



MASSACHUSETTS

Blue Cross Blue Shield of Massachusetts is an independent licensee of the Blue Cross and Blue Shield Association

Medical Policy

Optical Coherence Tomography of the Anterior Eye Segment

Table of Contents

- [Policy: Commercial](#)
- [Policy: Medicare](#)
- [Authorization Information](#)
- [Coding Information](#)
- [Description](#)
- [Policy History](#)
- [Information Pertaining to All Policies](#)
- [References](#)

Policy Number: 084

BCBSA Reference Number: 9.03.18 (For Plans internal use only)

Related Policies

- Ophthalmologic Techniques That Evaluate the Posterior Segment for Glaucoma, #[053](#)
- Endothelial Keratoplasty, #[180](#)
- Aqueous Shunts and Stents for Glaucoma, #[223](#)

Policy

Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity

Scanning computerized ophthalmic (eg, optical coherence tomography) imaging of the anterior eye segment is [INVESTIGATIONAL](#).

Prior Authorization Information

Inpatient

- For services described in this policy, precertification/preauthorization **IS REQUIRED** for all products if the procedure is performed **inpatient**.

Outpatient

- For services described in this policy, see below for products where prior authorization **might be required** if the procedure is performed **outpatient**.

	Outpatient
Commercial Managed Care (HMO and POS)	This is not a covered service.
Commercial PPO and Indemnity	This is not a covered service.

CPT Codes / HCPCS Codes / ICD Codes

Inclusion or exclusion of a code does not constitute or imply member coverage or provider reimbursement. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage as it applies to an individual member.

Providers should report all services using the most up-to-date industry-standard procedure, revenue, and diagnosis codes, including modifiers where applicable.

The following codes are included below for informational purposes only; this is not an all-inclusive list.

The following CPT code is considered investigational for **Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity:**

CPT Codes

CPT codes:	Code Description
92132	Scanning computerized ophthalmic diagnostic imaging, anterior segment, with interpretation and report, unilateral or bilateral

Description

Optical Coherence Tomography

Optical coherence tomography is a noninvasive, high-resolution imaging method that can be used to visualize ocular structures. Optical coherence tomography creates an image of light reflected from the ocular structures. In this technique, a reflected light beam interacts with a reference light beam. The coherent (positive) interference between the 2 beams (reflected and reference) is measured by an interferometer, allowing construction of an image of the ocular structures. This method allows cross-sectional imaging at a resolution of 6 to 25 μm .

The Stratus optical coherence tomography, which uses a 0.8- μm wavelength light source, was designed to evaluate the optic nerve head, retinal nerve fiber layer, and retinal thickness in the posterior segment. The Zeiss Visante optical coherence tomography and anterior chamber Cornea optical coherence tomography use a 1.3- μm wavelength light source designed specifically for imaging the anterior eye segment. Light of this wavelength penetrates the sclera, permitting high-resolution cross-sectional imaging of the anterior chamber angle and ciliary body. The light is, however, typically blocked by pigment, preventing exploration behind the iris. Ultrahigh-resolution optical coherence tomography can achieve a spatial resolution of 1.3 μm , allowing imaging and measurement of corneal layers.

An early application of optical coherence tomography technology was the evaluation of the cornea before and after refractive surgery. Because this noninvasive procedure can be conducted by a technician, it has been proposed that this device may provide a rapid diagnostic and screening tool for detecting angle-closure glaucoma.

Other Diagnostic Tools

Optical coherence tomography of the anterior eye segment is being evaluated as a noninvasive diagnostic and screening tool with a number of potential applications. One proposed use of anterior segment optical coherence tomography is to determine whether there is a narrowing of the anterior chamber angle, which could lead to angle-closure glaucoma. Another general area of potential use is as a presurgical and postsurgical evaluation tool for anterior chamber procedures. This could include assessment of corneal thickness and opacity, calculation of intraocular lens power, guiding surgery, imaging intracorneal ring segments, and assessing complications following surgical procedures such as blockage of glaucoma tubes or detachment of Descemet membrane following endothelial keratoplasty (see policy #180). A third general category of use is to image pathologic processes such as dry eye syndrome, tumors, noninfectious uveitis, and infections. It is proposed that anterior segment optical coherence tomography provides better images than slit-lamp biomicroscopy/gonioscopy and ultrasound biomicroscopy due to higher resolution. In addition, anterior segment optical coherence tomography does not require probe placement under topical anesthesia.

