

MEDICAL POLICY



SUBJECT: CORNEAL ULTRASOUND PACHYMETRY	EFFECTIVE DATE: 08/21/03 REVISED DATE: 08/19/04, 06/16/05, 05/18/06, 03/15/07, 03/20/08 ARCHIVED DATE: 03/19/09 EDITED DATE: 03/18/10, 03/17/11, 03/15/12, 03/21/13, 04/17/14, 04/16/15, 04/21/16, 04/20/17, 04/19/18
POLICY NUMBER: 9.01.07 CATEGORY: Technology Assessment	PAGE: 1 OF: 5
<ul style="list-style-type: none">• <i>If a product excludes coverage for a service, it is not covered, and medical policy criteria do not apply.</i>• <i>If a commercial product, including an Essential Plan product, covers a specific service, medical policy criteria apply to the benefit.</i>• <i>If a Medicare product covers a specific service, and there is no national or local Medicare coverage decision for the service, medical policy criteria apply to the benefit.</i>	

POLICY STATEMENT:

Based upon our criteria and assessment of peer-reviewed literature, corneal pachymetry is considered **medically appropriate** for the following:

- I. In the diagnosis of Fuch's endothelial dystrophy;
- II. In the diagnosis of bullous keratopathy;
- III. In the diagnosis of corneal edema;
- IV. In the diagnosis of Posterior polymorphous dystrophy;
- V. Patients with suspected glaucoma (e.g., elevated intraocular pressure, enlarged vertical cup-disc ratio); or
- VI. Patients with known glaucoma.

POLICY GUIDELINES:

- I. Coverage of corneal pachymetry for those medically appropriate indications listed above requires that there is a reasonable expectation that the outcome of corneal pachymetry will impact clinical decision making in the medical management of the patient.
- II. Corneal pachymetry will be allowed once per lifetime when performed due to suspected glaucoma or known glaucoma.
- III. Corneal pachymetry is considered inclusive when performed as part of the preoperative or postoperative evaluation of a patient undergoing an approved ophthalmologic surgery, such as a corneal transplant.
- IV. Corneal pachymetry is **ineligible for coverage** when performed as part of the pre-or postoperative evaluation of a patient undergoing a non-covered ophthalmologic refractive surgery, such as elective LASIK.

DESCRIPTION:

Corneal thickness is an important indication of the health and function of the cornea. Measurement of corneal thickness is useful for the diagnosis of certain corneal diseases, in determining the effectiveness of specific ophthalmologic medical and surgical treatments such as corneal transplant, penetrating keratoplasty and refractive surgeries and in the evaluation of contact lens wear.

Central corneal thickness has been found to be of predictive value for the development of glaucoma in patients with ocular hypertension. Several techniques have been developed for the clinical measurement of corneal thickness with ultrasound pachymetry currently the most commonly used method as it provides a rapid, precise measurement.

RATIONALE:

Studies have found that corneal thickness is an important indication of corneal function and is routinely determined in several clinical settings. Its evaluation reflects the endothelial function, offers insight to the cornea's adaptation in contact lens wear, is of postoperative prognostic value after penetrating keratoplasty and can reveal local or systemic metabolic disorders. Corneal pachymetry is an essential measurement prior to refractive surgical procedures such as LASIK as this measurement ascertains whether the cornea will retain enough central tissue thickness to prevent ectasia.

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Although there are several techniques and instruments used to measure corneal thickness, ultrasound pachymetry is most frequently utilized due to its ease of use, portability, accuracy and reproducibility.

The Ocular Hypertension Treatment Study (OHTS) is the first large scale study to demonstrate that lowering ocular pressure with topical medications can safely and effectively delay and possibly prevent primary open angle glaucoma (POAG). The OHTS also attempted to identify patients who would most likely benefit from treatment. The study found that the factor that was most predictive was the presence of a thin central cornea. Patients with a central corneal thickness of 555um or less had a 3-fold greater risk of developing POAG than those with a central corneal thickness of 588 um or greater. Central corneal thickness appears to be a powerful predictor of the progression from ocular hypertension to POAG. The study also found that older age, larger initial cup- to- disc ratio and a higher IOP were predictive of glaucoma. Repeat measurements of corneal thickness for glaucoma are not necessary unless the patient has corneal diseases or surgery affecting corneal thickness. Changes in corneal thickness with age are minimal in adulthood, with estimated changes of 0.006 to 0.015 mm per decade.

