

## Medical Coverage Policy | Intraocular Radiotherapy for Age-Related Macular Degeneration



**EFFECTIVE DATE:** 12|01|2022

**POLICY LAST UPDATED:** 05/05/2023

### OVERVIEW

Intraocular radiation, including brachytherapy, proton beam therapy, and stereotactic radiotherapy, are being evaluated to treat choroidal neovascularization associated with age-related macular degeneration.

### MEDICAL CRITERIA

Not applicable

### PRIOR AUTHORIZATION

Not applicable

### POLICY STATEMENT

#### Medicare Advantage Plans

Intraocular placement of a radiation source (brachytherapy), proton beam therapy and stereotactic radiotherapy for the treatment of choroidal neovascularization is considered not covered as the evidence is insufficient to determine the effects of the technology on health outcomes.

#### Commercial Products

Intraocular placement of a radiation source (brachytherapy), proton beam therapy and stereotactic radiotherapy for the treatment of choroidal neovascularization is considered not medically necessary as the evidence is insufficient to determine the effects of the technology on health outcomes.

### COVERAGE

Benefits may vary by group/contract. Please refer to the appropriate Member Certificate or Subscriber Agreement for applicable speech therapy benefits/coverage.

### BACKGROUND

#### Age-Related Macular Degeneration

Age-related macular degeneration is the leading cause of legal blindness in individuals older than age 60 in developed nations. Age-related macular degeneration is characterized in its earliest stages by minimal visual impairment and the presence of large drusen and other pigmentary abnormalities on ophthalmoscopic examination. Two distinctive forms of degeneration may be observed. The first, called the atrophic or areolar or dry form, evolves slowly. Atrophic age-related macular degeneration is the most common form of degeneration and may be a precursor of the more visually impairing exudative neovascular form, also referred to as disciform or wet age-related macular degeneration. The wet form is distinguished from the atrophic form by the development of choroidal neovascularization and serous or hemorrhagic detachment of the retinal pigment epithelium. Risk of developing severe irreversible loss of vision is greatly increased by the presence of choroidal neovascularization.

#### Standard Clinical Management

Usual care for neovascular age-related macular degeneration includes intravitreal agents that target vascular endothelial growth factor, including pegaptanib, ranibizumab, bevacizumab, and aflibercept. Photodynamic therapy is an older method that has been largely replaced by anti-vascular endothelial growth factor therapies. The intravitreal therapies may necessitate repeated intravitreal injections. Hence, alternative treatments, such

as intraocular radiation, including brachytherapy, proton beam therapy, and stereotactic radiotherapy, are being investigated.

### **Intraocular Radiotherapy**

The NeoVista Epi-Rad90 Ophthalmic System, a brachytherapy device, treats choroidal neovascularization by delivering focal radiation to a subfoveal choroidal neovascular lesion. Using a standard vitrectomy procedure, the cannula tip of a handheld (pipette-like) surgical device is inserted into the vitreous cavity and positioned under visual guidance over the target lesion. The radiation source (strontium 90) is advanced down the cannula until it reaches the tip, which is then held in place over the lesion for a “prescribed” time to deliver focused radiation. The system is designed to deliver a 1-timepeak dose of beta particle energy (24 Gray) for a target area 3 mm in depth and up to 5.4 mm in diameter. This dose is believed to be below that toxic to the retina and optic nerve. Radiation exposure outside of the target area is expected to be minimal.

Proton beam therapy is a type of external radiotherapy that uses charged atomic particles (protons or helium ions) to target a given area. Proton beam therapy differs from conventional electromagnetic (photon) radiotherapy in that, with proton beam therapy, there is less scatter as the particle beams pass through tissue to deposit ionizing energy at precise depths (Bragg peak). The theoretical advantage of proton beam therapy over photon therapy is the ability to deliver higher radiation doses to the target without harm to adjacent normal tissue.

