Mass General Brigham
Health Plan

Medical Policy
Phototherapeutic Keratectomy

Policy Number: 042

	Commercial and Qualified Health Plans	Mass General Brigham ACO	Medicare Advantage	OneCare	Senior Care Options (SCO)
Authorization required	X		X	X	X
Not covered		X			

Overview
The purpose of this document is to describe the guidelines Mass General Brigham Health Plan utilizes to determine medical appropriateness for phototherapeutic keratectomy for Mass General Brigham Health Plan members.

Coverage Guidelines
Mass General Brigham Health Plan medical necessity criteria for phototherapeutic keratectomy are determined through a custom subset accessible through InterQual®. To access the criteria, log into Mass General Brigham Health Plan's provider website at MassGeneralBrighamHealthPlan.org and click the InterQual® Criteria Lookup link under the Resources Menu, or see below:

- Member has at least one of the following:
    - Corneal scars and opacities (including post-traumatic, post-infectious, post-surgical, and secondary to pathology); or
    - Superficial corneal dystrophy (including granular, lattice, and Reis-Buckler's dystrophies); or
    - Irregular corneal surfaces (secondary to Salzmann's degeneration, keratoconus nodules, or other irregular surfaces); or
    - Epithelial basement membrane dystrophy; or
    - Recurrent corneal erosion when standard therapeutic regimens measures (e.g. lubricants, hypertonic saline, patching, bandage contact lenses, gentle debridement of severely aberrant epithelium) have failed to halt the erosions.

Exclusions
Phototherapeutic keratectomy is considered not medically necessary for any other indication including but not limited to:

- Infectious keratitis; or
- For cosmetic and/or convenience purposes, (i.e., to replace the need to wear eyeglasses and/or contact lenses).

Definitions
Phototherapeutic Keratectomy: Phototherapeutic keratectomy involves the use of the excimer laser to treat visual impairment or irritative symptoms relating to diseases of the anterior cornea by sequentially ablating (destroying) uniformly thin layers of corneal tissue.

Epithelial basement membrane dystrophy

A disease that disrupts the ability of the epithelium to attach to the lower layers of the cornea. The epithelium will often grow unevenly or will detach from the cornea.

Codes

The following codes are included below for informational purposes only; inclusion of a code does not constitute or imply coverage or reimbursement.

Authorized CPT/HCPCS Codes	Code Description
S0812	Phototherapeutic keratectomy (PTK)

Medicare Variation
Mass General Brigham Health Plan uses guidance from the Centers for Medicare and Medicaid Services (CMS) for medical necessity determinations for its Medicare Advantage plan members. National Coverage Determinations (NCDs), Local Coverage Determinations (LCDs), Local Coverage Articles (LCAs), and documentation included in the Medicare manuals are the basis for medical necessity determinations. When there is no guidance from CMS for the requested service, Mass General Brigham Health Plan's medical policies are used for medical necessity determinations. **At the time of Mass General Brigham Health Plan's most recent policy review, Medicare had:**

- **NCD - Refractive Keratoplasty (80.7)**

The NCD above excludes coverage of refractive keratoplasty to treat common refractive errors but permits coverage of phototherapeutic keratectomy to treat specific lesions of the cornea. Because the NCD does not specify which corneal lesions may be so treated, the NCD does not fully establish coverage criteria for this service, and therefore Mass General Brigham Health Plan uses internal criteria to determine medical necessity.

MassHealth Variation
Mass General Brigham Health Plan uses guidance from MassHealth for medical necessity determinations for its Mass General Brigham ACO members. When there is no guidance from MassHealth for a requested service, Mass General Brigham Health Plan's medical policies are used for medical necessity determinations. **As of Mass General Brigham Health Plan's most recent policy review, MassHealth does not consider Phototherapeutic Keratectomy to be payable.**

OneCare and SCO Variation
Mass General Brigham Health Plan uses guidance from CMS for medical necessity determinations for its OneCare and SCO plan members. NCDs, LCDs, LCAs, and documentation included in the Medicare manuals are the basis for medical necessity determinations. When there is no guidance from CMS for the requested service, Mass General Brigham Health Plan uses medical necessity guidelines from MassHealth. When there is no guidance from CMS or MassHealth, Mass General Brigham Health Plan's medical policies are used for medical necessity determinations.