Because the thickness of the cornea can impact the measurement of intraocular pressure (when the corneal thickness is reduced, the measured pressure underestimates the actual intraocular pressure), corneal pachymetry can be helpful in patients with known glaucoma whose visual fields are worsening despite reasonable intraocular pressure.

CODES: Number Description

Eligibility for reimbursement is based upon the benefits set forth in the member's subscriber contract.

CODES MAY NOT BE COVERED UNDER ALL CIRCUMSTANCES. PLEASE READ THE POLICY AND GUIDELINES STATEMENTS CAREFULLY.

Codes may not be all inclusive as the AMA and CMS code updates may occur more frequently than policy updates.

CPT: 76514 Ophthalmic ultrasound, diagnostic; corneal pachymetry, unilateral or bilateral (determination of corneal thickness)

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HCPCS: No specific code(s)

Medically appropriate codes

ICD10: H18.10-H18.13 Bullous keratopathy (code range)
H18.20 Unspecified corneal edema
H18.51 Endothelial corneal dystrophy
H18.59 Other hereditary corneal dystrophies
H40.00-H40.069 Glaucoma suspect (code range)
H40.10x0-H40.10x4 Unspecified open-angle glaucoma (code range)
H40.11x0-H40.11x4 Primary open-angle glaucoma (code range)
H40.1210-H40.1294 Low-tension glaucoma (code range)
H40.1310-H40.1394 Pigmentary glaucoma (code range)
H40.141-H40.149 Capsular glaucoma with pseudoexfoliation of lens (code range)
H40.1510-H40.1594 Residual stage of open-angle glaucoma (code range)

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H40.20x0-H40.249	Angle-closure glaucoma (code range)
H40.30x0-H40.33x4	Glaucoma secondary to eye trauma (code range)
H40.40x0-H40.43x4	Glaucoma secondary to eye inflammation (code range)
H40.50x0-H40.53x4	Glaucoma secondary to other eye disorders (code range)
H40.60x0-H40.63x4	Glaucoma secondary to drugs (code range)
H40.811-H40.819	Glaucoma with increased episcleral venous pressure (code range)
H40.821-H40.829	Hypersecretion glaucoma (code range)
H40.831-H40.839	Aqueous misdirection (code range)
H40.89	Other specified glaucoma
H40.9	Unspecified glaucoma
H42	Glaucoma in diseases classified elsewhere
Q15.0	Congenital glaucoma

REFERENCES:

American Academy of Ophthalmology Preferred Practice Pattern. Primary open-angle glaucoma suspect. 2010 Oct [http://one.aao.org/CE/PracticeGuidelines/default.aspx?dc=5c80ae29-ff49-4921-834a-04fb142c2465] accessed 3/21/18.

American Academy of Ophthalmology. Practice guideline. Corneal thickness measurement in the management of primary open-angle glaucoma OTA. [http://one.aao.org/CE/PracticeGuidelines/default.aspx?dc=5c80ae29-ff49-4921-834a-04fb142c2465] accessed 3/21/18.

*Brandt JD. Corneal thickness in glaucoma screening, diagnosis, and management. Current Opin Ophthalmol 2004 Apr;15(2):85-9.

Brandt JD. Central corneal thickness, tonometry, and glaucoma risk- a guide for the perplexed. Can J Ophthalmol 2007 Aug;42(4):562-6.

Brandt JD, et al. Changes in central corneal thickness over time: the ocular hypertension treatment study. Ophthalmol 2008 Sep;115(9):1550-6.

Dueker DK, et al. Corneal thickness measurement in the management of primary open-angle glaucoma: a report by the American Academy of Ophthalmology. Ophthalmol 2007 Sep;114(9):1779-87.

*Doughty MJ, et al. Human corneal thickness and its impact on intraocular pressure measures: A review and meta-analysis approach. Surv Ophthalmol 2000 Apr;44(5):367-408.

Francis BA, et al. Intraocular pressure, central corneal thickness, and prevalence of open-angle glaucoma: the Los Angeles Latino Eye Study. Am J Ophthalmol 2008 Nov;146(5):741-6.