Stereotactic radiotherapy is a nonsurgical procedure performed in an office setting. It uses a robotically controlled device to deliver radiation beams through the inferior sclera to overlap at the macula.

### **Other Treatments**

Other available therapeutic options for age-related macular degeneration not addressed in this evidence review include photodynamic therapy and vascular endothelial growth factor antagonists or angiostatics.

### **Summary of Evidence**

For individuals who have choroidal neovascularization due to age-related macular degeneration who receive brachytherapy, the evidence includes data from a Cochrane review, 2 randomized controlled trials (RCTs) comparing brachytherapy plus vascular endothelial growth factor with vascular endothelial growth factor monotherapy, as well as phase 1/2 trials and case series on the use of brachytherapy. Relevant outcomes are change in disease status, morbid events, functional outcomes, quality of life, medication use, and treatment-related morbidity. Both RCTs showed that brachytherapy did not attain noninferiority for visual acuity outcomes and was associated with a higher proportion of adverse events. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have choroidal neovascularization due to age-related macular degeneration who receive proton beam therapy, the evidence includes a randomized, prospective, sham-controlled trial and a pilot study. Relevant outcomes are change in disease status, morbid events, functional outcomes, quality of life, medication use, and treatment-related morbidity. Recruitment into the RCT was halted for ethical concerns, and available results did not show statistically significant stabilization of visual acuity. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have choroidal neovascularization due to age-related macular degeneration who receive stereotactic radiotherapy, the evidence includes an RCT with sham control. Relevant outcomes are change in disease status, morbid events, functional outcomes, quality of life, medication use, and treatment-related morbidity. The RCT showed a reduction in the number of vascular endothelial growth factor treatments at 12- and 24-month intervals, but no significant differences versus controls for changes in visual acuity. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

### **Regulatory Status**

No devices are specifically approved by the U.S. Food and Drug Administration (FDA) for intraocular radiation. An investigational device exemption was granted by the FDA for a phase 3 multicenter trial of the EPI-RAD90™ (now known as Vidion Anti-Neovascular Epimacular Brachytherapy [EMBT] System; NeoVista) to provide data for a device application to the FDA. This is a category B procedure.

## **CODING**

### **Medicare Advantage Plans and Commercial Products**

CPT codes have not been assigned to all of the services or therapies addressed in this policy. Therefore, the following Unlisted procedure code(s) should be used:

