Clinical Policy: Specular Microscopy

Reference Number: CP.VP.66
Last Review Date: 08/2025

Coding Implications
Revision Log

See Important Reminder at the end of this policy for important regulatory and legal information.

Description
Specular microscopy is used to view and record non-invasively the image of the corneal endothelial cell layer. This policy describes the medical necessity requirements for specular microscopy.

Policy/Criteria

I. It is the policy of health plans affiliated with Centene Corporation® (Centene) and Envolve Vision, Inc.® (Envolve) that specular microscopy is **medically necessary** for the following indications:
   A. As part of the pre-operative evaluation in patients undergoing a secondary intraocular lens implantation
   B. Assessment of endothelial corneal dystrophy (e.g. corneal guttata), corneal edema, posterior polymorphous dystrophy of the cornea or iridocorneal-endothelium syndrome
   C. As part of the evaluation process for patients being fitted with extended wear contact lenses after intraocular surgery
   D. As part of the pre-operative evaluation in patients undergoing an intraocular surgery with higher risk for corneal edema

Background
A transparent cornea is essential for the formation of a clear image on the retina. The human cornea is arranged into well-organized layers, and each layer plays a significant role in maintaining the transparency and viability of the tissue. The endothelium has both barrier and pump functions, which are important for the maintenance of corneal clarity. Many etiologies, including Fuchs' endothelial corneal dystrophy, surgical trauma, and congenital hereditary endothelial dystrophy, lead to endothelial cell dysfunction.

When the human corneal endothelium is damaged, the subsequent healing is a process of cellular enlargement and spreading to create a contiguous layer of cells on the inner surface of the cornea. The degree of endothelial cell loss from disease, trauma, chemical toxicity, etc. can be documented with specular microscopy as an increase in individual cell surface area and a decrease in the endothelial cell density for the cornea. The corneal endothelial cell wound repair is also reflected as an increase in the variation of individual cell areas, i.e. polymegethism or coefficient of variation (CV). Six-sided cells are an indication of an even distribution of membrane surface tension and of normal cells. The polygon that has the greatest surface area relative to its perimeter is the hexagon. Thus, the most efficient cell shape to cover a given area is the hexagon; i.e. a perfect cornea should have 100% hexagons. The normal cornea can be expected to have 60% of the endothelial cell as hexagons. Stress to the endothelial cells will result in a decrease from the normal 60% distribution of 6 sided cells to a lesser percentage. The endothelial cell morphology analysis includes: cell area ±S.D. (μm2), cell density (cells/mm2), polymegethism (coefficient of variation, CV), and pleomorphism (% of 6 sided cells).

Coding Implications

This clinical policy references Current Procedural Terminology (CPT®). CPT® is a registered trademark of the American Medical Association. All CPT codes and descriptions are copyrighted 2025, American Medical Association. All rights reserved. CPT codes and CPT descriptions are from the current manuals and those included herein are not intended to be all-inclusive and are included for informational purposes only. Codes referenced in this clinical policy are for informational purposes only. Inclusion or exclusion of any codes does not guarantee coverage. Providers should reference the most up-to-date sources of professional coding guidance prior to the submission of claims for reimbursement of covered services.

CPT® Codes	Description
92286	Anterior segment imaging with interpretation and report; with specular microscopy and endothelial cell analysis

ICD-10-CM Diagnosis Codes that Support Coverage Criteria

+ Indicates a code requiring an additional character

ICD-10® Codes	Description
H18.11	Bullous keratopathy right eye
H18.12	Bullous keratopathy left eye
H18.13	Bullous keratopathy bilateral
H18.20	Unspecified corneal edema
H18.211	Corneal edema secondary to contact lens, right eye
H18.212	Corneal edema secondary to contact lens, left eye
H18.213	Corneal edema secondary to contact lens, bilateral
H18.221	Idiopathic corneal edema right eye
H18.222	Idiopathic corneal edema left eye
H18.223	Idiopathic corneal edema bilateral
H18.231	Secondary corneal edema right eye
H18.232	Secondary corneal edema left eye
H18.233	Secondary corneal edema bilateral
H18.501	Unspecified hereditary corneal dystrophies, right eye
H18.502	Unspecified hereditary corneal dystrophies, left eye
H18.503	Unspecified hereditary corneal dystrophies, bilateral
H18.511	Endothelial corneal dystrophy, right eye
H18.512	Endothelial corneal dystrophy, left eye
H18.513	Endothelial corneal dystrophy, bilateral
H18.521	Epithelial (juvenile) corneal dystrophy, right eye
H18.522	Epithelial (juvenile) corneal dystrophy, left eye
H18.523	Epithelial (juvenile) corneal dystrophy, bilateral
H18.531	Granular corneal dystrophy, right eye
H18.532	Granular corneal dystrophy, left eye
H18.533	Granular corneal dystrophy, bilateral

