



Eye Surgery & Procedures

Origination: 07/26/13	Revised: 12/18/23	Annual Review: 11/12/24
Line of Business: Commercial Only <input type="checkbox"/> QHP/Exchange Only <input type="checkbox"/> Medicare Only <input type="checkbox"/> Commercial & QHP/Exchange <input checked="" type="checkbox"/> Commercial, QHP/Exchange, & Medicare <input type="checkbox"/>		

Purpose:

To provide guidelines for Population Health and Provider Alliances associates to reference when making benefit determinations specific to eye procedures.

Procedure (includes Coverage Guidelines & Exclusion Criteria):

I. Cataract Surgery

- 1.0 For the evaluation for cataract surgery:
 - 1.1 A comprehensive eye examination or a brief or intermediate examination and an A-scan is medically necessary as a diagnostic test prior to cataract surgery:
 - 1.1.1 Other pre-operative ophthalmologic tests may be considered medically necessary if there is another diagnosis in addition to cataracts;
 - 1.2 The following specialized ophthalmologic services are considered to be medically necessary for the routine pre-operative work-up for cataract surgery:
 - 1.2.1 Optical coherence biometry;
 - 1.2.2 Ultrasound, A-scan, diagnostic:
 - B-scan ultrasound is considered medically necessary in place of A-scan ultrasound when the Member has a dense cataract;
 - 1.2.3 Ultrasound, A-scan, ophthalmic biometry:
 - B-scan ultrasound is considered medically necessary in place of A-scan ultrasound when the Member has a dense cataract;
 - 1.2.4 Ultrasound, with intra-ocular lens (IOL) power calculation.
- 2.0 Criteria for cataract removal surgery to be considered medically necessary, all of the following must be met:
 - 2.1 **Subjective** - The Member perceives that his or her ability to carry out needed or desired activities is impaired. The Member's decision is based on:
 - 2.1.1 The Member's own assessment of visual disability (e.g., impact on driving, viewing television, and special occupational or avocational needs) and, in particular, disability at near sight (e.g., reading, occupational activities requiring near vision); and
 - 2.1.2 The Member's perception of the impact of the visual disability on lifestyle (e.g., loss of independence, loss of income);
 - 2.2 **Objective** - The best-corrected visual Snellen acuity (BCVA) in the affected eye is 20/40 or worse, or the Member's BCVA is 20/30 or better in the affected eye but there is a significant loss of visual acuity in bright ambient light:
 - 2.2.1 The eye examination confirms that the cataract is the limiting factor for improving visual function when other factors do not preclude improvement following surgery, and the Member's medical and mental health permits surgery to be performed safely;



Eye Surgery & Procedures

- 2.3 Educational - The Member has been educated about the risks and benefits of cataract surgery, including alternatives to treatment, and the Member determines if the expected reduction in the disability outweighs the potential risk, cost, and inconvenience of surgery.

- 3.0 Cataract removal surgery is considered medically necessary for one-eyed Members with visual disability of 20/80 or worse due to a cataract; that is, a Member with irreversible, untreatable legal blindness (20/200 or worse) in the other eye.

- 4.0 Cataract removal surgery involving removal of the lens is considered medically necessary without regard to visual disability when any of the following criteria is met:
 - 4.1 Member has lens-induced disease (e.g., phakomorphic glaucoma, phakolytic glaucoma, phakoanaphylactic endophthalmitis, dislocated or subluxated lens);
-or-
 - 4.1 There is a need to visualize the fundus (retina) in an eye that has the potential for sight in any of the following conditions:
 - 4.1.1 Diabetes with significant risk of reduced visual acuity (diabetic retinopathy) requiring photocoagulation management through clear media to monitor glaucoma;
 - 4.1.2 To prepare for vitrectomy;
 - 4.1.3 To prepare for surgical repair of retinal detachment; *or*
 - 4.1.4 When other special investigations demonstrate intra-ocular pathology where further attention is important and requires clear media.

