progression-nearsightedness-children. Accessed 7/2024.