ND

Medical Policies

Print

Policy Number:	G-5005		
Policy Name:	Corneal Topography/Computer-Assisted Corneal Topography/ Photokeratoscopy		
Policy Type:	Medical	**Policy Subtype:**	Miscellaneous
Effective Date:	09-15-2025		

Description

Detection and Monitoring Diseases of the Cornea

Corneal topography describes measurements of the curvature of the cornea. An evaluation of corneal topography is necessary for the accurate diagnosis and follow-up of certain corneal disorders, such as keratoconus, difficult contact lens fits, and pre- and postoperative assessment of the cornea, most commonly after refractive surgery.

Assessing corneal topography is a part of the standard ophthalmologic examination of some individuals. Corneal topography can be evaluated and determined in multiple ways. Computer-assisted corneal topography has been used for early identification and quantitative documentation of the progression of keratoconic corneas, and evidence is sufficient to indicate that computer-assisted topographic mapping can detect and monitor disease.

Various techniques and instruments are available to measure corneal topography: keratometer, keratoscope, and computer-assisted photokeratoscopy.

- The keratometer (also referred to as an ophthalmometer), the most commonly used instrument, projects an illuminated image onto a central area in the cornea. By measuring the distance between a pair of reflected points in both of the cornea's 2 principal meridians, the keratometer can estimate the radius of curvature of 2 meridians. Limitations of this technique include the fact that the keratometer can only estimate the corneal curvature over a small percentage of its surface and that estimates are based on the frequently incorrect assumption that the cornea is spherical.
- The keratoscope reflects a series of concentric circular rings off the anterior corneal surface. Visual inspection of the shape and spacing of the concentric rings provides a qualitative assessment of topography.
- A photokeratoscope is a keratoscope equipped with a camera that can provide a permanent record of the corneal topography.
- Computer-assisted photokeratoscopy is an alternative to keratometry or keratoscopy for measuring corneal curvature. This technique uses sophisticated image analysis programs to provide quantitative corneal topographic data. Early computer-based programs were combined with keratoscopy to create graphic displays and high-resolution, color-coded maps of the corneal surface. Newer technologies measure both curvature and shape, enabling quantitative assessment of corneal depth, elevation, and power.

Regulatory Status

A number of devices have been cleared for marketing by the U.S. Food and Drug Administration through the 510(k) process. In 1999, the Orbscan® (manufactured by Orbtek, distributed by Bausch and Lomb) was cleared by the Food and Drug Administration. The second-generation Orbscan II is a hybrid system that uses both projective (slit scanning) and reflective (Placido) methods. The Pentacam® (Oculus) is one of a number of rotating Scheimpflug imaging systems produced in Germany. In 2005, the Pentacam HR was released with a newly designed high-resolution camera and improved optics. Food and Drug Administration product code: MXK.

Table 1. Corneal Topography Devices Clearing by the US Food and Drug Administration

Device	Manufacturer	Date Cleared	510.k No.	Indication
Populations	Interventions	Comparators	Outcomes	
Individuals:	Interventions of interest are:	Comparators of interest are:	Relevant outcomes include:	
• With disorders of corneal topography	• Computer-assisted corneal topography/photokeratoscopy	• Manual corneal topography measurements	• Test accuracy • Other test performance measures • Functional outcomes	
VX130 Ophthalmic Diagnostic Device	LUNEAU SAS	4/24/2017	K162067	To scan, map and display the geometry of the anterior segment of the eye
Pentacam AXL	OCULUS OPTIKGERATE GMBH	1/20/2016	K152311	To scan, map and display the geometry of the anterior segment of the eye
ARGOS	SANTEC CORPORATION	10/2/2015	K150754	To scan, map and display the geometry

				of the anterior segment of the eye
ALLEGRO OCULYZER	WAVELIGHT AG	7/20/2007	K071183	To scan, map and display the geometry of the anterior segment of the eye
HEIDELBERG ENGINEERING SLITLAMP-OCT (SL-OCT)	HEIDELBERG ENGINEERING	1/13/2006	K052935	To scan, map and display the geometry of the anterior segment of the eye
CM 3910 ROTATING DOUBLE SCHEIMPFLUG CAMERA	SIS LTD. SURGICAL INSTRUMENT SYSTEMS	9/28/2005	K051940	To scan, map and display the geometry of the anterior segment of the eye
PATHFINDER	MASSIE RESEARCH LABORATORIES INC.	9/2/2004	K031788	To scan, map and display the geometry of the anterior segment of the eye
NGDI (NEXT GENERATION	BAUSCH & LOMB	7/23/2004	K040913	To scan, map and display