- 5.0 Documentation supporting medical necessity should consist of:
 - 5.1 Member history (including patient's assessment of functional status);
 - 5.2 Manifest refraction with BCVA (Note: Auto-refraction is not sufficient);
 - 5.3 Measurement of intraocular pressure;
 - 5.4 Assessment of pupillary function;
 - 5.5 Examination of ocular motility;
 - 5.6 External examination;
 - 5.7 Slit-lamp examination;
 - 5.8 Dilated examination of the fundus *unless* contraindicated by the anatomy of the eye;
 - 5.9 Notation that there is a reasonable expectation that removal of the cataract will improve the Member's visual acuity;
 - 5.10 Documentation that there was an adequate trial with updated corrective lenses;
 - 5.11 Degree of functional impairment (e.g. VF-14 assessment tool).

- 6.0 It is not recommended that surgery be performed on both eyes at the same time:
 - 6.1 The time interval between the two (2) eyes must be evaluated on a case-by-case basis with special attention to recovery of the vision in the operated-on eye so that the Member is not at risk of injury due to functional impairment during surgery of the second eye;



Eye Surgery & Procedures

- 6.2 Adequate time has passed (expected two weeks) to detect and treat the most immediate vision-threatening complications of cataract surgery;
- 6.3 The surgeon should discuss the post-operative corrective needs after cataract surgery in the first eye if the fellow eye does not meet criterion for cataract surgery. Second eye surgery to address refractive imbalance secondary to cataract surgery of the first eye is the responsibility of the Member;
- 6.4 Also, the measurement of glare disability by clinical methods is not standardized and that glare disability symptoms are not specific to cataract:
 - 6.4.1 Glare testing to substantiate Member's complaints of functional disability is considered more reliable in the presence of posterior subcapsular cataracts and readings are generally performed on the medium setting;
 - 6.4.2 Glare disability testing is not able to differentiate between visual loss due to cataract and visual loss due to other causes.

Associated codes: 66982 66983 66984

Covered Intraocular lens implants (IOLs):

- **Standard fixed monofocal posterior chamber IOLs**, Aspheric monofocal posterior chamber IOLs, and Standard fixed monofocal posterior chamber ultraviolet absorbing IOLs are all considered medically necessary for aphakia.
- **Standard posterior chamber IOL** is considered medically necessary for hyperopia.

Non-Covered Intraocular lens implants:

- **Piggyback posterior chamber IOLs** (i.e., placement of 2 IOLs in the same eye) are considered experimental and investigational.

Non-Covered Deluxe IOLs include, but are not limited to:

- **Accommodating posterior chamber IOLs** (e.g., Crystalens (Eyeonics Inc., Aliso Viejo, CA).
- **Multi-focal posterior chamber IOLs** (e.g., Array Model SA40 (Abbott Medical Optics, Santa Ana, CA), ReZoom (Abbott Medical Optics, Santa Ana, CA), Tecnis ZM900 and ZMAOO (Abbott Medical Optics, Santa Ana, CA), AcrySof ReSTOR, (Alcon Surgical, Fort Worth, TX), Acrysof Restor SA60D3 multifocal, Acrysof Natural ReSTOR SN60D3, AcrySof ReSTOR Aspheric IOL model SN6AD1, AcrySof ReSTOR Aspheric IOL model SN6AD3).
- **Astigmatism-correcting (toric) posterior chamber IOLs** (e.g., Staar Toric IOL (Star Surgical, Monrovia, CA), Staar Elastic Toric Lens Model AA4203TL, AcrySof Toric IOL (Alcon Surgical, Fort Worth, TX)) AcrySof Aspheric Toric IOL SN6AT3, SN6AT4 and SN6AT5, AcrySof Toric Models SA60T3, SA60T4 and SA60T5, AcrySof Toric Model SA60T, and Acrysof IQ Toric Model SN6ATT).
- Multi-focal IOL, Accommodating IOL and the Toric IOL are considered not medically necessary, and thus non-covered given that the intent of these IOLs is to obviate the need for reading glasses post-surgery.
- For Members who elect non-covered new technology IOLs, cataract removal and lens implantation would be considered medically necessary if the criteria for cataract surgery outlined above are met. The new technology lens itself would be non-covered and include codes V2787 & V2788.