Alternative methods of evaluating the anterior chamber are slit-lamp biomicroscopy or ultrasound biomicroscopy. Slit-lamp biomicroscopy is typically used to evaluate the anterior chamber; however, the chamber angle can only be examined with specialized lenses, the most common being the gonioscopic mirror. In this procedure, a gonio lens is applied to the surface of the cornea, which may result in distortion of the globe. Ultrasonography may also be used for imaging the anterior eye segment.¹

Ultrasonography uses high-frequency mechanical pulses (10 to 20 MHz) to build a picture of the front of the eye. An ultrasound scan along the optical axis assesses corneal thickness, anterior chamber depth, lens thickness, and axial length. Ultrasound scanning across the eye creates a 2-dimensional image of the ocular structures. It has a resolution of 100 µm but only moderately high intraobserver and low interobserver reproducibility. Ultrasound biomicroscopy (>50 MHz) has a resolution of 30 to 50 µm. As with slit-lamp biomicroscopy with a gonioscopic mirror, this technique requires placement of a probe under topical anesthesia.

Classification and Assessment of Glaucoma

Glaucoma is characterized by degeneration of the optic nerve.

The classification of glaucoma as open-angle or angle-closure relies on assessment of the anterior segment anatomy, particularly that of the anterior chamber angle. Angle-closure glaucoma is characterized by obstruction of aqueous fluid drainage through the trabecular meshwork (the primary fluid egress site) from the eye's anterior chamber. The width of the angle is a factor affecting the drainage of aqueous humor. A wide unobstructed iridocorneal angle permits sufficient drainage of aqueous humor, whereas a narrow-angle may impede the drainage system and leave the patient susceptible to an increase in intraocular pressure and angle-closure glaucoma.

A comprehensive ophthalmologic examination for glaucoma includes assessment of the optic nerve and retinal nerve fiber layer (see policy #053 on imaging of the optic nerve with posterior segment optical coherence tomography, evaluation of visual fields, and measurement of ocular pressure). The presence of characteristic changes in the optic nerve or abnormalities in visual field, together with increased intraocular pressure, is sufficient for a definitive diagnosis of glaucoma.

Summary

Optical coherence tomography is a noninvasive, high-resolution imaging method that can be used to visualize ocular structures. Optical coherence tomography of the anterior segment is being evaluated as a noninvasive diagnostic and screening tool for detecting angle-closure glaucoma, for presurgical evaluation, surgical guidance, and for assessing complications following surgical procedures. It is also being studied as a tool to evaluate the pathologic processes of dry eye syndrome, tumors, uveitis, and infections.

For individuals who are being evaluated for angle-closure glaucoma who receive anterior segment optical coherence tomography (AS-OCT), the evidence includes a systematic review, case series, and cohort studies. Relevant outcomes are test accuracy, symptoms, change in disease status, and morbid events. Current literature consists primarily of assessments of qualitative and quantitative imaging and detection capabilities. Ideally, a diagnostic test should be evaluated based on its diagnostic accuracy and clinical utility. Studies have shown that AS-OCT detects more eyes with narrow or closed angles than gonioscopy, suggesting that the sensitivity of optical coherence tomography may be higher than that of gonioscopy. However, because of clinical follow-up and validation studies, it is not clear to what degree these additional cases are true-positives or false-positives and, therefore, the specificity and predictive values cannot be determined. The evaluation of diagnostic performance depends, therefore, on evidence that the additional eyes identified with narrow-angle by AS-OCT are at higher risk for primary angle-closure glaucoma. Results from a study with mid-term follow-up have shown that some patients identified with angle-closure on AS-OCT will develop angle-closure on gonioscopy after several years, but that there may also be a large number of false-positive results. Longer-term studies are needed to determine whether eyes classified as closed-angle by AS-OCT are at higher risk of developing primary angle-closure glaucoma. It is also not known whether early detection of angle-closure will improve outcomes in individuals who do not have symptoms of angle-closure. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who are being evaluated for anterior eye surgery or postsurgical complications who receive AS-OCT, the evidence includes case series. Relevant outcomes are test accuracy, symptoms, change in disease status, and morbid events. Use of AS-OCT has been reported for presurgical