DIAGNOSTIC INSTRUMENT)				the geometry of the anterior segment of the eye
PENTACAM SCHEIMPFLUG CAMERA	OCULUS OPTIKGERATE GMBH	9/16/2003	K030719	To scan, map and display the geometry of the anterior segment of the eye
ANTERIOR EYE-SEGMENT ANALYSIS SYSTEM	NIDEK INC.	8/6/1999	K991284	To scan, map and display the geometry of the anterior segment of the eye
ORBSCAN	TECHNOLAS PERFECT VISION GMBH	3/5/1999	K984443	To scan, map and display the geometry of the anterior segment of the eye
VX130 Ophthalmic Diagnostic Device	LUNEAU SAS	4/24/2017	K162067	To scan, map and display the geometry of the anterior segment of the eye

Criteria

Coverage is subject to the specific terms of the member's benefit plan.

Policy Application

All claims submitted under this policy's section will be processed according to the policy effective date and associated revision effective dates in effect on the date of processing, regardless of service date; *OR*
All claims submitted under this policy's section will be processed according to the policy effective date and associated revision effective dates in effect on the date of service.

Non-computer-assisted corneal topography is considered part of the evaluation and management services of general ophthalmologic services (CPT codes 92002-92014), and therefore this service should not be billed separately. There is no separate CPT code for this type of corneal topography.

Computer-assisted corneal topography is considered **experimental/investigational** to detect or monitor diseases of the cornea

Procedure Codes

92002	92004	92012	92014	92025

Summary of Evidence

For individuals who have disorders of corneal topography who receive computer-assisted corneal topography/photokeratoscopy, the evidence includes only a few studies. Relevant outcomes are test accuracy, other test performance measures, and functional outcomes. With the exception of refractive surgery, a procedure not discussed herein, no studies have shown clinical benefit (e.g., a change in treatment decisions) based on a quantitative evaluation of corneal topography. In addition, a large prospective series found no advantage with use of different computer-assisted corneal topography methods over manual corneal keratometry. Computer-assisted corneal topography lacks evidence from appropriately constructed clinical trials that could confirm whether it improves outcomes. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Professional Statements and Societal Positions Guidelines

Practice Guidelines and Position Statements

A 1999 American Academy of Ophthalmology (AAO) assessment indicated that computer-assisted corneal topography evolved from the need to measure corneal curvature and topography more comprehensively and accurately than keratometry and that corneal topography is used primarily for refractive surgery. AAO indicated several other potential uses: (1) to evaluate and manage individuals following penetrating keratoplasty, (2) to plan astigmatic surgery, (3) to evaluate individuals with unexplained visual loss and document visual complications, and (4) to fit contact lenses. However, the AAO assessment noted the lack of data supporting the use of objective measurements (as opposed to subjective determinants, like subjective refraction) of astigmatism.

Diagnosis Codes

Non-Covered Diagnosis Codes

H16.001	H16.002	H16.003	H16.009	H16.011	H16.012	H16.013
H16.019	H16.021	H16.022	H16.023	H16.029	H16.031	H16.032
H16.033	H16.039	H16.041	H16.042	H16.043	H16.049	H16.051
H16.052	H16.053	H16.059	H16.061	H16.062	H16.063	H16.069
H16.071	H16.072	H16.073	H16.079	H16.101	H16.102	H16.103
H16.109	H16.111	H16.112	H16.113	H16.119	H16.121	H16.122
H16.123	H16.129	H16.131	H16.132	H16.133	H16.139	H16.141
H16.142	H16.143	H16.149	H16.201	H16.202	H16.203	H16.209
H16.211	H16.212	H16.213	H16.219	H16.221	H16.222	H16.223
H16.229	H16.231	H16.232	H16.233	H16.239	H16.241	H16.242
H16.243	H16.249	H16.251	H16.252	H16.253	H16.259	H16.261
H16.262	H16.263	H16.269	H16.291	H16.292	H16.293	H16.299
H16.301	H16.302	H16.303	H16.309	H16.311	H16.312	H16.313
H16.319	H16.321	H16.322	H16.323	H16.329	H16.331	H16.332
H16.333	H16.339	H16.391	H16.392	H16.393	H16.399	H16.401
H16.402	H16.403	H16.409	H16.411	H16.412	H16.413	H16.419
H16.421	H16.422	H16.423	H16.429	H16.431	H16.432	H16.433
H16.439	H16.441	H16.442	H16.443	H16.449	H16.8	H16.9
H17.00	H17.01	H17.02	H17.03	H17.10	H17.11	H17.12
H17.811	H17.812	H17.813	H17.819	H17.821	H17.822	H17.823
H17.829	H17.89	H17.9	H18.001	H18.002	H18.003	H18.009
H18.011	H18.012	H18.013	H18.019	H18.021	H18.022	H18.023
H18.029	H18.031	H18.032	H18.039	H18.041	H18.042	H18.043