Eye Surgery & Procedures

II. YAG Capsulotomy

- 1.0 Nd:YAG laser capsulotomy is medically necessary when performed following cataract extraction in Members with visually significant clouding (opacification) of the posterior portion of the membrane that surrounds the lens (the posterior capsule).
- 2.0 Criteria for coverage after three (3) months post-operatively:
 - 2.1 Member complains of decreased visual acuity related to distortion or glare, which affects functional visual ability;
 - 2.2 Decrease in best corrected visual acuity of two (2) lines and eye exam confirms diagnosis of posterior capsule opacification excluding other ocular causes of functional impairment;
 - 2.3 Yag laser capsulotomy is expected to be performed only once per eye per lifetime;
 - 2.4 Capsulotomy is needed to visualize fundus;
 - 2.5 When used for Members with posterior capsular opacification regardless of functional impairment for any of the following reasons:
 - 2.5.1 To provide better visualization of the posterior pole for Members with:
 - 2.5.1.1 Diabetic retinopathy; *or*
 - 2.5.1.1 Macular disease; *or*
 - 2.5.1.1 Retinal detachment; *or*
 - 2.5.1 To diagnose posterior pole tumors; *or*
 - 2.5.1 To evaluate the optic nerve head;
 - 2.6 If none of the above criteria are met, Nd:YAG laser capsulotomy performed within four (4) months of cataract surgery is considered experimental and investigational because of a lack of evidence of the value of routine prophylactic capsulotomy following cataract surgery.

Non-Covered Experimental & Investigational:

• Nd:YAG laser vitreolysis	• Nd:YAG laser peripheral iridotomy, and
• Nd:YAG laser anterior hyaloidotomy	• Nd:YAG laser posterior hyaloidotomy

Note: YAG capsulotomies scheduled within six (6) weeks after implantation of an IOL will be considered part of the reimbursement of the cataract surgery.

Corneal Procedures

III- Corneal Procedures

Post-Cataract Post-Transplant Corneal Surgery

- 1.0 Correction of surgically induced astigmatism with a corneal relaxing incision (including limbal relaxing incisions) or corneal wedge resection is considered medically necessary if the Member had previous penetrating keratoplasty (corneal transplant) within the past 60 months or cataract surgery within the last 36 months and both of the following criteria are met:
 - 1.1 The degree of astigmatism must be 3.00 diopters or greater; *and*
 - 1.2 The Member must be intolerant of glasses or contact lenses.

Eye Surgery & Procedures

Phototherapeutic keratectomy (PTK) may be considered medically necessary for the following corneal conditions:

- 1.1 Corneal scars and opacities (including post-traumatic, post-infectious, post-surgical, and secondary to pathology);
- 1.2 Epithelial membrane dystrophy;
- 1.3 Irregular corneal surfaces due to Salzmann's nodular degeneration or keratoconus nodules;
- 1.4 Recurrent corneal erosions when more conservative measures (e.g., lubricants, hypertonic saline, patching, bandage contact lenses, gentle debridement of severely aberrant epithelium) have failed to halt the erosions;
- 1.5 Superficial corneal dystrophy (including granular, lattice, and Reis-Bückler's dystrophy).

Epikeratoplasty (or epikeratophakia) may be considered medically necessary for the following indications:

- 1.1 Childhood aphakia since contact lenses are difficult for children to use and intraocular lens implants may result in long-term complications in children;
- 1.2 Scarred corneas and corneas affected with endothelial dystrophy;
- 1.3 Adult aphakia only in circumstances where secondary implantation of an intraocular lens is not feasible because re-entering the eye could affect outcome (e.g., vitreous in the anterior chamber, history of uveitis, disorganized anterior chamber that cannot support an intraocular lens, significant corneal endothelial disease, or gross corneal irregularity after trauma).

Lamellar keratoplasty (non-penetrating keratoplasty)

- 1.0 Lamellar keratoplasty (non-penetrating keratoplasty) may be considered medically necessary for treatment of corneal diseases, including scarring, edema, thinning, distortion, dystrophies, degenerations, and keratoconus.
- 2.0 It is considered investigational for pterygium and when performed solely to correct astigmatism and other refractive errors.

