



CIGNA MEDICAL COVERAGE POLICY

The following Coverage Policy applies to all health benefit plans administered by CIGNA Companies including plans formerly administered by Great-West Healthcare, which is now a part of CIGNA.

Subject Computer-Assisted Corneal Topography

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Corneal Pachymetry
Corneal Remodeling
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INSTRUCTIONS FOR USE

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Coverage Policy

CIGNA covers computer-assisted corneal topography as medically necessary for ANY of the following indications:

- assessment of postoperative complications associated with refractive surgery, post-traumatic corneal scarring or complications of a transplanted cornea
- diagnosis and management of keratoconus, bullous keratopathy or corneal dystrophy
- postoperative management of penetrating keratoplasty or of kerato-refractive or cataract surgery
- preoperative evaluation for phototherapeutic keratectomy

Many benefit plans specifically exclude coverage for refractive eye surgery. Corneal topography would be excluded from coverage under these plans for the routine preoperative or postoperative evaluation of the cornea associated with refractive surgeries (e.g., LASIK, radial keratotomy). Please refer to the applicable benefit plan document to determine benefit availability for this indication.

General Background

Computer-assisted corneal topography, also known as videokeratography, is a process for mapping the surface curvature of the cornea. The procedure involves the projection of a series of illuminated rings onto the corneal surface. The Placido disk, which contains 15–38 rings, is commonly used. A video camera captures

measurements of the reflected light rings, which are computer-digitized to create a three-dimensional map of the cornea. Algorithms then compute the curvature of the cornea at each point.

Conventional techniques used for evaluating the topography of the cornea are keratometry and keratoscopy. Keratometry is a reasonably accurate and reliable method for measuring corneal contours when the surface is spherical. However, keratometry does not provide data from the central or peripheral cornea and is inaccurate for aspheric corneas. In keratoscopy, multiple concentric rings called "mires" are projected on the anterior corneal surface. This technique involves the direct visual inspection of the mires and can provide topographic information from a relatively large area of the cornea. A permanent record of the corneal curvature can be made using a photokeratoscope, which is a keratoscope that has been mounted with a still-film camera. The record is helpful in monitoring changes in a corneal condition over time and in diagnosing disorders such as keratoconus, assessing postoperative astigmatism, and selectively removing corneal or limbal sutures. However, most photokeratoscopes primarily evaluate the intermediate zone of the cornea and provide little or no information about the central zone or periphery. Furthermore, since the keratoscope provides largely qualitative data, it may not detect subtle, but clinically significant, alterations of the corneal curvature.

Computer-assisted corneal topography provides both qualitative and quantitative information about the corneal surface. The purpose of corneal topography is to produce a detailed description of the shape and power in diopters of the cornea. A number of systems are used to measure corneal topography including Placido-based, elevation-based, interferometric, and hybrids that combine corneal topography and pachymetry. The systems vary in many ways, making comparison of the different instruments difficult. Accuracy and precision have been tested by comparing these systems to the keratometer. This comparison may not be appropriate because keratometry cannot quantify a large area of the cornea or read corneas with significant distortion. The accuracy of corneal topography systems varies when compared to keratometry in normal corneas. Specific testing to determine accuracy in abnormal corneas is lacking, but clinical correlation is good. Some studies have shown that topography is less reproducible on normal corneas than standard keratometry, but the evaluation of different tests is difficult, because there is no appropriate standard by which to measure the human cornea. Topography has however established utility for assessing changes in the cornea after penetrating keratoplasty and refractive surgery, as well as in diagnosing keratoconus (AAO, 2001).

Literature Review

Many of the studies evaluating computerized corneal topography are based on the assumption that corneal topography is an accurate diagnostic tool, and therefore do not specifically assess the safety or efficacy of this technology. A prospective, randomized controlled trial (RCT) (n=31 eyes) by Karabatsas et al. (1998) compared the effectiveness of videokeratography with keratometry in assessing patients with high postkeratoplasty astigmatism. It was found that presurgical videokeratography altered patient management and resulted in better outcomes than patient management based on keratometry. A cross-sectional study by Rabinowitz et al. (1998) compared the accuracy of ultrasonic pachymetry measurements with those of videokeratography performed on patients with normal corneas (n=142) and with keratoconus (n=99). Videokeratography data yielded a 97.5% correct classification rate of keratoconus versus 86% accuracy from data provided by pachymetry (p<0.01). The study results suggested that keratoconus is more accurately distinguished by videokeratography measurements than by pachymetry.

The limited, current evidence in the published peer-reviewed medical literature suggests that videokeratography is an accurate diagnostic tool for the measurement of corneal shape, curvature and depth, and has an established role in the evaluation and management of corneal disorders.

Professional Societies/Organizations

According to the AAO, applications for corneal topography include (AAO, 2008):

- preoperative screening for irregular astigmatism, corneal warpage, and keratoconus prior to refractive surgery
- evaluation of the cornea after refractive or cataract surgery
- postoperative management of penetrating keratoplasty
- planning for astigmatic surgery
- fitting contact lenses in patients with irregular astigmatism
- evaluation of unexplained visual loss

- evaluation of visual complications from corneal dystrophies, scars, pterygia, recurrent erosions and chalazia

Summary

Despite the paucity of evidence in the published scientific literature, computer-assisted corneal topography is an established technology that aids in the diagnosis, monitoring, and treatment of a variety of visual disorders. The diagnostic technique is typically a component of the preoperative evaluation for corneal transplant or phototherapeutic keratectomy, and may be used following cataract surgery to assess the effect of cataract incision placement and size. Although definitive patient selection criteria have not been determined, some evidence and professional society support exists for using computer-assisted corneal topography in specific clinical situations. Standardization of videokeratographic systems is needed to facilitate validation of the accuracy and reproducibility of this technology.

Coding/Billing Information

Note: This list of codes may not be all-inclusive.

Covered when medically necessary:

CPT®* Codes	Description
92025 [†]	Computerized corneal topography, unilateral or bilateral, with interpretation and report

[†]**Note:** Not covered under many benefit plans for the routine pre- or post- refractive surgical evaluation of the cornea.

ICD-9-CM Diagnosis Codes	Description
371.00	Corneal opacity, unspecified
367.20 – 367.22	Astigmatism
371.23	Bullous keratopathy
371.50 – 371.58	Hereditary corneal dystrophies
371.60 – 371.62	Keratoconus
372.40 – 372.45	Pterygium
996.51	Mechanical complication of other specified prosthetic device, implant, due to corneal graft
V42.5	Organ or tissue replaced by transplant, cornea
V45.69	Other states following surgery of eye and adnexa

*Current Procedural Terminology (CPT®) © 2010 American Medical Association: Chicago, IL.

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Policy History

<u>Pre-Merger Organizations</u>	<u>Last Review Date</u>	<u>Policy Number</u>	<u>Title</u>
CIGNA HealthCare	5/15/2008	0361	Computer-Assisted Corneal Topography

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