

UnitedHealthcare® Medicare Advantage *Medical Policy*

Corneal Topography

Policy	Number:	MMP062.	13
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Instructions for Use

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Coverage Rationale

Overview

Corneal topography is a computer assisted diagnostic imaging technique where a special instrument projects a series of light rings on the cornea, creating a color coded map of the corneal surface as well as a cross-section profile. This service is used to provide a detailed map or chart of the physical features and shape of the anterior surface of the cornea. This permits a more accurate portrayal of the physical state of the cornea and detection of subtle corneal surface irregularity and astigmatism.

CMS National Coverage Determinations (NCDs)

Medicare does not have an NCD for Corneal Topography.

CMS Local Coverage Determinations (LCDs) and Articles

Local Coverage Determinations (LCDs)/Local Coverage Articles (LCAs) exist and compliance with these policies is required where applicable. For specific LCDs/LCAs, refer to the table for Corneal Topography.

For coverage guidelines for states/territories with no LCDs/LCAs, refer to the coverage rationale below.

Indications

Corneal topography is considered reasonable and necessary for any of the following conditions:

- Pre-operative evaluation of irregular astigmatism for intraocular lens power determination with cataract surgery;
- Monocular diplopia;
- Diagnosis of early keratoconus;
- Post-surgical or post-traumatic astigmatism, measuring at a minimum of 3.5 diopters;
- Suspected irregular astigmatism based on retinoscopic streak or conventional keratometry;
- Post-penetrating keratoplasty surgery;
- Post-surgical or post-traumatic irregular astigmatism;
- Corneal dystrophies;
- Complications of transplanted cornea;
- Post-traumatic corneal scarring; and/or
- Pterygium and/or corneal ectasia that cause visual impairment.

Limitations

- Corneal topography is only reasonable and necessary for a pre-operative cataract patient if documentation supports
 that the patient has irregular astigmatism.
- Services performed for screening purposes or in the absence of associated signs, symptoms, illness or injury as indicated above, are non-covered.
- Corneal topography is not covered if performed pre- or post-operatively in relation to a Medicare non-covered procedure, e.g., radial keratotomy.

Applicable Codes

The following list(s) of procedure and/or diagnosis codes is provided for reference purposes only and may not be all inclusive. Listing of a code in this policy does not imply that the service described by the code is a covered or non-covered health service; however, language may be included in the listing below to indicate if a code is non-covered. Benefit coverage for health services is determined by the member specific benefit plan document and applicable laws that may require coverage for a specific service. The inclusion of a code does not imply any right to reimbursement or guarantee claim payment. Other Policies and Guidelines may apply.

CPT Code	Description
92025	Computerized corneal topography, unilateral or bilateral, with interpretation and report
	CPT® is a registered trademark of the American Medical Association

Diagnosis Code Description Unspecified pterygium of right eye H11.001 H11.002 Unspecified pterygium of left eye H11.003 Unspecified pterygium of eye, bilateral H11.011 Amyloid pterygium of right eye H11.012 Amyloid pterygium of left eye H11.013 Amyloid pterygium of eye, bilateral H11.021 Central pterygium of right eye H11.022 Central pterygium of left eye H11.023 Central pterygium of eye, bilateral H11.031 Double pterygium of right eye H11.032 Double pterygium of left eye H11.033 Double pterygium of eye, bilateral H11.041 Peripheral pterygium, stationary, right eye H11.042 Peripheral pterygium, stationary, left eye H11.043 Peripheral pterygium, stationary, bilateral H11.051 Peripheral pterygium, progressive, right eye H11.052 Peripheral pterygium, progressive, left eye H11.053 Peripheral pterygium, progressive, bilateral H11.061 Recurrent pterygium of right eye H11.062 Recurrent pterygium of left eye H11.063 Recurrent pterygium of eye, bilateral H16.051 Mooren's corneal ulcer, right eye Mooren's corneal ulcer, left eye H16.052 H16.053 Mooren's corneal ulcer, bilateral H16.301 Unspecified interstitial keratitis, right eye H16.302 Unspecified interstitial keratitis, left eye H16.303 Unspecified interstitial keratitis, bilateral H16.321 Diffuse interstitial keratitis, right eye