Corneal Transplantation, Penetrating keratoplasty (PK) may be considered medically necessary for the following conditions:

- 1.1 Poor visual acuity caused by an opaque cornea;
- 1.2 Remove active corneal disease, such as persistent severe bacterial, fungal, or amebic inflammation of the cornea (keratitis) after appropriate antibiotic therapy;
- 1.3 Restore altered corneal structure or to prevent loss of the globe that has been punctured;
- 1.4 Treat corneal diseases, including bullous keratopathy, keratoconus, corneal scar with opacity, keratitis, corneal transplant rejection, Fuch's dystrophy, corneal degeneration, other corneal dystrophies, corneal edema, and herpes simplex keratitis.

Intrastromal Corneal Ring Segments (INTACS) may be considered medically necessary for:

- 1.1 Reduction or elimination of myopia or astigmatism in Members with keratoconus; **or**
- 1.2 Pellucid marginal degeneration who are no longer able to achieve adequate vision using contact lenses; **or**
- 1.3 Spectacles and for whom corneal transplant is the only remaining option.



Eye Surgery & Procedures

Keratoprosthesis (Artificial Cornea)

- 1.0 The Boston Keratoprosthesis (Boston KPro) may be considered medically necessary for corneal blindness in Members who meet the following criteria:
 - 1.1 The cornea is severely opaque and vascularized, with vision less than 20/400 in the affected eye and lower than optimal vision in the opposite eye; **and**
 - 1.2 The Member has had two (2) or more prior failed penetrating keratoplasties (corneal transplants), with poor prognosis for further grafting; **and**
 - 1.3 The Member does not have end-stage glaucoma or retinal detachment.

Endothelial keratoplasty (Descemet's stripping endothelial keratoplasty (DSEK), Descemet's stripping automated endothelial keratoplasty (DSAEK), and Descemet's membrane endothelial keratoplasty (DLEK)

- 1.0 Endothelial keratoplasty (Descemet's stripping endothelial keratoplasty (DSEK), Descemet's stripping automated endothelial keratoplasty (DSAEK), and Descemet's membrane endothelial keratoplasty (DLEK) may be considered medically necessary for the following indications in persons with endothelial failure and otherwise healthy corneas:
 - 1.1 Bullous keratopathy;
 - 1.2 Corneal edema;
 - 1.3 Endothelial corneal dystrophy and other posterior corneal dystrophies;
 - 1.4 Mechanical complications due to corneal graft or ocular lens prostheses;
 - 1.5 Rupture of Descemet's membrane.
- 2.0 Otherwise, Endothelial keratoplasty procedures are considered experimental and investigational for:
 - 2.1 Conditions with concurrent endothelial disease and anterior corneal disease, including anterior corneal dystrophies, anterior corneal scars from trauma or prior infection;
 - 2.2 Ectatic conditions of the cornea such as keratoconus, pellucid marginal degeneration, and ectasia after previous laser vision correction surgery; and
 - 2.3 All other indications (e.g., iris atrophy).

Corneal Graft with Amniotic Membrane

- 1.0 Preserved human amniotic membrane transplantation for ocular surface reconstruction may be considered medically necessary in Members who are refractory to conventional treatment (e.g. lubricants, artificial tears, topical medications) and have any of the following conditions:
 - 1.1 Total loss of stem cells (one eye involvement only):
 - 1.1.1 Chemical/thermal injuries of the ocular surface;
 - 1.1.2 Contact lens-induced keratopathy or toxic effects from lens-cleaning solutions;
 - 1.1.3 Multiple surgeries or cryotherapies to the limbal region;
 - 1.1.4 Stevens-Johnson syndrome;
 - 1.1.5 Large Pterygium excision;

Eye Surgery & Procedures

- 1.2 Hypofunction of stem cells (one or both eyes can be involved):
 - 1.2.1 Aniridia (hereditary);
 - 1.2.2 Bullous keratopathy;
 - 1.2.3 Chronic limbitis;
 - 1.2.4 Keratitis associated with multiple endocrine deficiency (hereditary);
 - 1.2.5 Neurotrophic keratopathy (neuronal or ischemic);
 - 1.2.6 Peripheral corneal ulcerative keratitis.

