Medical Coverage Policy | Transpupillary Thermotherapy for Treatment of Choroidal Neovascularization

EFFECTIVE DATE: 02|17|2009
POLICY LAST REVIEWED: 03/18/2026

OVERVIEW
This policy documents the coverage determination for transpupillary thermotherapy (TTT) as it relates to the treatment of choroidal neovascularization (CNV) only. Transpupillary thermotherapy is a technique in which low-level heat is delivered through the pupil using a modified diode laser. TTT is designed to gently heat subfoveal choroidal lesions while limiting damage to the overlying retinal pigment epithelium.

MEDICAL CRITERIA
Not applicable

PRIOR AUTHORIZATION
Not applicable

POLICY STATEMENT
Medicare Advantage Plans
Transpupillary thermotherapy for the treatment of choroidal neovascularization is not covered as the evidence is insufficient to determine the effects of the technology on health outcomes.

Commercial Products
Transpupillary thermotherapy for the treatment of choroidal neovascularization is not medically necessary as the evidence is insufficient to determine the effects of the technology on health outcomes.

COVERAGE
Benefits may vary between groups/contracts. Please refer to the appropriate Evidence of Coverage or Subscriber Agreement for the applicable not medically necessary/not covered benefits/coverage.

BACKGROUND
Choroidal neovascularization is a common cause of adult-onset blindness, most commonly associated with age-related macular degeneration (AMD). In its earliest stages, AMD is characterized by minimal visual impairment and the presence of large drusen and other pigmentary abnormalities on ophthalmoscopic examination. As AMD progresses, 2 distinctively different forms of degeneration may be observed. The first, called the atrophic, areolar or dry form, evolves slowly. Atrophic AMD is the most common form of degeneration and is often a precursor of the second form, the more devastating exudative neovascular form, also referred to as disciform or wet degeneration. The wet form is distinguished from the atrophic form by serous or hemorrhagic detachment of the retinal pigment epithelium and the development of CNV, sometimes called neovascular membranes. Risk of developing severe irreversible loss of vision is greatly increased by the presence of CNV.

The pattern of CNV, as revealed by fluorescein or indocyanine angiography, is further categorized as classic or occult. For example, classic CNV appears as an initial lacy pattern of hyperfluorescence followed by more irregular patterns as the dye leaks into the subretinal space. Occult CNV lacks the characteristic angiographic pattern, either due to the opacity of coexisting subretinal hemorrhage or, especially in CNV associated with AMD, by a tendency for epithelial cells to proliferate and partially or completely surround the new vessels. Interestingly, lesions consisting only of classic CNV carry a worse visual prognosis than those composed of only occult CNV, suggesting that the proliferative response that obscures new vessels may also favorably alter the clinical course of AMD.

There is ongoing research interest in the use of TTT to treat subfoveal choroidal neovascularization with an "occult" angiographic pattern. TTT is a technique in which heat is delivered to the choroid and retinal pigment epithelium through the pupil using a modified diode laser. This laser technique contrasts with the laser used in standard photocoagulation therapy in that TTT uses a lower power laser for more prolonged periods of time and is designed to gently heat the choroidal lesion, thus limiting damage to the overlying retinal pigment epithelium.

Transpupillary thermotherapy is a technique in which low-level heat is delivered through the pupil using a modified diode laser. TTT is designed to gently heat subfoveal choroidal lesions while limiting damage to the overlying retinal pigment epithelium. Evidence on TTT is limited. The available studies comparing TTT with sham have not shown a benefit of this procedure. Although trials comparing TTT to photodynamic therapy show similar outcomes for the 2 treatments, there may be an increase in adverse events with TTT. TTT has not been compared with angiogenesis inhibitors. Evidence is insufficient to determine whether TTT is as beneficial as the established alternative; this procedure is considered not medically necessary.

CODING

Medicare Advantage Plans and Commercial Products

There is no specific code(s) for this service. To report, use the unlisted procedure, posterior segment: 67299. It is incorrect to report this service with CPT code 67220.

RELATED POLICIES

None

PUBLISHED

Provider Update, May 2026
Provider Update, April 2025
Provider Update, April 2024
Provider Update, May 2023
Provider Update, July 2022