Diagnosis Code	Description
H16.322	Diffuse interstitial keratitis, left eye
H16.323	Diffuse interstitial keratitis, bilateral
H16.331	Sclerosing keratitis, right eye
H16.332	Sclerosing keratitis, left eye
H16.333	Sclerosing keratitis, bilateral
H17.9	Unspecified corneal scar and opacity
H18.11	Bullous keratopathy, right eye
H18.12	Bullous keratopathy, left eye
H18.13	Bullous keratopathy, bilateral
H18.421	Band keratopathy, right eye
H18.422	Band keratopathy, left eye
H18.423	Band keratopathy, bilateral
H18.451	Nodular corneal degeneration, right eye
H18.452	Nodular corneal degeneration, left eye
H18.453	Nodular corneal degeneration, bilateral
H18.511	Endothelial corneal dystrophy, right eye
H18.512	Endothelial corneal dystrophy, left eye
H18.513	Endothelial corneal dystrophy, bilateral
H18.521	Epithelial (juvenile) corneal dystrophy, right eye
H18.522	Epithelial (juvenile) corneal dystrophy, left eye
H18.523	Epithelial (juvenile) corneal dystrophy, bilateral
H18.531	Granular corneal dystrophy, right eye
H18.532	Granular corneal dystrophy, left eye
H18.533	Granular corneal dystrophy, bilateral
H18.541	Lattice corneal dystrophy, right eye
H18.542	Lattice corneal dystrophy, left eye
H18.543	Lattice corneal dystrophy, bilateral
H18.551	Macular corneal dystrophy, right eye
H18.552	Macular corneal dystrophy, left eye
H18.553	Macular corneal dystrophy, bilateral
H18.592	Other hereditary corneal dystrophies, left eye
H18.593	Other hereditary corneal dystrophies, bilateral
H18.601	Keratoconus, unspecified, right eye
H18.602	Keratoconus, unspecified, left eye
H18.603	Keratoconus, unspecified, bilateral
H18.611	Keratoconus, stable, right eye
H18.612	Keratoconus, stable, left eye
H18.613	Keratoconus, stable, bilateral
H18.621	Keratoconus, unstable, right eye
H18.622	Keratoconus, unstable, left eye
H18.623	Keratoconus, unstable, bilateral
H18.711	Corneal ectasia, right eye
H18.712	Corneal ectasia, left eye
H18.713	Corneal ectasia, bilateral
H52.211	Irregular astigmatism, right eye

Diagnosis Code	Description
H52.212	Irregular astigmatism, left eye
H52.213	Irregular astigmatism, bilateral
H53.2	Diplopia
T85.21XA	Breakdown (mechanical) of intraocular lens, initial encounter
T85.22XA	Displacement of intraocular lens, initial encounter
T85.318A	Breakdown (mechanical) of other ocular prosthetic devices, implants and grafts, initial encounter
T85.328A	Displacement of other ocular prosthetic devices, implants and grafts, initial encounter
T86.8401	Corneal transplant rejection, right eye
T86.8402	Corneal transplant rejection, left eye
T86.8403	Corneal transplant rejection, bilateral
T86.8411	Corneal transplant failure, right eye
T86.8412	Corneal transplant failure, left eye
T86.8413	Corneal transplant failure, bilateral
Z94.7	Corneal transplant status
Z98.41	Cataract extraction status, right eye
Z98.42	Cataract extraction status, left eye
Z98.83	Filtering (vitreous) bleb after glaucoma surgery status

Centers for Medicare and Medicaid Services (CMS) Related Documents

After checking the table below and searching the <u>Medicare Coverage Database</u>, if no NCD, LCD, or LCA is found, refer to the criteria as noted in the <u>Coverage Rationale</u> section above.