67299 Unlisted procedure, posterior segment

## **RELATED POLICIES**

Not applicable

## **PUBLISHED**

Provider Update, July 2023

Provider Update, October 2022

## **REFERENCES**

1. Evans JR, Igwe C, Jackson TL, et al. Radiotherapy for neovascular age-related macular degeneration. *CochraneDatabase Syst Rev.* Aug 26 2020; 8: CD004004. PMID 32844399
2. Jackson TL, Desai R, Simpson A, et al. Epimacular Brachytherapy for Previously Treated Neovascular Age-Related Macular Degeneration (MERLOT): A Phase 3 Randomized Controlled Trial. *Ophthalmology.* Jun 2016;123(6): 1287-96. PMID 27086023
3. Jackson TL, Soare C, Petrarca C, et al. Evaluation of Month-24 Efficacy and Safety of Epimacular Brachytherapy for Previously Treated Neovascular Age-Related Macular Degeneration: The MERLOT Randomized Clinical Trial. *JAMA Ophthalmol.* Aug 01 2020; 138(8): 835-842. PMID 32644148
4. Dugel PU, Bebhuk JD, Nau J, et al. Epimacular brachytherapy for neovascular age-related macular degeneration: a randomized, controlled trial (CABERNET). *Ophthalmology.* Feb 2013; 120(2): 317-27. PMID 23174399
5. Jackson TL, Dugel PU, Bebhuk JD, et al. Epimacular brachytherapy for neovascular age-related macular degeneration (CABERNET): fluorescein angiography and optical coherence tomography. *Ophthalmology.* Aug 2013; 120(8): 1597-603. PMID 23490325
6. Dugel PU, Petrarca R, Bennett M, et al. Macular epiretinal brachytherapy in treated age-related macular degeneration: MERITAGE study: twelve-month safety and efficacy results. *Ophthalmology.* Jul 2012; 119(7): 1425-31. PMID 22465819
7. Petrarca R, Dugel PU, Nau J, et al. Macular epiretinal brachytherapy in treated age-related macular degeneration (MERITAGE): month 12 optical coherence tomography and fluorescein angiography. *Ophthalmology.* Feb 2013; 120(2): 328-33. PMID 23178157
8. Petrarca R, Dugel PU, Bennett M, et al. Macular epiretinal brachytherapy in treated age-related macular degeneration (MERITAGE): month 24 safety and efficacy results. *Retina.* May 2014; 34(5): 874-9. PMID 24169101
9. Avila MP, Farah ME, Santos A, et al. Twelve-month safety and visual acuity results from a feasibility study of intraocular, epiretinal radiation therapy for the treatment of subfoveal CNV secondary to AMD. *Retina.* Feb 2009; 29(2): 157-69. PMID 19202425
10. Avila MP, Farah ME, Santos A, et al. Twelve-month short-term safety and visual-acuity results from a multicentre prospective study of epiretinal strontium-90 brachytherapy with bevacizumab for the treatment of subfoveal choroidal neovascularisation secondary to age-related macular degeneration. *Br J Ophthalmol.* Mar 2009; 93(3): 305-9. PMID 19019935
11. Avila MP, Farah ME, Santos A, et al. Three-year safety and visual acuity results of epimacular 90 strontium/90yttrium brachytherapy with bevacizumab for the treatment of subfoveal choroidal

neovascularization secondary to age-related macular degeneration. *Retina*. Jan 2012; 32(1): 10-8. PMID 21817963

12. Park SS, Daftari I, Phillips T, et al. Three-year follow-up of a pilot study of ranibizumab combined with proton beam irradiation as treatment for exudative age-related macular degeneration. *Retina*. May 2012; 32(5): 956-66. PMID 22183743
13. Ciulla TA, Danis RP, Klein SB, et al. Proton therapy for exudative age-related macular degeneration: a randomized, sham-controlled clinical trial. *Am J Ophthalmol*. Dec 2002; 134(6): 905-6. PMID 12470761
14. Jackson TL, Chakravarthy U, Kaiser PK, et al. Stereotactic radiotherapy for neovascular age-related macular degeneration: 52-week safety and efficacy results of the INTREPID study. *Ophthalmology*. Sep 2013; 120(9): 1893-900. PMID 23490327
15. Jackson TL, Chakravarthy U, Slakter JS, et al. Stereotactic radiotherapy for neovascular age-related macular degeneration: year 2 results of the INTREPID study. *Ophthalmology*. Jan 2015; 122(1): 138-45. PMID 25208859
16. Ranjbar M, Kurz M, Holzhey A, et al. Stereotactic radiotherapy in neovascular age-related macular degeneration: Real-life efficacy and morphological evaluation of the outer retina-choroid complex. *Medicine (Baltimore)*. Dec 2016; 95(52): e5729. PMID 28033280
17. American Academy of Ophthalmology Retina/Vitreous Panel. Preferred Practice Pattern: Age-Related Macular Degeneration. San Francisco, CA: American Academy of Ophthalmology; 2015.
18. American Academy of Ophthalmology. Age-related macular degeneration. Preferred practice pattern. October 2019. <https://www.aao.org/preferred-practice-pattern/age-related-macular-degeneration-ppp>. Accessed February 16, 2023.
19. National Institute for Health and Care Excellence. Epirretinal brachytherapy for wet age-related macular degeneration [IPG415]. 2011; <https://www.nice.org.uk/guidance/IPG415>. Accessed February 16, 2023.

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Provider Update, July 2023

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