

# Protocol

## Corneal Topography/Computer-Assisted Corneal Topography/Photokeratometry

(90305)

<b>Medical Benefit</b>		<b>Effective Date:</b> 01/01/13	<b>Next Review Date:</b> 07/15
<b>Preauthorization</b>	No	<b>Review Dates:</b> 05/07, 07/08, 05/09, 05/10, 05/11, 01/12, 09/12, 07/13, 07/14	

*The following Protocol contains medical necessity criteria that apply for this service. It is applicable to Medicare Advantage products unless separate Medicare Advantage criteria are indicated. If the criteria are not met, reimbursement will be denied and the patient cannot be billed. **Preauthorization is not required.** Please note that payment for covered services is subject to eligibility and the limitations noted in the patient's contract at the time the services are rendered.*

### Description

Computer-assisted topography/photokeratometry provides a quantitative measure of corneal curvature. Measurement of corneal topography is being evaluated for the diagnosis and follow-up of corneal disorders such as keratoconus, difficult contact lens fits, and pre- and postoperative assessment of the cornea, most commonly after refractive surgery.

### Background

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. Various techniques and instruments are available to measure corneal topography:

- 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 two principal meridians, the keratometer can estimate the radius of curvature of two meridians. 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, are limitations of this technique.
- The keratoscope is an instrument that 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 photokeratometry is an alternative to keratometry or keratoscopy in 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 received clearance for marketing through the U.S. Food and Drug Administration (FDA) 510(k) mechanism. The Orbscan® (manufactured by Orbtex and distributed by Bausch and Lomb) received FDA clearance in 1999. 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.

*Related Protocol*

Implantation of Intrastromal Corneal Ring Segments

**Policy (Formerly Corporate Medical Guideline)**

Non-computer assisted corneal topography is considered part of the evaluation/and management services of general ophthalmological services; and therefore, this service should not be billed separately.

Computer-assisted corneal topography is considered **not medically necessary** to detect or monitor diseases of the cornea.

**Benefit Application**

For all business, if this service is provided in conjunction with an evaluation service, it is considered inclusive to the evaluation service.

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Services that are the subject of a clinical trial do not meet our Technology Assessment Protocol criteria and are considered investigational. *For explanation of experimental and investigational, please refer to the Technology Assessment Protocol.*

It is expected that only appropriate and medically necessary services will be rendered. We reserve the right to conduct prepayment and postpayment reviews to assess the medical appropriateness of the above-referenced procedures. **Some of this Protocol may not pertain to the patients you provide care to, as it may relate to products that are not available in your geographic area.**

**References**

We are not responsible for the continuing viability of web site addresses that may be listed in any references below.

1. Morrow GL, Stein RM. Evaluation of corneal topography: past, present and future trends. *Can J Ophthalmol* 1992; 27(5):213–25.
2. Wilson SE, Klyce SD. Advances in the analysis of corneal topography. *Surv Ophthalmol* 1991; 35(4-Jan):269–77.
3. Bhattoa NS, Hau S, Ehrlich DP. A comparison of a topography-based rigid gas permeable contact lens design with a conventionally fitted lens in patients with keratoconus. *Cont Lens Anterior Eye* 2010; 33(3):128-35.
4. Lee H, Chung JL, Kim EK et al. Univariate and bivariate polar value analysis of corneal astigmatism measurements obtained with 6 instruments. *J Cataract Refract Surg* 2012; 38(9):1608-15.
5. Ophthalmic Technology Assessment Committee Cornea Panel American Academy of Ophthalmology. Corneal topography. *Ophthalmology* 1999; 106(8-Jan):1628-38.