Refractive Surgery

- 1.0 Most benefit plans specifically exclude coverage of surgery to correct refractive errors. These exclusions apply to:
 - 1.1 Radial keratotomy (RK);
 - 1.2 Astigmatic keratotomy;
 - 1.3 Photorefractive keratectomy (PRK);
 - 1.4 Photoastigmatic keratectomy (PARK);
 - 1.5 Laser-in-situ keratomileusis (LASIK);
 - 1.6 Keratomileusis;
 - 1.7 Epikeratophakia;
 - 1.8 Implantation of intrastromal corneal ring segments; and
 - 1.9 Other surgical procedures done for refractive correction.
- 2.0 Otherwise, refractive surgical procedures are considered not medically necessary because spectacles or contact lenses have been shown to provide more accurate corrections of refractive errors than refractive surgery.

Corneal Ultrasound

- 1.0 Ultrasound corneal pachymetry is considered medically necessary for the following indications:
 - 1.1 Bullous keratopathy; *or*
 - 1.2 Corneal edema; *or*
 - 1.3 Corneal refractive surgery (pre- and post-operative evaluation) *; *or*
 - 1.4 Corneal transplant (penetrating keratoplasty) (pre- and post-operative evaluation); *or*
 - 1.5 Evaluation of complications of corneal refractive surgery (once); *or*
 - 1.6 Evaluation of corneal rejection post penetrating keratoplasty; *or*
 - 1.7 Fuchs' endothelial dystrophy; *or*
 - 1.8 Persons with glaucoma or glaucoma suspects (testing is considered medically necessary once per lifetime); *or*
 - 1.9 Posterior polymorphous dystrophy.
- 2.0 Repeat ultrasound corneal pachymetry for corneal diseases and injuries is considered not medically necessary if performed more frequently than once every six (6) months.



Eye Surgery & Procedures

Strabismus Surgery in Adults

- 1.0 Strabismus repair may be considered medically necessary for adults (17 years of age or older) with the following indications:
 - 1.1 Restoration of binocular fusion and elimination of diplopia;
 - 1.2 Acute cranial nerve palsy (less than two years);
 - 1.3 Thyroid ophthalmopathy;
 - 1.4 Acquired vertical strabismus (i.e., following cataract surgery);
 - 1.5 Breakdown of an intermittent deviation-vertical or horizontal.

- 2.0 Otherwise the repair of strabismus is considered to be cosmetic for the following:
 - 2.1 No light perception (or extremely poor vision);
 - 2.2 A strabismic deviation that has been present and not addressed for over five (5) years;
 - 2.3 Clinical findings do not support restoration of binocular vision with prisms without inducing diplopia;
 - 2.4 Member does not complain of diplopia (or a disturbance from the motility disorder);
 - 2.5 Angle of strabismus is less than 12 prism diopters horizontal or less than 5 prism diopters vertical.

Botulinum Toxin Usage

- 1.0 Botulinum toxin may be considered medically necessary for the following conditions:
 - 1.1 Strabismus, including gaze palsies accompanying diseases such as Neuromyelitis optica or Schilder's disease.
 - 1.2 Blepharospasm, characterized by intermittent or sustained closure of the eyelids caused by involuntary contractions of the orbicularis oculi muscle.

- 2.0 Non-covered conditions which would be considered cosmetic include, but are not limited to:
 - 2.1 Unilateral myokymia which warrants observation;
 - 2.2 Adults with uncorrected congenital strabismus and no binocular fusion.

References:

1. Centers for Medicare and Medicaid Services (CMS). Requirements for determining coverage of presbyopia-correcting intraocular lenses that provide two distinct services for the Member: (1) Restoration of distance vision following cataract surgery, and (2) Refractive correction of near and intermediate vision with less dependency on eyeglasses or contact lenses. CMS Rulings. Ruling No. 05-01. Baltimore, MD: CMS; May 3, 2005.
2. Mundy L, Merlin T, Parrella A. CrystaLens: An accommodating intraocular lens replacement for patients with cataracts. Horizon Scanning Prioritising Summary - Volume 6. Adelaide, Australia: Adelaide Health Technology Assessment (AHTA) on behalf of National Horizon Scanning Unit (HealthPACT and MSAC); 2004.
3. Macsai MS, Padnick-Silver L, Fontes BM. Visual outcomes after accommodating intraocular lens implantation. J Cataract Refract Surg. 2006;32(4):628-633.