Summary of Evidence
Phototherapeutic Keratectomy (PTK) is a laser-based surgical procedure that has emerged as a versatile and effective surgical intervention for a range of anterior corneal pathologies including corneal dystrophies, recurrent corneal erosion syndrome (RCES), Salzmann's nodular degeneration, and post-traumatic corneal lesions. Its precision, minimal invasiveness, and quick recovery time make it a preferred choice for both patients and ophthalmologists. The procedure has demonstrated significant improvements in visual outcomes and symptom relief, contributing to better quality of life for patients. (Ashena et al., 2023), (Baryla et al., 2006), (Sauvageot et al., 2022), (Zhang et al., 2022).

Deshmukh et al. (2020) outlined the indications and techniques for PTK, including large-area, focal, and multifocal approaches. Modern technological advancements, such as Fourier-domain optical coherence tomography-guided PTK (Yang et al., 2020), continue to refine the procedure's precision and outcomes. PTK limitations include depth restrictions, induced astigmatism, hyperopic shifts, and scarring. For deeper lesions, anterior lamellar keratoplasty may be preferred. Despite these limitations, PTK offers advantages such as repeatability, rapid visual recovery, and minimal invasiveness.

Baryla et al. (2006) framed both the challenges and management of recurrent corneal erosions. This study retrospectively analyzed the long-term efficacy of PTK in treating RCES (recurrent corneal erosion syndrome) in 39 eyes of 33 patients. The study found that 50% of cases were attributed to epithelial corneal dystrophies, 31% to post-traumatic causes, and 15% to idiopathic factors. Recurrence rates were 25% at three months and 36% at nine months, with an average follow-up of 17.4 months. While 38% of eyes experienced a second recurrence and 15% a third, the majority of patients remained recurrence-free. Transient haze was observed in 10% of cases, but no serious adverse effects were reported. These findings underscore PTK as a viable option for RCES refractory to other treatments. Longer term follow-up will better characterize the impact of PTK for each condition.

Recurrence rates vary depending on the underlying condition, with higher rates observed in corneal dystrophy compared to other conditions. For RCES, Yang et al. (2020) reported results from 23 eyes in 21 patients and found an 18% overall recurrence rate over 24 months, with higher rates in corneal dystrophy cases (22%) compared to post-traumatic cases (17%). Complications such as corneal haze, ectasia, and infection, though rare, underscore the need for careful patient selection and postoperative monitoring. Complications varied across dystrophy types and surgical approaches.

Corneal dystrophies refer to more than 20 genetic conditions commonly diagnosed by age 20 that show progressive disease. Following conservative care, individuals commonly benefit with a first PTK sometimes with a repeat PTK, as a means to postpone keratoplasty (corneal transplant). PTK effects the shallowest depth of corneal conditions, as compared to greater depth with the deep anterior lamellar keratoplasty (DALK) which transplants surface cornea while retaining the host endothelium, and greatly reducing rejection risk, as compared to keratoplasty, full thickness corneal transplant.

Ashena et al. (2023) conducted a comprehensive review of stromal corneal dystrophies, including Reis-Bucklers, Thiel-Behnke, Lattice, Granular, Macular, and Schnyder dystrophies, to evaluate the roles of PTK and keratoplasty. This review cites many small case series of PTK and other techniques followed clinically with diverse recurrence rates, reported for various dystrophies followed for different time intervals around the world. For these many rare and disabling conditions, this is among the best available study compilation and provides valuable insights into optimizing surgical decision-making. Despite promising results, the limited sample sizes and case series for many studies highlight the need for larger, longer-term trials to improve treatment and optimize outcomes, especially for the rare corneal conditions.

PTK has proven to be a highly effective and minimally invasive intervention for a variety of anterior corneal pathologies. While recurrence rates and complications vary depending on the condition and surgical technique, the collective evidence demonstrates significant improvements in visual acuity and quality of life for patients. Continued research and technological advancements are essential to refine PTK techniques, reduce recurrence, and improve long term outcomes. Mass General Brigham Health Plan’s considers PTK to be medically necessary for patients with diagnoses for which this treatment has shown efficacy, as described in the literature above.

Effective
January 2026: Annual update. Updated prior authorization table and added variation for OneCare and SCO members. Fixed code disclaimer.

April 2025: Ad hoc update. Clarified Medicare variation. Added Summary of Evidence.
November 2024: Annual update. Added MassHealth Variation language. Added reference to InterQual® subset and custom criteria. Added code list disclaimer.
November 2023: Annual update. Medicare Advantage added to table. Medicare Variation language added. References updated.
December 2022: Annual update. References updated.
November 2021: Annual Update.
May 2020: Effective Date.

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