**Name of Policy:**
**Corneal Pachymetry**

Policy #: 126  
Category: Medical  

Latest Review Date: March 2010  
Policy Grade: **Active Policy but no longer scheduled for regular literature reviews and updates.**

**Background/Definitions:**
As a general rule, benefits are payable under Blue Cross and Blue Shield of Alabama health plans only in cases of medical necessity and only if services or supplies are not investigational, provided the customer group contracts have such coverage.

The following Association Technology Evaluation Criteria must be met for a service/supply to be considered for coverage:

1. The technology must have final approval from the appropriate government regulatory bodies;
2. The scientific evidence must permit conclusions concerning the effect of the technology on health outcomes;
3. The technology must improve the net health outcome;
4. The technology must be as beneficial as any established alternatives;
5. The improvement must be attainable outside the investigational setting.

**Medical Necessity** means that health care services (e.g., procedures, treatments, supplies, devices, equipment, facilities or drugs) that a physician, exercising prudent clinical judgment, would provide to a patient for the purpose of preventing, evaluating, diagnosing or treating an illness, injury or disease or its symptoms, and that are:

1. In accordance with generally accepted standards of medical practice; and
2. Clinically appropriate in terms of type, frequency, extent, site and duration and considered effective for the patient’s illness, injury or disease; and
3. Not primarily for the convenience of the patient, physician or other health care provider; and
4. Not more costly than an alternative service or sequence of services at least as likely to produce equivalent therapeutic or diagnostic results as to the diagnosis or treatment of that patient’s illness, injury or disease.
**Description of Procedure or Service:**
Pachymetry is the measurement of the thickness of the cornea and is an indicator of corneal health. Corneal pachymetry is useful in monitoring the progression of certain disorders that cause the cornea to become thickened resulting in a loss of vision such as in Fuch’s endothelial dystrophy. Thinning of the cornea can also be monitored as in keratoconus and pellucid marginal corneal degeneration. The pachymeter is the instrument that measures the thickness of the cornea. Ultrasound pachymetry has replaced optical pachymetry because of the ease of use, portability, accuracy and reproducibility and can be performed by a technician. Different devices allowing measurement of the central corneal thickness are: ultrasound, optical and Optical Coherence Tomography. The procedure is also performed prior to certain refractive procedures to determine if the cornea is strong enough for procedures such as LASIK.

**Policy:**

**Effective for dates of service on or after August 5, 2008:**

Corneal pachymetry meets Blue Cross and Blue Shield of Alabama’s medical criteria for coverage for **once in a lifetime procedure** when performed for the following diagnoses *(See Benefit Application):*

- Glaucomatocyclitic crises;
- Recession of chamber angle of eye;
- Glaucoma;
- Glaucomatous atrophy (cupping) of optic disc.

Corneal pachymetry meets Blue Cross and Blue Shield of Alabama’s medical criteria for coverage when performed not more frequently than every six months for the following diagnoses:

- Fuchs endothelial dystrophy or bullous keratopathy
- Posterior polymorphous dystrophy
- Corneal rejection post penetrating keratopathy
- Corneal edema
- Keratoconus
- Corneal deformities
- Post corneal transplant
- Corneal degeneration
- Cornea, transplant

Corneal pachymetry does not meet Blue Cross and Blue Shield of Alabama’s medical criteria for coverage when performed for routine screening services, e.g., glaucoma screening, routine vision screening.

Corneal pachymetry does not meet Blue Cross and Blue Shield of Alabama’s criteria for coverage when used to evaluate refractory errors and as a contract exclusion. *(See Benefit Application)*
**Effective for dates of service on or after May 26, 2004:**

**Corneal pachymetry meets** Blue Cross and Blue Shield of Alabama’s medical criteria for coverage for **once in a lifetime procedure** when performed for the following diagnoses: *Glaucomatocyclitic crises, Recession of chamber angle, Borderline glaucoma (glaucoma suspect), Glaucoma.* (See Benefit Application)

**Corneal pachymetry does not meet** Blue Cross and Blue Shield of Alabama’s medical criteria for coverage when performed for routine screening, i.e., glaucoma, routine vision screening.

**Corneal pachymetry meets** Blue Cross and Blue Shield of Alabama’s medical criteria for coverage when performed for the following diagnoses:
- Fuchs endothelial dystrophy or bullous keratopathy
- Posterior polymorphous dystrophy
- Corneal rejection post penetrating keratopathy
- Corneal edema
- Keratoconus
- Corneal deformities
- Post corneal transplant
- Corneal degeneration
- Cornea, transplant

**Corneal pachymetry does not meet** Blue Cross and Blue Shield of Alabama’s criteria for coverage when used to evaluate refractory errors and is a contract exclusion. (See Benefit Application)

*Blue Cross and Blue Shield of Alabama does not approve or deny procedures, services, testing, or equipment for our members. Our decisions concern coverage only. The decision of whether or not to have a certain test, treatment or procedure is one made between the physician and his/her patient. Blue Cross and Blue Shield of Alabama administers benefits based on the members' contract and corporate medical policies. Physicians should always exercise their best medical judgment in providing the care they feel is most appropriate for their patients. Needed care should not be delayed or refused because of a coverage determination.*

**Key Points:**
Under normal conditions, the thickness of the cornea remains remarkably constant. The epithelium and the oily component of the tear film act as barriers to fluid evaporation. Measurement of corneal thickness furnishes a means of monitoring the functional status of the cell monolayer. The importance of central corneal thickness has been highlighted in measuring intraocular pressure and in differentiating normal tension glaucoma or ocular hypertension from primary open-angle glaucoma. Corneal pachymetry has also been used for monitoring after corneal transplant surgery. Precise measurement of corneal thickness is also important in refractive surgery.