Eye Surgery & Procedures

4. Scott A. Accommodative intraocular lenses for age-related cataracts. *Issues in Emerging Health Technologies Issue 85*. Ottawa, ON: Canadian Agency for Drugs and Technologies in Health (CADTH); August 2006. Available at: http://www.cadth.ca/media/pdf/406_accommodative_lens_cetap_August2006.pdf. Accessed June 18, 2007.
5. National Institute for Health and Clinical Excellence (NICE). *Implantation of accommodating intraocular lenses for cataract. Interventional Procedure Guidance 209*. London, UK: NICE; 2007. Available at: <http://guidance.nice.org.uk/IPG209/guidance/pdf/English>. Accessed October 31, 2007.
6. Packer M, Fine IH, Hoffman RS. Aspheric intraocular lens selection: The evolution of refractive cataract surgery. *Curr Opin Ophthalmol*. 2008;19(1):1-4.
7. Martínez Palmer A, Gómez Faiña P, España Albelda A, et al. Visual function with bilateral implantation of monofocal and multifocal intraocular lenses: A prospective, randomized, controlled clinical trial. *J Refract Surg*. 2008;24(3):257-264.
8. National Institute for Health and Clinical Excellence (NICE). *Implantation of multifocal (non-accommodative) intraocular lenses during cataract surgery. Interventional Procedure Guidance 264*. London, UK: NICE; June 2008. Available at: <http://www.nice.org.uk/nicemedia/pdf/IPG264Guidance.pdf>. Accessed April 15, 2009.
9. Keay L, Lindsley K, Tielsch J, et al. Routine preoperative medical testing for cataract surgery. *Cochrane Database Syst Rev*. 2009;(2):CD007293.
10. Schaumberg DA, Dana MR, Christen WG, Glynn RJ. A systematic overview of the incidence of posterior capsule opacification. *Ophthalmology*. 1998;105(7):1213-1221.
11. Ku WC, Chuang LH, Lai CC. Cataract extraction in high myopic eyes. *Chang Gung Med J*. 2002;25(5):315-320.
12. Aslam TM, Devlin H, Dhillon B. Use of Nd:YAG laser capsulotomy. *Surv Ophthalmol*. 2003;48(6):594-612.
13. Yilmaz S, Ozdil MA, Bozkir N, Maden A. The effect of Nd:YAG laser capsulotomy size on refraction and visual acuity. *J Refract Surg*. 2006;22(7):719-721.
14. Cinal A, Demirok A, Yasar T, et al. Nd:YAG laser posterior capsulotomy after pediatric and adult cataract surgery. *Ann Ophthalmol (Skokie)*. 2007;39(4):321-326.
15. Findl O, Buehl W, Bauer P, Sycha T. Interventions for preventing posterior capsule opacification. *Cochrane Database Syst Rev*. 2007;(3): CD003738.
16. Delaney YM, Oyinloye A, Benjamin L. Nd:YAG vitreolysis and pars plana vitrectomy: Surgical treatment for vitreous floaters. *Eye*. 2002;16(1):21-26.
17. Lundqvist B, Mönestam E. Ten-year longitudinal visual function and Nd: YAG laser capsulotomy rates in patients less than 65 years at cataract surgery. *Am J Ophthalmol*. 2010;149(2):238-244.
18. Findl O, Buehl W, Bauer P, Sycha T. Interventions for preventing posterior capsule opacification. *Cochrane Database Syst Rev*. 2010;(2):CD003738.