H18.049	H18.051	H18.052	H18.053	H18.059	H18.061	H18.062
H18.063	H18.069	H18.20	H18.211	H18.212	H18.213	H18.219
H18.221	H18.222	H18.223	H18.229	H18.231	H18.232	H18.233
H18.239	H18.30	H18.302	H18.311	H18.312	H18.313	H18.319
H18.321	H18.322	H18.323	H18.329	H18.331	H18.332	H18.333
H18.339	H18.411	H18.412	H18.413	H18.419	H18.429	H18.43
H18.441	H18.442	H18.443	H18.449	H18.459	H18.469	H18.49
H18.50	H18.51	H18.52	H18.53	H18.54	H18.55	H18.59
H18.609	H18.619	H18.629	H18.70	H18.719	H18.721	H18.722
H18.723	H18.729	H18.731	H18.732	H18.733	H18.739	H18.791
H18.792	H18.793	H18.799	H18.811	H18.812	H18.813	H18.819
H18.829	H18.831	H18.832	H18.833	H18.839	H18.891	H18.892
H18.893	H18.899	H18.9				

CURRENT CODING

CPT:

92002	OPH SVCS MEDICAL XM&EVAL INTERMEDIATE NEW PT	Medicaid Expansion
92004	OPH SVCS MEDICAL XM&EVAL COMPRE NEW PT 1/> VST	Medicaid Expansion
92012	OPH SVCS MEDICAL XM&EVAL INTERMEDIATE EST PT	Medicaid Expansion
92014	OPH SVCS MEDICAL XM&EVAL COMPRE EST PT 1/>VST	Medicaid Expansion
92025	COMPUTERIZED CORNEAL TOPOGRAPHY UNI/BI W/I&R	Medicaid Expansion
92002	OPH SVCS MEDICAL XM&EVAL INTERMEDIATE NEW PT	Commercial
92004	OPH SVCS MEDICAL XM&EVAL COMPRE NEW PT 1/> VST	Commercial

92012	OPH SVCS MEDICAL XM&EVAL INTERMEDIATE EST PT	Commercial
92014	OPH SVCS MEDICAL XM&EVAL COMPRE EST PT 1/>VST	Commercial
92025	COMPUTERIZED CORNEAL TOPOGRAPHY UNI/BI W/I&R	Commercial