The Ocular Hypertension Treatment Study (OHTS) by Gordon et al was reported in June 2002. This study included 1636 participants with ocular hypertension. Several factors were identified
as possible predictors for the development of primary open angle glaucoma (POAG). Central corneal thickness was found to be a powerful predictor for the development of POAG. The OHTS also suggests that other factors combined with ocular hypertension can assess the potential risk of developing POAG by considering age, intraocular pressure, (IOP), cup-disc ratio, and central corneal thickness. By using these factors patients can be identified as moderate to high risk for developing POAG and would most likely benefit from early medical treatment.

Patients with thick corneas as determined by corneal pachymetry and ocular hypertension are not as likely to be at risk for progression of glaucoma. Patients with thin corneas and ocular hypertension are more likely to be at risk for the development and progression of POAG. Medeiros et al also note this information in their study published in 2003.

Keratoconus is a noninflammatory progressive disease of the cornea characterized by thinning and distortion of the central cornea. Corneal topography makes keratoconus relatively easy to diagnose once the condition manifests itself. Approximately 75% of individual with keratoconus can be managed with rigid contact lenses. The classic histopathologic features of keratoconus include stromal thinning, iron deposition in the epithelial basement membrane and breaks in Bowman’s layer. The differential diagnosis encompasses keratoglobus, pellucid marginal degeneration and Terrien’s marginal degeneration. Accurate diagnosis is important as the management and prognosis of these disorders differ markedly from keratoconus. Retinoscopy and handheld keratoscopes can aid in diagnosis. Computer-assisted video-keratoscopes are currently the most sensitive and sophisticated devices for confirming the presence of keratoconus. Corneal pachymetry may be useful to confirm corneal thinning in patients with suspected keratoconus. It should not, however, be used by itself as a diagnostic tool because of the large range of pachymetry readings in the normal population.

A November 2007 update reveals no new information that would alter the coverage statement on this policy.

March 2010 Update

Cheng et al published the results of a retrospective study to compare central corneal thickness measurements obtained with Orbscan II, Visante optical coherence tomography (OCT), and ultrasound pachymetry in myopic eyes after LASIK. Thirty-six patients were included in this study and six months after the LASIK procedure CCT measurements were obtained using ultrasound pachymetry, Orbscan scanning slit topography and Visante OCT. Compared to the ultrasound measurement, Orbscan and Visante measurements significantly underestimated the corneal thickness six months after LASIK. Measurements obtained with Visante OCT had better agreement and correlation with ultrasound pachymetry than with Orbscan.

Ciulino et al also published results of measuring central cornea thickness (CCT) in eyes that had undergone LASIK. This was a prospective clinical trial. In this study, 53 patients had CCT measurement with the Pentacam and ultrasonic pachymetry one year after LASIK. The Pentacam’s CCT measurement and that of ultrasound pachymetry show good correlation. The authors concluded that Pentacam pachymetry may be substituted for ultrasound in the post-LASIK patient.
**Key Words:**
Corneal pachymetry, pachymetry, pachymeter, corneal thickness, intraocular pressure, ultrasound pachymetry, optical pachymetry, refractory surgery, IOP, primary open angle glaucoma, POAG, ocular hypertension, central corneal thickness, CCT

**Approved by Governing Bodies:**
Not applicable

**Benefit Application:**
In general, Alabama written contracts exclude “services for eye exercises, eye refractions, visual training orthoptics, shaping the cornea with contact lenses, or any surgery on the eye to improve vision including radial keratotomy.”

Diagnosis codes covered for once per lifetime procedure of corneal pachymetry will be considered medically necessary. Additional testing for these diagnosis codes should not be necessary unless a patient transfers to another practice or there are corneal changes. If corneal changes occur, then the appropriate diagnosis code should be filed. Procedures performed beyond the once per lifetime limit should include documentation of change in practice or change in condition.

**Current Coding:**
CPT codes:

**Effective for dates of service on or after January 1, 2004:**

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<th>Code</th>
<th>Description</th>
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<tr>
<td>76514</td>
<td>Ophthalmic ultrasound, echography, diagnostic; corneal pachymetry, unilateral or bilateral (determination of corneal thickness)</td>
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**Previous Coding:**

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<tr>
<td>0025T</td>
<td>Determination of corneal thickness (e.g. pachymetry) with interpretation and report, bilateral (Deleted January 1, 2004)</td>
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**HCPCS:**

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<tr>
<td>S0830</td>
<td>Ultrasound pachymetry to determine corneal thickness, with interpretation and report, unilateral (Deleted April 1, 2004)</td>
</tr>
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References:

Policy History:
Medical Policy Group, July 2003 (1)
Medical Policy Administration Committee, July 2003
Available for comment, July 14-August 27, 2003
Medical Review Committee, May 2004
Medical Policy Administration Committee, June 2004
Available for comment June 28-August 11, 2004

Proprietary Information of Blue Cross and Blue Shield of Alabama
Medical Policy #126
This medical policy is not an authorization, certification, explanation of benefits, or a contract. Eligibility and benefits are determined on a case-by-case basis according to the terms of the member’s plan in effect as of the date services are rendered. All medical policies are based on (i) research of current medical literature and (ii) review of common medical practices in the treatment and diagnosis of disease as of the date hereof. Physicians and other providers are solely responsible for all aspects of medical care and treatment, including the type, quality, and levels of care and treatment.

This policy is intended to be used for adjudication of claims (including pre-admission certification, pre-determinations, and pre-procedure review) in Blue Cross and Blue Shield’s administration of plan contracts.