Eye Surgery & Procedures

19. Kirwan RP, Cahill MT. Nd:YAG laser hyaloidotomy for valseva pre-macular haemorrhage. *Ir J Med Sci.* 2011;180(3):749-752.
20. Scott A, Kotecha A, Bunce C, et al. YAG laser peripheral iridotomy for the prevention of pigment dispersion glaucoma a prospective, randomized, controlled trial. *Ophthalmology.* 2011;118(3):468-473.
21. Ascaso FJ, de Gopegui ER, Cascante JM. Neodymium: yttrium-aluminum-garnet laser anterior hyaloidotomy to treat trapped triamcinolone acetonide behind the crystalline lens after intravitreal injection. *Middle East Afr J Ophthalmol.* 2012;19(1):163-165.
22. American Academy of Ophthalmology. Radial keratotomy for myopia. *Ophthalmology.* 1993;100(7):1103-1115.
23. American Academy of Ophthalmology. Low to moderate refractive errors. Preferred Practice Pattern. San Francisco, CA: American Academy of Ophthalmology; 1991.
24. American Academy of Ophthalmology. Keratophakia and keratomileusis: Safety and effectiveness. *Ophthalmology.* 1992;99(8):1332-1341.
25. U.S. Department of Health and Human Services, Public Health Service, Agency for Health Care Policy and Research. Cataract in Adults: Management of Functional Impairment. Clinical Practice Guideline No. 4, AHCPR Publication No. 93-0544. Rockville, MD: Agency for Health Care Policy and Research; February 1993.
26. American Academy of Ophthalmology. Refractive errors. Preferred Practice Pattern. San Francisco, CA: AAO; 1997.
27. American Academy of Ophthalmology. Automated lamellar keratoplasty. *Ophthalmology.* 1996;103(5):852-861.
28. American Academy of Ophthalmology. Epikeratoplasty. *Ophthalmology.* 1996;103(6):983-991.
29. American Academy of Ophthalmology. Excimer laser photorefractive keratectomy (PRK) for myopia and astigmatism. *Ophthalmology.* 1999;106(2):422-437.
30. Waring GO 3rd, Lynn MJ, Fielding B, et al. Results of the prospective evaluation of radial keratotomy (PERK) study 4 years after surgery for myopia. *JAMA.* 1990;263(8):1083-1091.
31. American Academy of Ophthalmology. Corneal opacification. Preferred Practice Pattern No. 15. San Francisco, CA: AAO; September 16, 1995.
32. Stoiber J, Muss WH, Pohla-Gubo G, et al. Histopathology of human corneas after amniotic membrane and limbal stem cell transplantation for severe chemical burn. *Cornea.* 2002;21(5):482-489.
33. Lee C, Samuel M, Tan D. Surgical interventions for pterygium (Protocol). *Cochrane Database Syst Rev.* 2002;(3):CD004506.
34. Dogru M, Tsubota K. Current concepts in ocular surface reconstruction. *Semin Ophthalmol.* 2005;20(2):75-93.