*Gordon MO, et al. The ocular hypertension treatment study. Baseline factors that predict the onset of primary open-angle glaucoma. Arch Ophthalmol 2002 Jun;120:714-20.

*Herndon L, et al. Central corneal thickness as a risk factor for advanced glaucoma damage. Arch Ophthalmol 2004 Jan;122(1):17-21.

*Herman DC, et al. Increased corneal thickness in patients with ocular hypertension. Arch Ophthalmol 2001 Mar;119:334-6.

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Ho T, et al. Central corneal thickness measurements using Orbscan II, Viscante, ultrasound and Pentacam pachymetry after laser in situ keratomileusis for myopia. J Cataract Refract Surg 2007 Jul;33(7):1177-1182.

*Kass M, et al. The ocular hypertension treatment study. Arch Ophthalmol 2002 Jun;120:701-12.

*Kim JW, et al. Central corneal pachymetry and visual field progression in patients with open angle glaucoma. Ophthalmol 2004 Nov;111(11):2126-32.

Leske MC, et al. Risk factors for incident open- angle glaucoma: the Barbados Eye Studies. Ophthalmol 2008 Jan;115(1):85-93.

Li EY, et al. Agreement among 3 methods to measure corneal thickness: ultrasound pachymetry, Orbscan II and Visante anterior segment optical coherence tomography. Ophthalmol 2007 Oct;114(10):1842-7.

*Leo A, et al. The relationship between corneal thickness and Goldmann applanation tonometry. Clin Exp Optom 2003 Mar;86(2):104-8.

*Medeiros FA, et al. Corneal thickness measurements and frequency doubling technology perimetry abnormalities in ocular hypertensive eyes. Ophthalmol 2003 Oct;110(10):1903-8.

*Modis L, et al. Corneal thickness measurements with contact and noncontact specular microscope and ultrasonic pachymetry. Am J Ophthalmol 2001 Oct;132(4):517-22.

Ocular Hypertension Treatment Study (OHTS). [<http://www.nei.nih.gov/neitrials/stat/study24.htm>] accessed 1/26/09.

Ocular Hypertension Treatment Study Group and the European Glaucoma Prevention Study Group. The accuracy and clinical application of predictive models for primary open-angle glaucoma in ocular hypertensive individuals. Ophthalmol 2008 Nov;115(11):2030-6.

Patwardhan AA, et al. The importance of central corneal thickness measurements and decision making in general ophthalmology clinics: a masked observational study. BMC Ophthalmol 2008 Jan 20;8:1.

*Phillips LJ, et al. Central corneal thickness and measured IOP: a clinical study. Optomet 2003 Apr;74(4):218-25.

*Sallet G. Comparison of optical and ultrasound central corneal pachymetry. Bull Soc Bel Ophthalmol 2001;281:35-8.

*Shih Y, et al. Clinical significance of central corneal thickness in the management of glaucoma. Arch Ophthalmol 2004 Sep;122(9):1270-5.

Zhao PS, et al. Comparison of central corneal thickness measurements by visante anterior segment optical coherence tomography with ultrasound pachymetry. Am J Ophthalmol 2007 Jun;143(6):1047-9.

* Key articles

KEY WORDS:

Corneal thickness, Pachymetry.

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CMS COVERAGE FOR MEDICARE PRODUCT MEMBERS

There is currently a Local Coverage Determination (LCD) for corneal pachymetry. Please refer to the following LCD website for Medicare Members: [https://www.cms.gov/medicare-coverage-database/details/lcd-details.aspx?LCDId=33630&ContrId=298&ver=16&ContrVer=1&CtrctrSelected=298*1&Ctrctr=298&name=National+Government+Services%2c+Inc.+\(13201%2c+A+and+B+and+HHH+MAC%2c+J++K\)&s=All&DocType=Active&bc=AggAAAQAAAAA�](https://www.cms.gov/medicare-coverage-database/details/lcd-details.aspx?LCDId=33630&ContrId=298&ver=16&ContrVer=1&CtrctrSelected=298*1&Ctrctr=298&name=National+Government+Services%2c+Inc.+(13201%2c+A+and+B+and+HHH+MAC%2c+J++K)&s=All&DocType=Active&bc=AggAAAQAAAAA�)