References

1. Avedro Inc. Photorexa Viscous and Photorexa Prescribing Label. 2016; http://www.accessdata.fda.gov/drugsatfda_docs/label/2016/203324s000lbl.pdf. Accessed February 17, 2023.
2. Davis LJ, Schechtman KB, Wilson BS, et al. Longitudinal changes in visual acuity in keratoconus. Invest Ophthalmol Vis Sci. Feb 2006; 47(2): 489-500. PMID 16431941
3. McMahon TT, Edrington TB, Szczotka-Flynn L, et al. Longitudinal changes in corneal curvature in keratoconus. Cornea. Apr 2006; 25(3): 296-305. PMID 16633030
4. Hersh PS, Stulting RD, Muller D, et al. United States Multicenter Clinical Trial of Corneal Collagen Crosslinking for Keratoconus Treatment. Ophthalmology. Sep 2017; 124(9): 1259-1270. PMID 28495149
5. McAnena L, Doyle F, O'Keefe M. Cross-linking in children with keratoconus: a systematic review and meta-analysis. Acta Ophthalmol. May 2017; 95(3): 229-239. PMID 27678078
6. Toprak I, Yaylali V, Yildirim C. Visual, Topographic, and Pachymetric Effects of Pediatric Corneal Collagen Cross-linking. J Pediatr Ophthalmol Strabismus. Mar 01 2017; 54(2): 84-89. PMID 27668869
7. Badawi AE. Accelerated corneal collagen cross-linking in pediatric keratoconus: One year study. Saudi J Ophthalmol. 2017; 31(1): 11-18. PMID 28337057
8. Knutsson KA, Paganoni G, Matuska S, et al. Corneal collagen cross-linking in paediatric patients affected by keratoconus. Br J Ophthalmol. Feb 2018; 102(2): 248-252. PMID 28655729
9. Papaioannou L, Miligkos M, Papathanassiou M. Corneal Collagen Cross- Linking for Infectious Keratitis: A Systematic Review and Meta-Analysis. Cornea. Jan 2016; 35(1): 62-71. PMID 26509768
10. Padmanabhan P, Rachapalle Reddi S, Rajagopal R, et al. Corneal Collagen Cross-Linking for Keratoconus in Pediatric Patients-Long-Term Results. Cornea. Feb 2017; 36(2): 138-143. PMID 28060058
11. Raiskup-Wolf F, Hoyer A, Spoerl E, et al. Collagen crosslinking with riboflavin and ultraviolet-A light in keratoconus: long-term results. J Cataract Refract Surg. May 2008; 34(5): 796-801. PMID 18471635
12. Raiskup F, Theuring A, Pillunat LE, et al. Corneal collagen crosslinking with riboflavin and ultraviolet-A light in progressive keratoconus: ten-year results. J Cataract Refract Surg. Jan 2015; 41(1): 41-6. PMID 25532633
13. Caporossi A, Mazzotta C, Baiocchi S, et al. Long-term results of riboflavin ultraviolet a corneal collagen cross-linking for keratoconus in Italy: the Siena eye cross study. Am J Ophthalmol. Apr 2010; 149(4): 585-93. PMID 20138607
14. Hersh PS, Stulting RD, Muller D, et al. U.S. Multicenter Clinical Trial of Corneal Collagen Crosslinking for Treatment of Corneal Ectasia after Refractive Surgery. Ophthalmology. Oct 2017; 124(10): 1475-1484. PMID 28655538
15. Wittig-Silva C, Whiting M, Lamoureux E, et al. A randomized controlled trial of corneal collagen cross-linking in progressive keratoconus: preliminary results. J Refract Surg. Sep 2008; 24(7): S720-5. PMID 18811118
16. Wittig-Silva C, Chan E, Islam FM, et al. A randomized, controlled trial of corneal collagen cross-linking in progressive keratoconus: three-year results. Ophthalmology. Apr 2014; 121(4): 812-21. PMID 24393351
17. Center for Drug Evaluation and Research. Application Number 203324Orig2s000. Summary Review. 2015; https://www.accessdata.fda.gov/drugsatfda_docs/nda/2016/203324Orig2s000S umR.pdf. Accessed February 17, 2023.
18. National Institute for Health and Care Excellence (NICE). Photochemical corneal collagen cross-linkage using riboflavin and ultraviolet A for keratoconus and keratectasia [IPG466]. 2013; https://www.nice.org.uk/guidance/ipg466. Accessed February 17, 2023.
19. https://www.mdpi.com/2075-4418/11/8/1466
20. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3720663/

21. https://www.contactlensjournal.com/article/S1367-0484(21)00205-8/fulltext

ND Committee Review

Internal Medical Policy Committee 11-14-2019 Annual Review of Association Policy 9.03.05

Internal Medical Policy Committee 1-19-2021 Annual Review

Internal Medical Policy Committee 5-24-2022 Revision

- *Added* Summary of Evidence statement

Internal Medical Policy Committee 5-23-2023 Revision

- *Changed* Not medically necessary to Experimental/Investigational

Internal Medical Policy Committee 11-15-2023 Coding update-*Effective January 01, 2024*

- *Removed* duplicates of diagnosis code H16.001; and
- *Removed* diagnosis codes H18.10; H18.11; H18.12; H18.13; H18.40; H18.421; H18.422; H18.423; H18.451; H18.452; H18.453; H18.461; H18.462; H18.463; H18.463; H18.601; H18.603; H18.611; H18.612; H18.613; H18.621; H18.622; H18.623; H18.711; H18.712; H18.713; H18.821; H18.821; H18.822; and H18.823
- *Updated* References

Internal Medical Policy Committee 11-19-2024 Annual Review-no changes to criteria

- *Added* Policy Application

Disclaimer

Current medical policy is to be used in determining a Member's contract benefits on the date that services are rendered. Contract language, including definitions and specific inclusions/exclusions, as well as state and federal law, must be considered in determining eligibility for coverage. Members must consult their applicable benefit plans or contact a Member Services representative for specific coverage information. Likewise, medical policy, which addresses the issue(s) in any specific case, should be considered before utilizing medical opinion in adjudication. Medical technology is constantly evolving, and the Company reserves the right to review and update medical policy periodically.