Eye Surgery & Procedures

35. Chandra A, Maurya OP, Reddy B, et al. Amniotic membrane transplantation in ocular surface disorders. *J Indian Med Assoc.* 2005;103(7):364-366, 368.
36. Hammersmith KM. Diagnosis and management of Acanthamoeba keratitis. *Curr Opin Ophthalmol.* 2006;17(4):327-331.
37. Rauscher FM, Barton K, Budenz DL, et al. Long-term outcomes of amniotic membrane transplantation for repair of leaking glaucoma filtering blebs. *Am J Ophthalmol.* 2007;143(6):1052-1054.
38. Küçükerdönmez C, Akova YA, Altinörs DD. Comparison of conjunctival autograft with amniotic membrane transplantation for pterygium surgery: Surgical and cosmetic outcome. *Cornea.* 2007;26(4):407-413.
39. Sangwan VS, Burman S, Tejwani S, et al. Amniotic membrane transplantation: A review of current indications in the management of ophthalmic disorders. *Indian J Ophthalmol.* 2007;55(4):251-260.
40. Espana EM, Grueterich M, Sandoval H, et al. Amniotic membrane transplantation for bullous keratopathy in eyes with poor visual potential. *J Cataract Refract Surg.* 2003;29(2):279-284.
41. Chansanti O, Horatanaruang O. The results of amniotic membrane transplantation for symptomatic bullous keratopathy. *J Med Assoc Thai.* 2005;88 Suppl 9: S57-S62.
42. Srinivas S, Mavrikakis E, Jenkins C. Amniotic membrane transplantation for painful bullous keratopathy. *Eur J Ophthalmol.* 2007;17(1):7-10.
43. Georgiadis NS, Ziakas NG, Boboridis KG, et al. Cryopreserved amniotic membrane transplantation for the management of symptomatic bullous keratopathy. *Clin Experiment Ophthalmol.* 2008;36(2):130-135.
44. Altiparmak UE, Oflu Y, Yildiz EH, et al. Prospective comparison of two suturing techniques of amniotic membrane transplantation for symptomatic bullous keratopathy. *Am J Ophthalmol.* 2009;147(3):442-446.
45. Shay E, Kheirkhah A, Liang L, et al. Amniotic membrane transplantation as a new therapy for the acute ocular manifestations of Stevens-Johnson syndrome and toxic epidermal necrolysis. *Surv Ophthalmol.* 2009;54(6):686-696.
46. Chawla B, Sharma N, Tandon R, et al. Comparative evaluation of phototherapeutic keratectomy and amniotic membrane transplantation for management of symptomatic chronic bullous keratopathy. *Cornea.* 2010;29(9):976-979.
47. Gregory DG. Treatment of acute Stevens-Johnson syndrome and toxic epidermal necrolysis using amniotic membrane: A review of 10 consecutive cases. *Ophthalmology.* 2011;118(5):908-914.
48. Strube YN, Conte F, Faria C, et al. Amniotic membrane transplantation for restrictive strabismus. *Ophthalmology.* 2011;118(6):1175-1179.



Eye Surgery & Procedures

49. American Academy of Ophthalmology (AAO) and American Association for Pediatric Ophthalmology and Strabismus (AAPOS). Policy Statement: Adult Strabismus Surgery. A Joint Statement of the American Association for Pediatric Ophthalmology and Strabismus and the American Academy of Ophthalmology. San Francisco, CA: AAO; April 2002. Available at: <http://www.aao.org/aao/Member/policy/adult.cfm>. Accessed October 15, 2003.
50. Beauchamp CL, Beauchamp GR, Stager DR, et al. The cost utility of strabismus surgery in adults. *J AAPOS*. 2006;10(5): 394-399.
51. Hatt SR, Leske DA, Kirgis PA, et al. The effects of strabismus on quality of life in adults. *Am J Ophthalmol*. 2007;144(5):643-647.
52. Beauchamp GR, Felius J, Stager DR, Beauchamp CL. The utility of strabismus in adults. *Trans Am Ophthalmol Soc*. 2005; 103:164-172.
53. Jackson S, Harrad RA, Morris M, Rumsey N. The psychosocial benefits of corrective surgery for adults with strabismus. *Br J Ophthalmol*. 2006;90(7):883-888.
54. Beauchamp GR, Black BC, Coats DK, et al. The management of strabismus in adults--III. The effects on disability. *J AAPOS*. 2005;9(5):455-459.
55. Stavrakas P, Georgopoulos G, Milia M, et al. The use of amniotic membrane in trabeculectomy for the treatment of primary open-angle glaucoma: A prospective study. *Clin Ophthalmol*. 2012; 6:205-212.

Disclaimer Information:

Coverage Issues Guidelines and Medical Technology Assessment Recommendations are developed to determine coverage for AvMed's benefits and are published to provide a better understanding of the basis upon which coverage decisions are made. AvMed makes coverage decisions using these guidelines, along with the Member's benefit document. The use of this guideline is neither a guarantee of payment nor a final prediction of how specific claim(s) will be adjudicated.

Coverage Issues Guidelines and Medical Technology Assessment Recommendations are developed for selected therapeutic or diagnostic services found to be safe, but proven effective in a limited, defined population of patients or clinical circumstances. They include concise clinical coverage criteria based on current literature review, consultation with practicing physicians in the AvMed service area who are medical experts in the particular field, FDA and other government agency policies, and standards adopted by national accreditation organizations.

Treating providers are solely responsible for the medical advice and treatment of Members. This guideline may be updated and therefore is subject to change.