ICD-10® Codes	Description
H18.541	Lattice corneal dystrophy, right eye
H18.542	Lattice corneal dystrophy, left eye
H18.543	Lattice corneal dystrophy, bilateral
H18.551	Macular corneal dystrophy, right eye
H18.552	Macular corneal dystrophy, left eye
H18.553	Macular corneal dystrophy, bilateral
H18.591	Other hereditary corneal dystrophies, right eye
H18.592	Other hereditary corneal dystrophies, left eye
H18.593	Other hereditary corneal dystrophies, bilateral
H27.01	Aphakia right eye
H27.02	Aphakia left eye
H27.03	Aphakia bilateral
Q12.3	Congenital aphakia
T85.21XA	Breakdown (mechanical) of intraocular lens, initial encounter
T85.21XD	Breakdown (mechanical) of intraocular lens, subsequent encounter
T85.21XS	Breakdown (mechanical) of intraocular lens, sequela
T85.22XA	Displacement of intraocular lens, initial encounter
T85.22XD	Displacement of intraocular lens, subsequent encounter
T85.22XS	Displacement of intraocular lens, sequela
T85.29XA	Other mechanical complication of intraocular lens, initial encounter
T85.29XD	Other mechanical complication of intraocular lens, subsequent encounter
T85.29XS	Other mechanical complication of intraocular lens, sequela
T86.8401	Corneal transplant rejection, right eye
T86.8402	Corneal transplant rejection, left eye
T86.8403	Corneal transplant rejection, bilateral
T86.8411	Corneal transplant failure, right eye
T86.8412	Corneal transplant failure, left eye
T86.8413	Corneal transplant failure, bilateral
T86.8421	Corneal transplant infection, right eye
T86.8422	Corneal transplant infection, left eye
T86.8423	Corneal transplant infection, bilateral
T86.8481	Other complications of corneal transplant, right eye
T86.8482	Other complications of corneal transplant, left eye
T86.8483	Other complications of corneal transplant, bilateral
T86.8491	Unspecified complication of corneal transplant, right eye
T86.8492	Unspecified complication of corneal transplant, left eye
T86.8493	Unspecified complication of corneal transplant, bilateral
Y77.11	Contact lens associated with adverse incidents
Z96.1	Presence of intraocular lens

Reviews, Revisions, and Approvals	Date	Approval Date
Annual Review	12/2019	12/2019
Converted to new template	07/2020	10/2020
Annual Review; Updated ICD-10 diagnosis codes	12/2020	12/2020
Annual Review	12/2021	01/2022
Annual Review	11/2022	12/2022
Annual Review	11/2023	12/2023
Annual Review	11/2024	12/2024
Annual Review	08/2025	10/2025

References

1. Review of Corneal Endothelial Specular Microscopy for FDA Clinical Trials of Refractive Procedures, Surgical Devices, and New Intraocular Drugs and Solutions, Bernard E. McCarey, Ph.D., Henry F. Edelhauser, Ph.D., Michael J. Lynn, M.S., Cornea. 2008 January; 27(1): 1-16, PMC, U.S. National Library of Medicine, National Institutes of Health
2. American Academy of Ophthalmology. Corneal endothelial photography. Three-year revision. Ophthalmology. 1997;104(8):1360-1365
3. Modis L Jr, Langenbucher A, Seitz B. Corneal endothelial cell density and pachymetry measured by contact and noncontact specular microscopy. J Cataract Refract Surg. 2002;28(10):1763-176
4. Sepehr Feizi. Corneal endothelial cell dysfunction: etiologies and management. Ther Adv Ophthalmol. 2018 Jan-Dec; 10: 2515841418815802.

Important Reminder

This clinical policy has been developed by appropriately experienced and licensed health care professionals based on a review and consideration of currently available generally accepted standards of medical practice; peer-reviewed medical literature; government agency/program approval status; evidence-based guidelines and positions of leading national health professional organizations; views of physicians practicing in relevant clinical areas affected by this clinical policy; and other available clinical information. The Health Plan makes no representations and accepts no liability with respect to the content of any external information used or relied upon in developing this clinical policy. This clinical policy is consistent with standards of medical practice current at the time that this clinical policy was approved. "Health Plan" means a health plan that has adopted this clinical policy and that is operated or administered, in whole or in part, by Centene Management Company, LLC, or any of such health plan's affiliates, as applicable.

The purpose of this clinical policy is to provide a guide to medical necessity, which is a component of the guidelines used to assist in making coverage decisions and administering benefits. It does not constitute a contract or guarantee regarding payment or results. Coverage decisions and the administration of benefits are subject to all terms, conditions, exclusions and limitations of the coverage documents (e.g., evidence of coverage, certificate of coverage, policy, contract of insurance, etc.), as well as to state and federal requirements and applicable Health Plan-level administrative policies and procedures.

This clinical policy is effective as of the date determined by the Health Plan. The date of posting may not be the effective date of this clinical policy. This clinical policy may be subject to applicable legal

and regulatory requirements relating to provider notification. If there is a discrepancy between the effective date of this clinical policy and any applicable legal or regulatory requirement, the requirements of law and regulation shall govern. The Health Plan retains the right to change, amend or withdraw this clinical policy, and additional clinical policies may be developed and adopted as needed, at any time.

This clinical policy does not constitute medical advice, medical treatment or medical care. It is not intended to dictate to providers how to practice medicine. Providers are expected to exercise professional medical judgment in providing the most appropriate care, and are solely responsible for the medical advice and treatment of members. This clinical policy is not intended to recommend treatment for members. Members should consult with their treating physician in connection with diagnosis and treatment decisions.

Providers referred to in this clinical policy are independent contractors who exercise independent judgment and over whom the Health Plan has no control or right of control. Providers are not agents or employees of the Health Plan.

This clinical policy is the property of the Health Plan. Unauthorized copying, use, and distribution of this clinical policy or any information contained herein are strictly prohibited. Providers, members and their representatives are bound to the terms and conditions expressed herein through the terms of their contracts. Where no such contract exists, providers, members and their representatives agree to be bound by such terms and conditions by providing services to members and/or submitting claims for payment for such services.

Note: For Medicaid members, when state Medicaid coverage provisions conflict with the coverage provisions in this clinical policy, state Medicaid coverage provisions take precedence. Please refer to the state Medicaid manual for any coverage provisions pertaining to this clinical policy.

Note: For Medicare members, to ensure consistency with the Medicare National Coverage Determinations (NCD) and Local Coverage Determinations (LCD), all applicable NCDs, LCDs, and Medicare Coverage Articles should be reviewed prior to applying the criteria set forth in this clinical policy. Refer to the CMS website at https://www.cms.gov for additional information.