NCD	LCD	LCA	Contractor Type	Contractor Name
Corneal Topograpi	hy			
N/A	<u>L34008 Computerized</u> <u>Corneal Topography</u>	A56816 Billing and Coding: Computerized Corneal Topography	Part A and B MAC	CGS

Medicare Administrative Contractor (MAC) With Corresponding States/Territories		
MAC Name (Abbreviation)	States/Territories	
CGS Administrators, LLC (CGS)	KY, OH	
First Coast Service Options, Inc. (First Coast)	FL, PR, VI	
National Government Services, Inc. (NGS)	CT, IL, ME, MA, MN, NH, NY, RI, VT, WI	
Noridian Healthcare Solutions, LLC (Noridian)	AS, AK, AZ, CA, GU, HI, ID, MT, NV, ND, Northern Mariana Islands, OR, SD, UT, WA, WY	
Novitas Solutions, Inc. (Novitas)	AR, CO, DC, DE, LA, MD, MS, NJ, NM, OK, PA, TX, VA**	
Palmetto GBA (Palmetto)	AL, GA, NC, SC, TN, VA**, WV	
Wisconsin Physicians Service Insurance Corporation (WPS)*	IA, IN, KS, MI, MO, NE	

Notes

Other

Social Security Act, Title XVIII Section 1862(a)(1)(A)

^{*}Wisconsin Physicians Service Insurance Corporation: Contract Number 05901 applies only to WPS Legacy Mutual of Omaha MAC A Providers.

^{**}For the state of Virginia: Part B services for the city of Alexandria and the counties of Arlington and Fairfax are excluded for the Palmetto GBA jurisdiction and included within the Novitas Solutions, Inc. jurisdiction.

Clinical Evidence

In 2024, Kuo et al. conducted a technology assessment on behalf of the AAO regarding advanced corneal imaging in keratoconus. This is an update to the previous publication in 1999 which reviewed the advances in computerized analysis of corneal topography for the measurement and describing of the shape of the cornea which is important for the development of diagnostic indices. In this update, the authors review the corneal tomography technologies that add to the diagnostic capabilities of topography including overall corneal shape.

Goto and Maeda (2021) conducted a review to evaluate the role of corneal topography in the selection of premium intraocular lenses in refractive cataract surgery. Corneal topography can detect corneal regular astigmatism, corneal irregular astigmatism (higher-order aberrations [HOAs]) including spherical aberration, and corneal shape abnormalities after corneal refractive surgery.

Ono et al. (2020) performed an observational study to evaluate the characteristics of anterior and posterior corneal topography in keratoconic eyes after more than 30 years post penetrating keratoplasty (PK). Patients who maintained clear grafts for over 30 years post PK were included and divided into the keratoconus (KC) group or other diseases (Others) group, based on the primary indication. Included in the study were 26 eyes of 26 patients. Included in the KC group and the Others group were 14 eyes and 12 eyes, respectively. The KC group participants were younger at the time of surgery. Differences were not found in best-spectacle-corrected visual acuity, central corneal-thickness and keratometric power. Based on corneal topography using Fourier harmonic analyses, regular astigmatism in the anterior cornea was substantially larger and the spherical component in the posterior cornea was substantially lower in the KC group. The area under the receiver operating characteristic curve of the spherical component, regular astigmatism, asymmetry component, and higher-order irregularity were 66.07%, 63.10%, 57.14%, and 59.23%, respectively, in the anterior cornea and 80.65%, 52.98%, 63.10%, and 63.99%, respectively, in the posterior cornea. The authors concluded that the findings suggested that Fourier harmonic analysis of corneal topography may be useful for patients with KC long after PK. Study limitations included its retrospective design, small sample size, frequency at which corneal topographic analysis was performed, and that some patients had PK performed at a different institution so the data was unavailable for pre and post operative comparison.

In a 2007 retrospective analysis, Maheshwari studied the effect of pterygium on corneal topography. One hundred and fifty one eyes with primary pterygia were included. Participants were excluded if there was a history of trauma, previous surgery or corneal scarring. The results showed that in these patients, pterygium has a considerable effect on topographic indices, with flattening seen in the horizontal median and associated with astigmatism. All topgraphic parameters improved following pterygium excision.