evaluation, surgical guidance, and monitoring for postsurgical complications. There is some evidence that the high-resolution images provided by AS-OCT are superior to results from slit-lamp examination or gonioscopy for some indications. However, current literature is very limited. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have anterior eye segment disease or pathology who receive AS-OCT , the evidence includes case series. Relevant outcomes are test accuracy, symptoms, change in disease status, and morbid events. The evidence related to the use of AS-OCT for anterior segment disease or pathology (eg, dry eye syndrome, tumors, uveitis, infections) is limited, and does not support improvements in imaging compared with alternative diagnostic techniques. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Policy History

Date	Action
5/2024	Annual policy review. Description, summary, and references updated. Policy statements unchanged.
5/2023	Annual policy review. Description, summary, and references updated. Policy statements unchanged.
4/2022	Annual policy review. Description, summary, and references updated. Policy statements unchanged.
4/2021	Annual review. Policy statements unchanged.
1/2021	Medicare information removed. See MP #132 Medicare Advantage Management for local coverage determination and national coverage determination reference.
5/2020	Annual review. Description, summary, and references updated. Policy statements unchanged.
4/2019	Annual review. Description, summary, and references updated. Policy statements unchanged.
4/2018	Annual review. Description, summary, and references updated. Policy statements unchanged.
6/2017	Clarified coding language.
10/2016	Annual review. New references added
8/2015	Added coding language.
7/2014	Updated Coding section with ICD10 procedure and diagnosis codes. Effective 10/2015.
5/2014	Annual review. New references added
4/2014	Coding information clarified.
2/2014	Coding information clarified.
11/2011-4/2012	Medical policy ICD 10 remediation: Formatting, editing and coding updates. No changes to policy statements.
2/2011	Reviewed - Medical Policy Group – Psychiatry and Ophthalmology. References added. No changes to policy statements.
12/2010	Updated to remove deleted CPT code 0187T. Effective 1/1/2011.
2/2010	Reviewed - Medical Policy Group Psychiatry, Ophthalmology, and Endocrinology. No changes to policy statements.
3/2009	Updated after annual review policy issued 12/09, without change in coverage exclusion of anterior eye segment optical imaging for commercial products only. References added.
1/2010	Updated to remove Blue Medicare PFFS PlusRX.
2/2009	Updated to align coverage of anterior eye segment optical imaging with Local Medicare LCD coverage criteria and to implement editing to support coverage when billed with CPT Category III code 0187T for our Medicare Advantage Products only; editing is effective 12/5/08.
2/2009	Reviewed - Medical Policy Group - Psychiatry, Ophthalmology and Endocrinology. No changes to policy statements.
10/2008	Medical Policy 084 created.

Information Pertaining to All Blue Cross Blue Shield Medical Policies

Click on any of the following terms to access the relevant information:

[Medical Policy Terms of Use](#)

[Managed Care Guidelines](#)

[Indemnity/PPO Guidelines](#)

[Clinical Exception Process](#)

[Medical Technology Assessment Guidelines](#)