REFERENCES

1. Reichel E, Berrocal AM, Ip M et al. Transpupillary thermotherapy of occult subfoveal choroidal neovascularization in patients with age-related macular degeneration. Ophthalmology 1999; 106(10):1908-14.
2. Newsom RS, McAlister JC, Saeed M et al. Transpupillary thermotherapy (TTT) for the treatment of choroidal neovascularisation. Br J Ophthalmol 2001; 85(2):173-8.
3. Blue Cross and Blue Shield Association Technology Evaluation Center (TEC). TEC Special Report: Current and evolving strategies in the treatment of age-related macular degeneration. TEC Assessments 2005; Volume 20, Tab 11.
4. Gustavsson C, Agardh E. Transpupillary thermotherapy for occult subfoveal choroidal neovascularization: a 1-year, prospective randomized pilot study. Acta Ophthalmol Scand 2005; 83(2):148-53.
5. Myint K, Armbrecht AM, Mon S et al. Transpupillary thermotherapy for the treatment of occult CNV in age-related macular degeneration: a prospective randomized controlled pilot study. Acta Ophthalmol Scand 2006; 84(3):328-32.
6. Odergren A, Algvere PV, Seregard S et al. A prospective randomised study on low-dose transpupillary thermotherapy versus photodynamic therapy for neovascular age-related macular degeneration. Br J Ophthalmol 2008; 92(6):757-61.
7. Odergren A, Algvere PV, Seregard S et al. Vision-related function after low-dose transpupillary thermotherapy versus photodynamic therapy for neovascular age-related macular degeneration. Acta Ophthalmol 2010; 88(4):426-30.
8. Tewari HK, Prakash G, Azad RV et al. A pilot trial for comparison of photodynamic therapy and transpupillary thermotherapy for the management of classic subfoveal choroidal neovascularization secondary to age-related macular degeneration. Indian J Ophthalmol 2007; 55(4):277-81.

9. Zhang X, Zhu X, Wang D et al. Low-power transpupillary thermotherapy combined with intravitreal triamcinolone acetonide for subfoveal choroidal neovascularization. Ophthalmic Res 2007; 39(4):241-2.
10. Nowak MS, Jurowski P, Grzybowski A et al. A prospective study on different methods for the treatment of choroidal neovascularization. The efficacy of verteporfin photodynamic therapy, intravitreal bevacizumab and transpupillary thermotherapy in patients with neovascular age-related macular degeneration. Med Sci Monit 2012; 18(6):CR374-80.
11. Soderberg AC, Algvere PV, Hengstler JC et al. Combination therapy with low-dose transpupillary thermotherapy and intravitreal ranibizumab for neovascular age-related macular degeneration: a 24-month prospective randomised clinical study. Br J Ophthalmol 2012; 96(5):714-8.
12. Agurto-Rivera R, Diaz-Rubio J, Torres-Bernal L et al. Intravitreal triamcinolone with transpupillary therapy for subfoveal choroidal neovascularization in age related macular degeneration. A randomized controlled pilot study [ISRCTN74123635]. BMC Ophthalmol 2005; 5:27.
13. Nagpal M, Nagpal K, Sharma S et al. Transpupillary thermotherapy for treatment of choroidal neovascularization secondary to age-related macular degeneration in Indian eyes. Indian J Ophthalmol 2003; 51(3):243-50.
14. Algvere PV, Libert C, Lindgarde G et al. Transpupillary thermotherapy of predominantly occult choroidal neovascularization in age-related macular degeneration with 12 months follow-up. Acta Ophthalmol Scand 2003; 81(2):110-7.
15. Thach AB, Sipperley JO, Dugel PU et al. Large-spot size transpupillary thermotherapy for the treatment of occult choroidal neovascularization associated with age-related macular degeneration. Arch Ophthalmol 2003; 121(6):817-20.
16. Kumar A, Prakash G, Singh RP. Transpupillary thermotherapy for idiopathic subfoveal choroidal neovascularization. Acta Ophthalmol Scand 2004; 82(2):205-8.
17. Peyman G, Tsipursky M, Gohel P et al. Regression of peripapillary choroidal neovascularization after oscillatory transpupillary thermotherapy and anti-VEGF pharmacotherapy. Eur J Ophthalmol 2011; 21(2):162-72.
18. Kawamura R, Ideta H, Hori H et al. Transpupillary thermotherapy for atypical central serous chorioretinopathy. Clin Ophthalmol 2012; 6:175-9.
19. Kwon HJ, Kim M, Lee CS et al. Treatment of serous macular detachment associated with circumscribed choroidal hemangioma. Am J Ophthalmol 2012; 154(1):137-45 e1.
20. Rougier MB, Francois L, Fourmaux E et al. Complications and lack of benefit after transpupillary thermotherapy for occult choroidal neovascularization: 1-year results. Retina 2005; 25(6):784-8.
21. Mason JO, 3rd, Colagross CC, Feist RM et al. Risk factors for severe vision loss immediately after transpupillary thermotherapy for occult subfoveal choroidal neovascularization. Ophthalmic Surg Lasers Imaging 2008; 39(6):460-5.
22. American Academy of Ophthalmology. Age-Related Macular Degeneration. Available online at: www.aao.org/ppp.

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