Takei et al. (2002) conducted a prospective study to determine if the pattern of corneal distortion was related specifically to persistent monocular diplopia. Sixteen visually normal eyes (controls) and two groups of volunteers in which abnormal focal steepening of the cornea was expected to be found, 40 eyes of 20 volunteers who wore rigid gas-permeable contact lenses (RGP) for myopia, and 10 eyes of 7 patients with keratoconus. New charts that consisted of white dials on a black background were prepared for detection and measurement of secondary images. Any secondary image that could not be eliminated by any trial lens correction was defined as a persistent secondary image. Corneal topography from all subjects was classified as round or oval, symmetric or asymmetric bowtie, abnormal focal steepening accompanied by contact lens-induced corneal warpage or keratoconus, or amorphous. The relationship between the persistent secondary image and the corneal topographical patterns was analyzed. The results showed that a persistent secondary image was detected from seven eyes of RGP wearers and all the eyes with keratoconus. All corneal topographies of the seven RGP eyes with a persistent secondary image showed abnormal focal steepening related to contact lens-induced corneal warpage. The direction of the persistent secondary image was approximately consistent with the location of the focal steepening as seen on the corneal topography. The authors concluded that abnormal focal steepening of the cornea that appeared to produce a prismatic difference between two parts of the cornea was specifically related to persistent monocular diplopia.

Clinical Practice Guidelines American Academy of Ophthalmology (AAO)

In a 2023 preferred practice pattern regarding corneal ectasia, the AAO states that the diagnosis of corneal ectasia is usually based on patient history and the findings of topography and tomography. A comprehensive evaluation of both the anterior and posterior surfaces (topographically and tomographically) as well as full pachymetric mapping of the cornea is important in establishing the diagnosis of corneal ectatic disease and following its course.

In a 2021 preferred practice pattern regarding cataract in the adult eye, the AAO states that corneal topography may aid in the diagnosis of post-operative irregular corneal astigmatism.

AAO's EyeSmart® on Corneal Topography lists the following conditions corneal topography is used for:

- Scarring Trauma (injury) or infections can scar the cornea. This changes the shape of the cornea. A topography scan measures the distortion and its effect on vision.
- Growths The size of pterygia or other growths can be monitored with topography.
- Astigmatism and keratoconus Topography can help find astigmatism and early cases of keratoconus and track their progression.
- Cataracts When cataracts make the eye's natural lens cloudy, it is replaced with an intraocular lens (IOL) during cataract surgery. Corneal topography helps surgeons select the right IOL in some cases.
- Corneal transplants After a corneal transplant, a surgeon may use corneal topography to help a patient heal correctly. The images help assess which stitches should be removed and when based on the shape of the cornea. (AAO, 2021)

AAO's EyeWiki® describes Meesmann Corneal Dystrophy (MECD) as a rare hereditary type of superficial corneal dystrophy that follows an autosomal dominant pattern of inheritance. Diagnostic procedures include corneal elevation topography (AAO, 2024). Assessment of visual acuity, changes in manifest refraction, and corneal topography can aid in determining the visual impact of pterygia (AAO, 2022). Diagnostic procedures for keratoconus include computerized corneal topography (AAO, 2023).

References

American Academy of Ophthalmology (AAO). EyeSmart®. Corneal Topography. 2021.

American Academy of Ophthalmology (AAO). EyeWiki®. Basic Approach to Diplopia. 2024.

American Academy of Ophthalmology (AAO). EyeWiki®. Corneal Topography. 2023.

American Academy of Ophthalmology (AAO). EyeWiki[®]. Keratoconus. 2023.

American Academy of Ophthalmology (AAO). EyeWiki®. Meesmann Corneal Dystrophy. 2024.

American Academy of Ophthalmology (AAO). EyeWiki®. Pseudophakic Bullous Keratopathy. 2023.

American Academy of Ophthalmology (AAO). EyeWiki[®]. Pterygium. 2022.

American Academy of Ophthalmology. Preferred Practice Pattern Guideline. Cataract in the adult eye PPP 2021. November 2021. Available at https://www.aao.org/education/preferred-practice-pattern/cataract-in-adult-eye-ppp-2021-in-press. Accessed June 25, 2024.

American Academy of Ophthalmology. Preferred Practice Pattern Guideline. Corneal Ectasia PPP 2023. February 2024. Available at: https://www.aao.org/education/preferred-practice-pattern/corneal-ectasia-ppp-2023. Accessed June 24, 2024.

Kuo AN, Cortina MS, Greiner MA, et al. Advanced Corneal Imaging in Keratoconus: A Report by the American Academy of Ophthalmology. Ophthalmology. 2024 Jan;131(1):107-121.