References

1. Wolffsohn JS, Peterson RC. Anterior ophthalmic imaging. *Clin Exp Optom*. Jul 2006; 89(4): 205-14. PMID 16776728
2. Baskaran M, Iyer JV, Narayanaswamy AK, et al. Anterior Segment Imaging Predicts Incident Gonioscopic Angle Closure. *Ophthalmology*. Dec 2015; 122(12): 2380-4. PMID 26359189
3. Desmond T, Tran V, Maharaj M, et al. Diagnostic accuracy of AS-OCT vs gonioscopy for detecting angle closure: a systematic review and meta-analysis. *Graefes Arch Clin Exp Ophthalmol*. Jan 2022; 260(1): 1-23. PMID 34223989
4. Nolan WP, See JL, Chew PT, et al. Detection of primary angle closure using anterior segment optical coherence tomography in Asian eyes. *Ophthalmology*. Jan 2007; 114(1): 33-9. PMID 17070597
5. Narayanaswamy A, Sakata LM, He MG, et al. Diagnostic performance of anterior chamber angle measurements for detecting eyes with narrow angles: an anterior segment OCT study. *Arch Ophthalmol*. Oct 2010; 128(10): 1321-7. PMID 20938002
6. Pekmezci M, Porco TC, Lin SC. Anterior segment optical coherence tomography as a screening tool for the assessment of the anterior segment angle. *Ophthalmic Surg Lasers Imaging*. 2009; 40(4): 389-98. PMID 19634744
7. Mansouri K, Sommerhalder J, Shaarawy T. Prospective comparison of ultrasound biomicroscopy and anterior segment optical coherence tomography for evaluation of anterior chamber dimensions in European eyes with primary angle closure. *Eye (Lond)*. Feb 2010; 24(2): 233-9. PMID 19444291
8. Jiang C, Li Y, Huang D, et al. Study of anterior chamber aqueous tube shunt by fourier-domain optical coherence tomography. *J Ophthalmol*. 2012; 2012: 189580. PMID 22778909
9. Moutsouris K, Dapena I, Ham L, et al. Optical coherence tomography, Scheimpflug imaging, and slit-lamp biomicroscopy in the early detection of graft detachment after Descemet membrane endothelial keratoplasty. *Cornea*. Dec 2011; 30(12): 1369-75. PMID 21993458
10. Dhanaseelan T, Odayappan A, Vivekanandan VR, et al. Retrospective analysis of the role of anterior segment optical coherence tomography and outcomes of cataract surgery in posterior polar cataract. *Indian J Ophthalmol*. May 2023; 71(5): 1913-1917. PMID 37203055
11. Sarkar S, Das S. Role of preoperative anterior segment optical coherence tomography in identifying intraoperative posterior capsular dehiscence in posterior polar cataract. *Oman J Ophthalmol*. 2023; 16(2): 244-251. PMID 37602161
12. Venincasa MJ, Osigian CJ, Cavuoto KM, et al. Combination of anterior segment optical coherence tomography modalities to improve accuracy of rectus muscle insertion location. *J AAPOS*. Jun 2017; 21(3): 243-246. PMID 28526283
13. Nguyen P, Chopra V. Applications of optical coherence tomography in cataract surgery. *Curr Opin Ophthalmol*. Jan 2013; 24(1): 47-52. PMID 23197267
14. Bianciotto C, Shields CL, Guzman JM, et al. Assessment of anterior segment tumors with ultrasound biomicroscopy versus anterior segment optical coherence tomography in 200 cases. *Ophthalmology*. Jul 2011; 118(7): 1297-302. PMID 21377736
15. Agarwal A, Ashokkumar D, Jacob S, et al. High-speed optical coherence tomography for imaging anterior chamber inflammatory reaction in uveitis: clinical correlation and grading. *Am J Ophthalmol*. Mar 2009; 147(3): 413-416.e3. PMID 19054493
16. Garcia JP, Rosen RB. Anterior segment imaging: optical coherence tomography versus ultrasound biomicroscopy. *Ophthalmic Surg Lasers Imaging*. 2008; 39(6): 476-84. PMID 19065978
17. Medina CA, Plesec T, Singh AD. Optical coherence tomography imaging of ocular and periocular tumours. *Br J Ophthalmol*. Jul 2014; 98 Suppl 2(Suppl 2): ii40-6. PMID 24599420

18. Thomas BJ, Galor A, Nanji AA, et al. Ultra high-resolution anterior segment optical coherence tomography in the diagnosis and management of ocular surface squamous neoplasia. *Ocul Surf.* Jan 2014; 12(1): 46-58. PMID 24439046
19. American Academy of Ophthalmology. Preferred Practice Pattern: Primary angle closure disease. 2020; <https://www.aao.org/preferred-practice-pattern/primary-angle-closure-disease-ppp>. Accessed January 29, 2024.