Goto S, Maeda N. Corneal topography for intraocular lens selection in refractive cataract surgery. Ophthalmology. 2021 Nov;128(11).

Maheshwari S. Pterygium-induced corneal refractive changes. Indian J Ophthalmol. 2007 Sep-Oct;55(5):383-6.

Ono T, Kawasaki Y, Chen LW, et al. Corneal topography in keratoconus evaluated more than 30 years after penetrating keratoplasty: A Fourier harmonic analysis. Sci Rep. 2020;10(1):14880.

Takei K. Is abnormal focal steepening of the cornea related to persistent monocular diplopia? J Refract Surg. 2002 May-Jun;18(3):253-62.

Policy History/Revision Information

Date	Summary of Changes
10/01/2024	Template Update
	Reformatted and reorganized policy; transferred content to new template
	Changed policy type classification from "Policy Guideline" to "Medical Policy"
	Added Clinical Evidence and References sections

Date Summary of Changes Updated Instructions for Use **Coverage Rationale Overview** Replaced language indicating "computerized corneal topography [also known as computerassisted video keratography (CAVK) and corneal mapping] is a computer assisted diagnostic imaging technique in which a special instrument projects a series of light rings on the cornea, creating a color coded map of the corneal surface as well as a cross-section profile" with "corneal topography is a computer assisted diagnostic imaging technique where a special instrument projects a series of light rings on the cornea, creating a color coded map of the corneal surface as well as a cross-section profile" CMS National Coverage Determinations (NCDs) Added language to indicate Medicare does not have a National Coverage Determination (NCD) for corneal topography CMS Local Coverage Determinations (LCDs) and Articles Added language to indicate Local Coverage Determinations (LCDs)/Local Coverage Articles (LCAs) exist and compliance with these policies is required where applicable; for specific LCDs/LCAs, refer to the table [in the Centers for Medicare & Medicaid (CMS) Related *Documents* section of the policy Added instruction to refer to the coverage rationale [listed in the policy] for coverage guidelines for states/territories with no LCDs/LCAs **Indications** Replaced language indicating "computerized corneal topography is considered medically necessary under any of the [listed] conditions" with "corneal topography is considered reasonable and necessary for any of the [listed] conditions" Updated list of medically necessary conditions: o Replaced: "Keratoconus" with "diagnosis of early keratoconus" "Certain corneal dystrophies" with "corneal dystrophies" Removed "bullous keratopathy" Limitations Revised list of coverage limitations: Replaced language indicating "corneal topography will only be allowed for a pre-operative cataract patient if documentation supports that the patient has irregular astigmatism" with "corneal topography is only reasonable and necessary for a pre-operative cataract patient if documentation supports that the patient has irregular astigmatism" Removed language indicating: Corneal topography is to be billed only when the diagnosis of monocular diplopia is thought to be caused by a corneal irregularity Corneal topography is a covered service for the indications [listed in the policy] when medically reasonable and necessary only if the results will assist in defining further treatment; it is not covered for routine follow-up testing-Repeat testing is only indicated if a change of vision is reported in connection with one of the conditions [listed in the policy] **Applicable Codes** Removed ICD-10 diagnosis codes H11.009, H11.019, H11.029, H11.039, H11.049, H11.059,

Removed ICD-10 diagnosis codes H11.009, H11.019, H11.029, H11.039, H11.049, H11.059, H11.069, H11.141, H11.142, H11.143, H11.149, H11.811, H11.812, H11.813, H11.819, H17.89, H18.10, H18.459, H18.461, H18.462, H18.463, H18.469, H18.609, H18.619, H18.629, H18.719, H52.219, H52.221, H52.222, H52.223, H52.229, T85.318D, T85.318S, T85.328D, T85.328S, T85.398A, T85.398D, T85.398S, T86.8481, T86.8482, T86.8483, Z96.1, and Z98.49

Centers for Medicare and Medicaid Services (CMS) Related Documents

- Updated list of documents available in the Medicare Coverage Database to reflect the most current information
- Added:
 - List of applicable Medicare Administrative Contractors (MACs) With Corresponding States/Territories
 - Notation to indicate:

Date	Summary of Changes
	 The Wisconsin Physicians Service Insurance Company (WPS) Contract Number 05901 applies only to WPS Legacy Mutual of Omaha MAC A Providers For the state of Virginia: Part B services for the city of Alexandria and the counties of Arlington and Fairfax are excluded for the Palmetto GBA jurisdiction and included within the Novitas Solutions, Inc. jurisdiction Reference link to the Social Security Act, Title XVIII Section 1862(a)(1)(A) Removed reference link to the Billing and Coding Guidelines: Billing and Coding Guidelines for Computerized Corneal Topography (OPHTH-014), WPS, CMS Website
	Supporting Information
	 Archived previous policy version MPG062.12

Instructions for Use

The Medicare Advantage Policy documents are generally used to support UnitedHealthcare coverage decisions. It is expected providers retain or have access to appropriate documentation when requested to support coverage. This document may be used as a guide to help determine applicable:

- Medical necessity coverage guidelines; including documentation requirements, and/or
- Medicare coding or billing requirements.

Medicare Advantage Policies are applicable to UnitedHealthcare Medicare Advantage Plans offered by UnitedHealthcare and its affiliates. This Policy is provided for informational purposes and does not constitute medical advice. It is intended to serve only as a general reference and is not intended to address every aspect of a clinical situation. Physicians and patients should not rely on this information in making health care decisions. Physicians and patients must exercise their independent clinical discretion and judgment in determining care. Treating physicians and healthcare providers are solely responsible for determining what care to provide to their patients. Members should always consult their physician before making any decisions about medical care.

Benefit coverage for health services is determined by the member specific benefit plan document and applicable laws that may require coverage for a specific service. The member specific benefit plan document identifies which services are covered, which are excluded, and which are subject to limitations. In the event of a conflict, the member specific benefit plan document supersedes this policy. For more information on a specific member's benefit coverage, please call the customer service number on the back of the member ID card or refer to the <u>Administrative Guide</u>.

Medicare Advantage Policies are developed as needed, are regularly reviewed, and updated, and are subject to change. They represent a portion of the resources used to support UnitedHealthcare coverage decision making. UnitedHealthcare may modify these Policies at any time by publishing a new version on this website. Medicare source materials used to develop these policies may include, but are not limited to, CMS statutes, regulations, National Coverage Determinations (NCDs), Local Coverage Determinations (LCDs), and manuals. This document is not a replacement for the Medicare source materials that outline Medicare coverage requirements. The information presented in this Policy is believed to be accurate and current as of the date of publication. Where there is a conflict between this document and Medicare source materials, the Medicare source materials apply. Medicare Advantage Policies are the property of UnitedHealthcare. Unauthorized copying, use, and distribution of this information are strictly prohibited.

UnitedHealthcare follows Medicare coverage guidelines found in statutes, regulations, NCDs, and LCDs to determine coverage. The clinical coverage criteria governing certain items or services referenced in this Medical Policy have not been fully established in applicable Medicare guidelines because there is an absence of any applicable Medicare statutes, regulations, NCDs, or LCDs setting forth coverage criteria and/or the applicable NCDs or LCDs include flexibility that explicitly allows for coverage in circumstances beyond the specific indications that are listed in an NCD or LCD. As a result, in these circumstances, UnitedHealthcare applies internal coverage criteria as referenced in this Medical Policy. The internal coverage criteria in this Medical Policy was developed through an evaluation of the current relevant clinical evidence in acceptable clinical literature and/or widely used treatment guidelines. UnitedHealthcare evaluated the evidence to determine whether it was of sufficient quality to support a finding that the items or services discussed in the policy might, under certain circumstances, be reasonable and necessary for the diagnosis or treatment of illness or injury or to improve the functioning of a malformed body member.

Providers are responsible for submission of accurate claims. Medicare Advantage Policies are intended to ensure that coverage decisions are made accurately. UnitedHealthcare Medicare Advantage Policies use Current Procedural Terminology (CPT®), Centers for Medicare and Medicaid Services (CMS), or other coding guidelines. References to CPT®

or other sources are for definitional purposes only and do not imply any right to reimbursement or guarantee claims payment.

For members in UnitedHealthcare Medicare Advantage plans where a delegate manages utilization management and prior authorization requirements, the delegate's requirements need to be followed.